

MAULES CREEK COAL MINE
THREATENED FAUNA IMPLEMENTATION PLAN



PREPARED BY
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EXECUTIVE SUMMARY

Maules Creek Coal Pty Ltd (MCC) owns the Maules Creek Coal Mine (MCCM) located approximately 40 kilometres south-east of Narrabri, New South Wales (NSW). The MCCM commenced construction in December 2013 under State (NSW) and Commonwealth Project approvals. As part of the NSW Project approval for the MCCM, MCC will implement:

- a Rehabilitation Strategy to progressively rehabilitate the post-mine landforms and re-establish vegetation and habitat for native flora and fauna (including threatened species); and
- a Biodiversity Offset Strategy in the surrounding region with habitat for a number of threatened fauna species.

In 2014, an investigation of factors likely to enhance or impede the effective long term provision of suitable habitat(s) for threatened fauna species was undertaken by Whitehaven Coal Limited (Whitehaven) (a joint venture partner of MCC). The provision of suitable habitats to support individual or populations of threatened species does not in itself ensure the presence of any such species in the restored or remediated landscapes in the future. However it is possible to seek to optimise the potential for such species to ultimately locate into these landscapes.

Condition 50 of MCCM Project Approval (PA 10_0138) requires the investigation to include the following threatened species:

- **Threatened birds:** Spotted Harrier (*Circus assimilis*), Little Eagle (*Hieraaetus morphnoides*), Little Lorikeet (*Glossopsitta pusilla*), Turquoise Parrot (*Neophema pulchella*), Masked Owl (*Tyto novaehollandiae*), Barking Owl (*Ninox connivens*), Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*), Speckled Warbler (*Chthonicola sagittata*), Black-chinned Honeyeater (eastern subspecies) (*Melithreptus gularis gularis*), Regent Honeyeater (*Anthochaera phrygia*), Painted Honeyeater (*Grantiella picta*), Hooded Robin (south-eastern form) (*Melanodryas cucullata cucullata*), Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*), Varied Sittella (*Daphoenositta chrysoptera*) and Diamond Firetail (*Stagonopleura guttata*).
- **Threatened bats:** Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*), Corben's Long-eared Bat (Greater Long-eared Bat or South-eastern Long-eared Bat) (*Nyctophilus corbeni*), Little Pied Bat (*Chalinolobus picatus*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*).

This investigation report also covers the additional threatened and migratory species listed under Condition 49 of MCCM Project Approval (PA 10_0138):

- **Threatened birds:** Black-necked Stork (*Ephippiorhynchus asiaticus*), Square-tailed Kite (*Lophoictinia isura*) and Swift Parrot (*Lathamus discolor*).
- **Threatened mammals:** Koala (*Phascolarctos cinereus*), Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*) and Eastern Cave Bat (*Vespadelus troughtoni*).
- **Migratory species:** White-throated Needletail (*Hirundapus caudacutus*), Fork-tailed Swift (*Apus pacificus*), Rainbow Bee-eater (*Merops ornatus*) and Satin Flycatcher (*Myiagra cyanoleuca*).

Other threatened species that have recently been recorded in the vicinity of the MCCM and/or associated offset areas are also covered by this investigation, namely: Pale-headed Snake (*Hoplocephalus bitorquatus*), Superb Parrot (*Polytelis swainsonii*), Squirrel Glider (*Petaurus norfolcensis*) and Large-eared Pied Bat (*Chalinolobus dwyeri*).

This implementation plan was developed in accordance with Condition 50 of MCCM Project Approval (PA 10_0138) to maximise the likely prospects for providing viable areas of suitable habitat for threatened fauna species on the offset areas and on the mine site. The actual return of such threatened species to these future landscapes will also depend on source populations being available away from the restored remediated landscapes and the availability of potential movement pathways for such species between potential source populations and the restored and rehabilitated landscapes.

The outcomes of this implementation plan are 'checklists' for implementing the Rehabilitation Strategy and Biodiversity Offset Strategy. The approved implementation plan will be incorporated into a revised MCCM Biodiversity Management Plan (due to be submitted to the Department of Planning and Environment in April 2015) and a revised MCCM Rehabilitation Management Plan.

1 INTRODUCTION

1.1 BACKGROUND

The Maules Creek Coal Mine (MCCM) an open cut coal mining operation is located approximately 40 kilometres south-east of Narrabri, New South Wales (NSW) (Figures 1 and 2). The MCCM is owned by Maules Creek Coal Pty Ltd (MCC), a joint venture between Aston Coal 2 Pty Limited (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ITOCHU Corporation (15%) and J-Power Corporation Pty Limited (10%).

The MCCM was granted NSW Project approval under the NSW *Environmental Planning and Assessment Act* by the Planning Assessment Commission under delegation of the Minister for Planning and Infrastructure on 23 October 2012. The MCCM was granted approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 11 February 2013 (Commonwealth Approval Decision 2010/5566).

As part of the NSW Project approval for the MCCM, MCC will implement:

- a Rehabilitation Strategy to progressively rehabilitate the post-mine landforms and re-establish vegetation and habitat for native flora and fauna (including threatened species); and
- a Biodiversity Offset Strategy in the surrounding region with habitat for a number of threatened fauna species.

Rehabilitation Strategy

Condition 44 of Maules Creek Coal Mine Project Approval (PA 10_0138) requires 2,078 hectares (ha)¹ of vegetation to be re-established on the post-mine landforms. An objective is to revegetate the post-mine landforms with a mixture of native grassy woodland, shrubby woodland/open forest, riparian forest and Box-Gum Woodland EEC (Hansen Bailey, 2013). The rehabilitation areas will be designed to contain habitat for native flora and fauna.

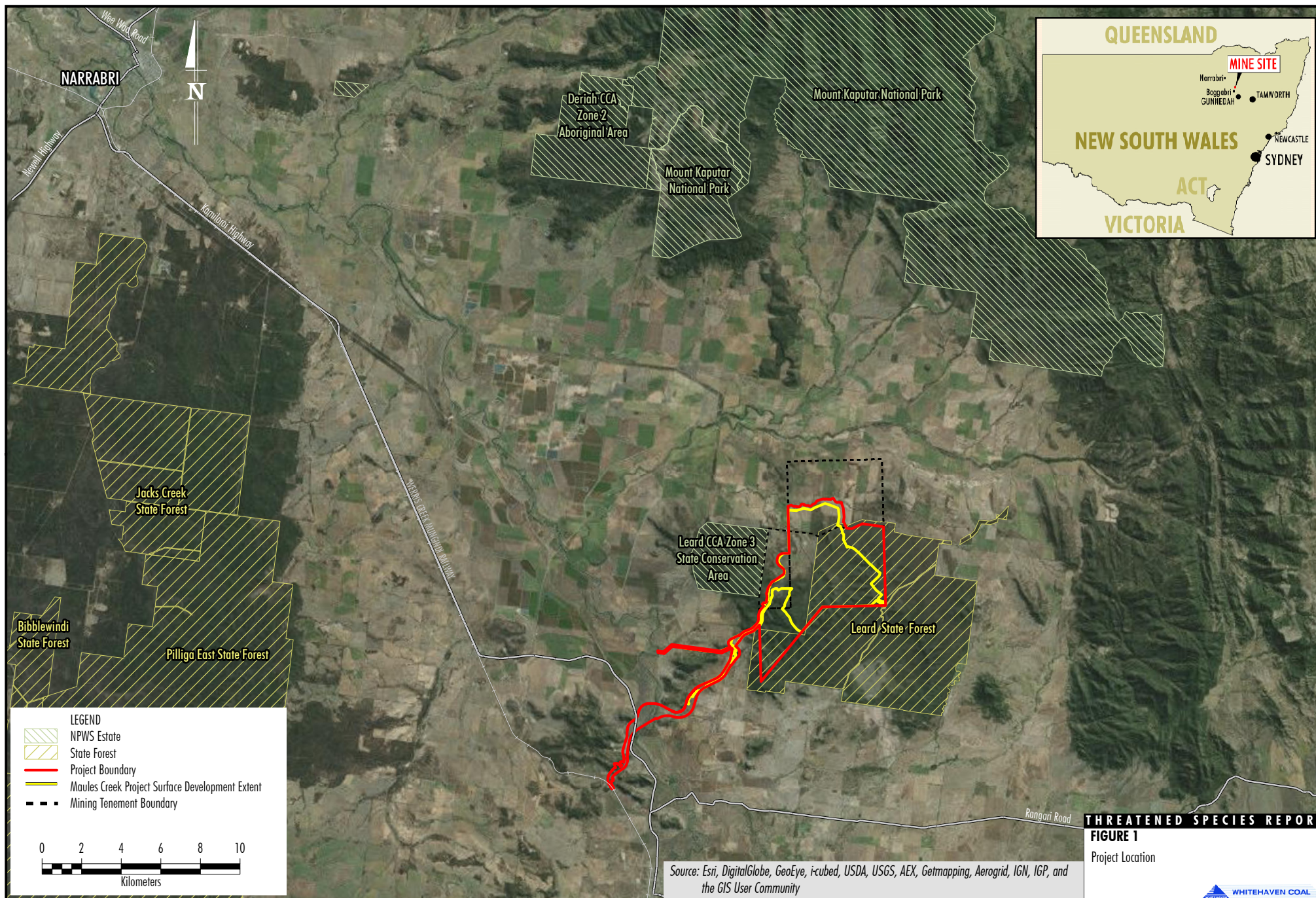
Biodiversity Offset Strategy

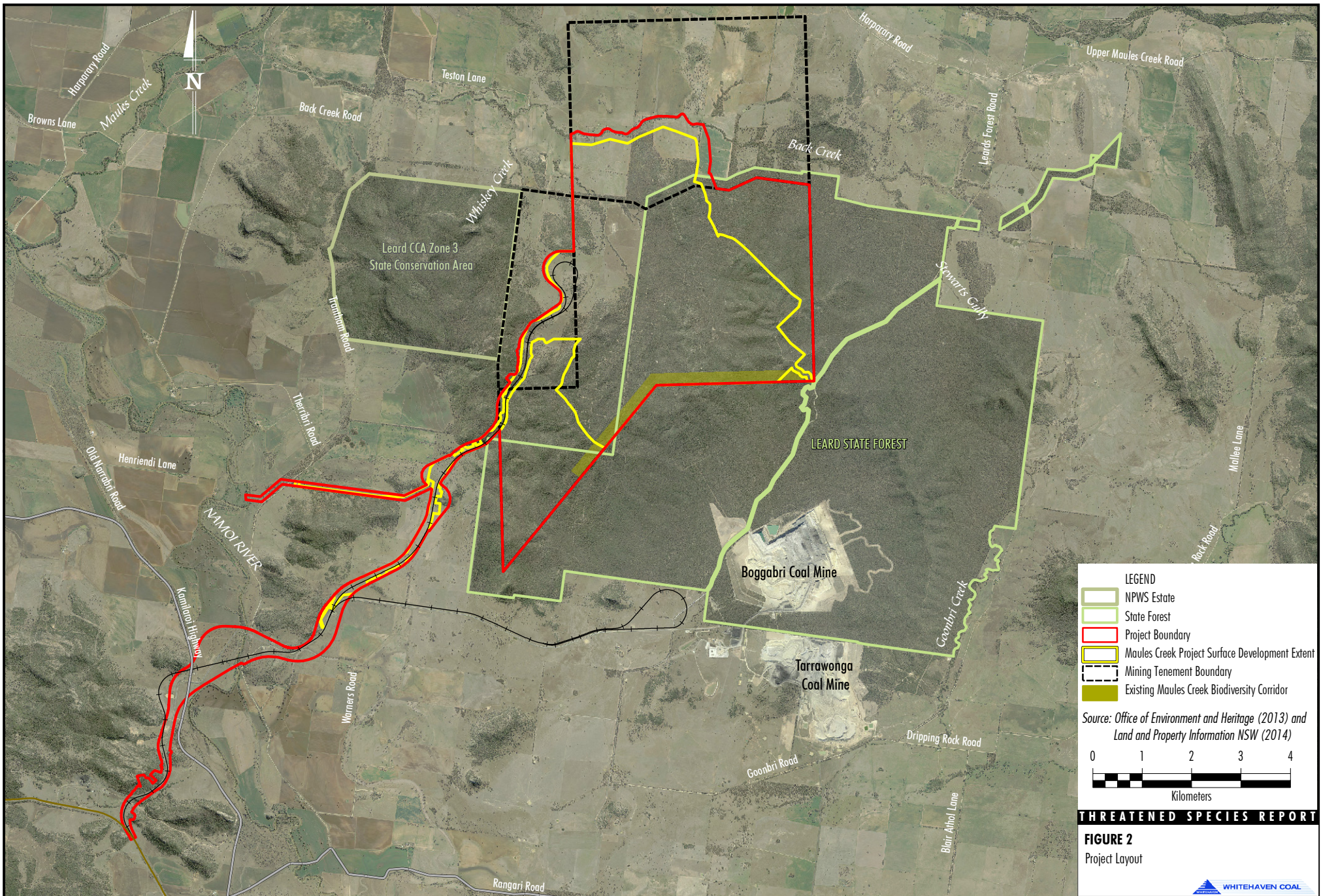
The biodiversity offset areas under Condition 44 of Maules Creek Coal Mine Project Approval (PA 10_0138) are required to cover a minimum of 10,333 ha² of land (Figure 3). The objectives of the offset areas are defined in the MCC Biodiversity Management Plan (BMP) (Whitehaven, 2014a):

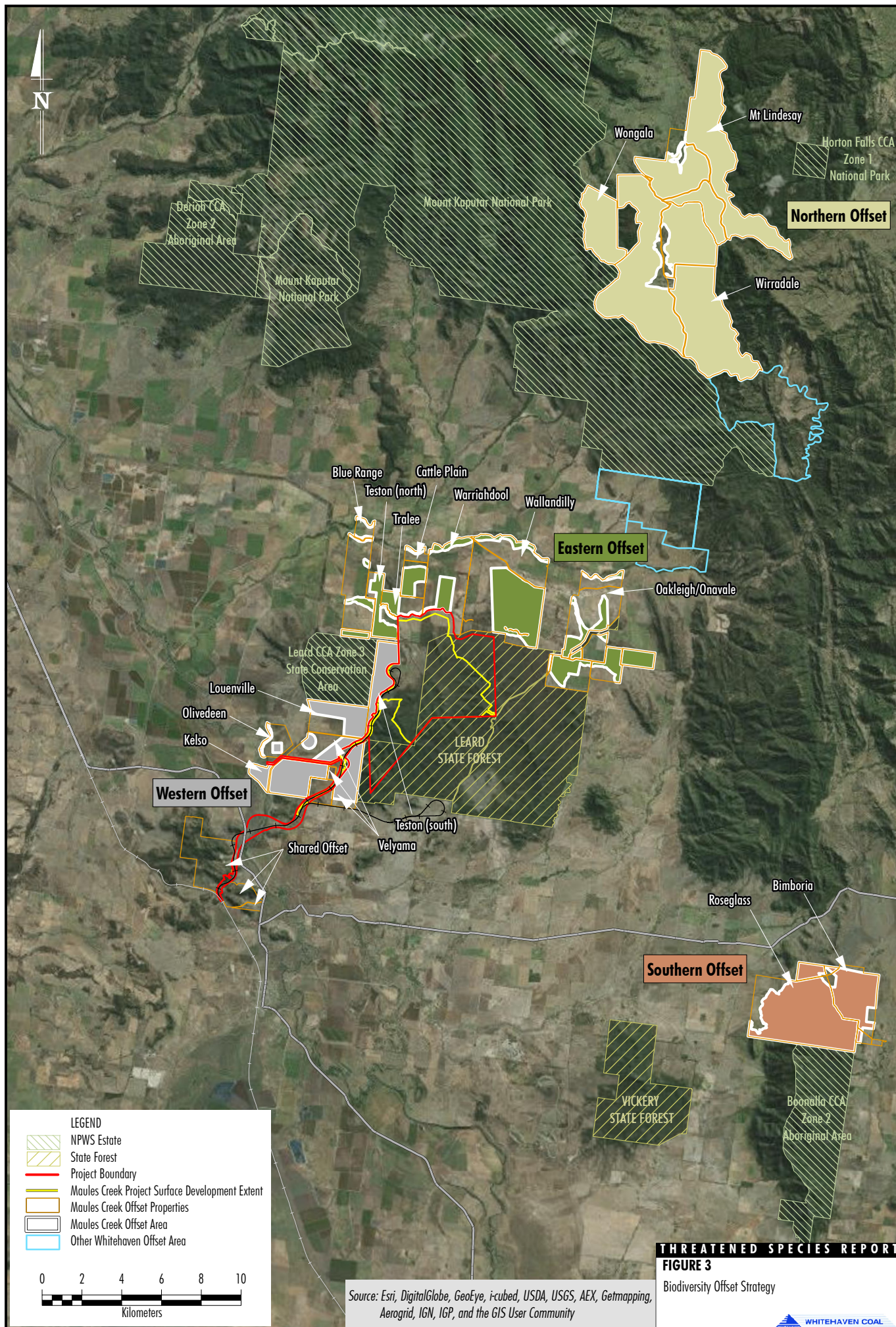
- *to protect and enhance existing native woodland/forest;*
- *to protect and enhance areas of semi-cleared woodland/forest;*
- *to restore self-sustaining vegetation communities within derived native grassland;*
- *to restore the woodland form of Box Gum Woodland within existing areas of Box Gum Woodland EEC/CEEC (derived native grassland); and*
- *to restore self-sustaining vegetation communities within areas of low diversity derived native grassland, pasture improved and cultivated land.*

¹ Less the area of the minimised final void.

² Note: Additional offset areas will be established for the MCCM under the EPBC Act approval. These additional offset areas are not subject to this investigation report. The Oakleigh/Onavale, Bimboria and Roseglass offset areas shown on Figure 3 are relevant to the offset required under the EPBC Act. The Oakleigh/Onavale, Bimboria and Roseglass offset areas may be used to satisfy the 1,000 ha additional offset requirement under Condition 44.







Long-term Maintenance

The long-term maintenance of Box-Gum Woodland/provision of habitat would be facilitated through:

1. long-term security of the offset areas and woodland on the rehabilitation areas by the mechanisms specified in the Project Approval (i.e. management will be required to be undertaken in accordance with a conservation agreement and/or protected area [e.g. National Park or Nature Reserve] management arrangement).
2. lodgement of conservation and biodiversity bond for the offset areas with the DP&E (noting that the bond will only be released once the offset strategy is completed generally in accordance with completion criteria).

Threatened Species Investigation

Condition 50 of MCCM Project Approval (PA 10_0138) requires:

1. an investigation of factors likely to enhance or impede the prospects for providing viable areas of suitable habitat for threatened fauna species (i.e. an Investigation Report);
2. an implementation plan to maximise the likely prospects for providing viable areas of suitable habitat for threatened fauna species on the offset areas and on the mine site (i.e. an Implementation Plan – this document); and
3. revision of the BMP.

Figure 4 contains a flow diagram that shows how the Investigation Report, Implementation Plan and the BMP (and MCCM Rehabilitation Management Plan [RMP]) relate to each other.

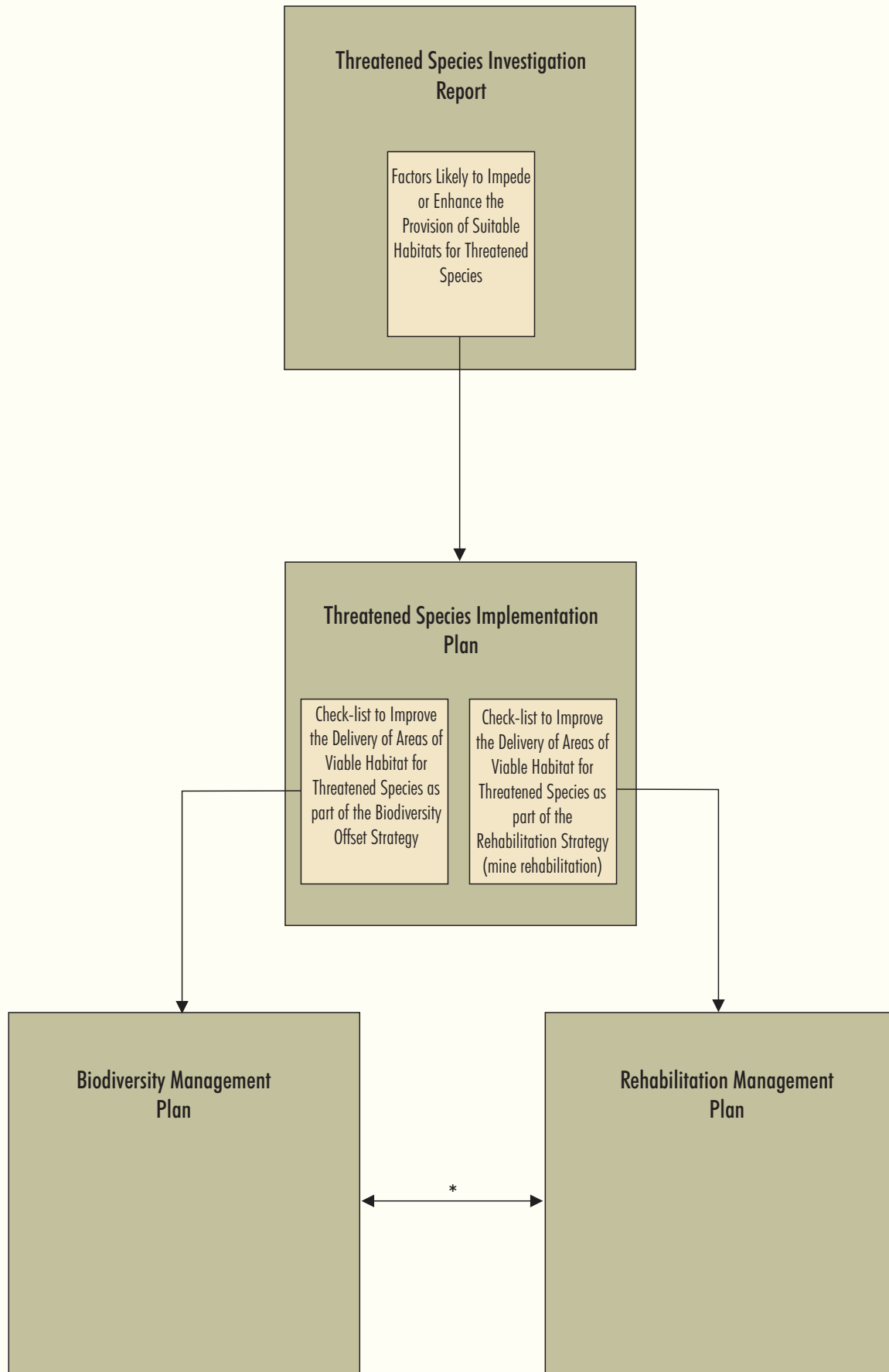
The Investigation Report (Whitehaven, 2014b; Appendix A) was prepared in 2014 and identified factors likely to enhance or impede the prospects for providing viable areas of suitable habitat for threatened fauna species. Those factors are considered in this report to maximise the likely prospects for providing viable areas of suitable habitat for threatened fauna species on the offset areas and on the mine site.

The outcome of this document is the creation of 'checklists' for implementing the Rehabilitation Strategy and Biodiversity Offset Strategy (where they relate to provision of habitat for threatened species). The approved the implementation plan will be incorporated into a revised BMP (due to be submitted to the Department of Planning and Environment (DP&E) in April 2015) and a revised RMP.

Relevant Threatened Species

Condition 50 of MCCM Project Approval (PA 10_0138) requires the investigation to include the following threatened species:

- **Threatened birds:** Spotted Harrier (*Circus assimilis*), Little Eagle (*Hieraaetus morphnoides*), Little Lorikeet (*Glossopsitta pusilla*), Turquoise Parrot (*Neophema pulchella*), Masked Owl (*Tyto novaehollandiae*), Barking Owl (*Ninox connivens*), Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*), Speckled Warbler (*Chthonicola sagittata*), Black-chinned Honeyeater (eastern subspecies) (*Melithreptus gularis gularis*), Regent Honeyeater (*Anthochaera phrygia*), Painted Honeyeater (*Grantiella picta*), Hooded Robin (south-eastern form) (*Melanodryas cucullata cucullata*), Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*), Varied Sittella (*Daphoenositta chrysoptera*) and Diamond Firetail (*Stagonopleura guttata*).



** Integration of relevant mine rehabilitation components in the Biodiversity Management Plan.*

THREATENED SPECIES REPORT

FIGURE 4

Threatened Species Investigation and Implementation Plan

- **Threatened bats:** Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*), Corben's Long-eared Bat (Greater Long-eared Bat or South-eastern Long-eared Bat) (*Nyctophilus corbeni*), Little Pied Bat (*Chalinolobus picatus*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*).

The above listed species were deemed to be potentially significantly impacted by the MCCM (in the Director General's Assessment Report). These species all inhabit woodland and forest habitats.

This investigation report also covers the additional threatened and migratory species listed under Condition 49 of MCCM Project Approval (PA 10_0138):

- **Threatened birds:** Black-necked Stork (*Ephippiorhynchus asiaticus*), Square-tailed Kite (*Lophoictinia isura*) and Swift Parrot (*Lathamus discolor*).
- **Threatened mammals:** Koala (*Phascolarctos cinereus*), Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*) and Eastern Cave Bat (*Vespadelus troughtoni*).
- **Migratory species:** White-throated Needletail (*Hirundapus caudacutus*), Fork-tailed Swift (*Apus pacificus*), Rainbow Bee-eater (*Merops ornatus*) and Satin Flycatcher (*Myiagra cyanoleuca*).

Other threatened species that have recently been recorded in the vicinity of the MCCM and/or associated offset areas are also covered by this investigation, namely: Pale-headed Snake (*Hoplocephalus bitorquatus*), Superb Parrot (*Polytelis swainsonii*), Squirrel Glider (*Petaurus norfolcensis*) and Large-eared Pied Bat (*Chalinolobus dwyeri*).

In 2014, a second investigation was undertaken by Whitehaven into the factors likely to enhance or impede the effective restoration or re-establishment of the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland Endangered Ecological Community (Box-Gum Woodland EEC) listed under the NSW *Threatened Species Conservation Act, 1995* (Whitehaven, 2014b; Appendix A). This implementation plan recognises that many of the threatened fauna species use the Box-Gum Woodland as habitat and therefore incorporates actions aimed at enhancing prospects for the effective restoration and rehabilitation of this habitat.

The provision of suitable habitats to support individual or populations of threatened species does not in itself ensure the presence of any such species in the restored or remediated landscapes in the future. However it is possible to seek to optimise the potential for such species to ultimately locate into these landscapes. The actual return of such threatened species to these future landscapes will also depend on source populations being available away from the restored remediated landscapes and the availability of potential movement pathways for such species between potential source populations and the restored and rehabilitated landscapes.

1.2 OBJECTIVES OF THIS REPORT

The purpose of this report is to satisfy Condition 49 and 50(b) of Maules Creek Coal Mine Project Approval (PA 10_0138) (Table 1) by providing an implementation plan to maximise the likely prospects for provision of habitat for threatened fauna species on the offset areas and the mine site.

As described in Section 1.1, the outcomes of this document are 'checklists' for implementing the Rehabilitation Strategy and Biodiversity Offset Strategy (where they relate to provision of habitat for threatened species). The approved implementation plan will be incorporated into a revised BMP (due to be submitted to the DP&E in April 2015) and a revised RMP.

Table 1
Conditions 49 and 50 of Project Approval (PA 10_0138)

Condition	
49.	For all threatened species on site, the Proponent shall ensure that the Biodiversity Offset Strategy and Rehabilitation Strategy are focused on protection, rehabilitation and long-term maintenance of viable stands of suitable habitat for these species.
Note: the threatened fauna species on site include: Regent Honeyeater, Fork Tailed Swift, White Throated Needletail, Rainbow Bee-eater, Satin Flycatcher, Speckled Warbler, Swift Parrot, Brown Treecreeper, Diamond Firetail, Greycrowned Babbler, Hooded Robin, Little Lorikeet, Varied Sittella, White-browed Woodswallow ¹ , Black Chinned Honeyeater, Painted Honeyeater, Little Eagle, Spotted Harrier, Black Necked Stork, Square Tailed Kite, Turquoise Parrot, Barking Owl, Masked Owl, Eastern False Pipistrelle, Greater Long-eared Bat, Yellow-bellied Sheath Tail Bat, Eastern Cave Bat, Eastern Bent-wing Bat, Little Pied Bat and Koala.	
50.	The Proponent shall:
(a)	investigate, in consultation with OEH and the Namoi CMA, all factors likely to enhance or impede the effective long term provision of suitable habitat(s) for the following species: Regent Honeyeater, Speckled Warbler, Brown Treecreeper, Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Little Lorikeet, Varied Sittella, Black Chinned Honeyeater, Painted Honeyeater, Little Eagle, Spotted Harrier, Turquoise Parrot, Barking Owl, Masked Owl, Eastern False Pipistrelle, Greater Long-eared Bat, Yellow-bellied Sheath Tail Bat and Little Pied Bat;
(b)	within 24 months of the date of this approval (and if possible, in conjunction with Stage 2 of the Leard Forest Mining Precinct Regional Biodiversity Strategy), submit a report of this investigation and provide an implementation plan to ensure delivery of suitable areas of viable habitat for the species included in (a) above, for approval by the Director-General; and
(c)	incorporate the approved implementation plan into the revised Biodiversity Management Plan, required under condition 52.
Note: the species listed in (a) are those identified in the Director-General's Assessment Report as likely to be significantly impacted by the project.	

¹ The proposed vulnerable species listing for the White-browed Woodswallow was rejected by the NSW Scientific Committee in 2010 (Office of Environment and Heritage [OEH], 2014a).

A complete list of species covered by this investigation is provided in Table 2.

Table 2
Threatened Fauna Species Relevant to the RMP and BMP

Scientific Name	Common Name	Conservation Status	
		TSC Act ¹	EPBC Act ²
Reptiles			
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V	-
Birds			
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E	-
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-
<i>Circus assimilis</i>	Spotted Harrier	V	-
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-
<i>Potytelis swainsonii</i>	Superb Parrot	V	V
<i>Neophema pulchella</i>	Turquoise Parrot	V	-
<i>Lathamus discolor</i>	Swift Parrot	E	E
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	M
<i>Apus pacificus</i>	Fork-tailed Swift	-	M
<i>Merops ornatus</i>	Rainbow Bee-eater	-	M
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	-	M
<i>Tyto novaehollandiae</i>	Masked Owl	V	-
<i>Ninox connivens</i>	Barking Owl	V	-

Table 2 (Continued)
Threatened Fauna Species Relevant to the RMP and BMP

Scientific Name	Common Name	Conservation Status	
		TSC Act ¹	EPBC Act ²
Birds (Continued)			
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V	-
<i>Chthonicola sagittata</i>	Speckled Warbler	V	-
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V	-
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	E
<i>Grantiella picta</i>	Painted Honeyeater	V	-
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V	-
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V	-
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-
<i>Stagonopleura guttata</i>	Diamond Firetail	V	-
Mammals			
<i>Phascolarctos cinereus</i>	Koala	V	V
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	-
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V	-
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat (Listed as South-eastern Long-eared Bat under EPBC)	V	V
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V
<i>Chalinolobus picatus</i>	Little Pied Bat	V	-
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V	-

It has not been possible to prepare this report in conjunction with Stage 2 of the Leard Forest Mining Precinct Regional Biodiversity Strategy being co-ordinated by the DP&E as it is yet to be developed. Nevertheless, this report is consistent with the intent of the Stage 2 of the Leard Forest Mining Precinct Regional Biodiversity Strategy in that it seeks to improve the performance of the offset areas and has been prepared jointly with the Tarrawonga Coal Mine.

1.3 CONSULTATION

Conditions 49 and 50(b) of Maules Creek Coal Mine Project Approval (PA 10_0138) (Table 1) do not require consultation with stakeholders regarding this implementation plan, however, consultation was undertaken with:

- OEH; and
- North West Local Land Services (formerly the Namoi Catchment Management Authority); and
- DP&E.

This implementation plan was revised in light of comments by or discussions with those stakeholders before it was submitted to DP&E for approval.

In their letter (dated 20 October 2014), OEH provided the following comments not directly related to this implementation plan:

OEH offers the following suggestions regarding the level of detail it expects should be included in the revisions of the RMP and BMP. This includes:

- *detailed descriptions, maps and area on each offset property for each condition state of the EEC and other vegetation types, and management area, if different*
- *maps and area of the estimated area of habitat of each threatened species, and condition class if known*
- *details of the presence of important structural, floristic and habitat elements present (eg caves, cliff lines, raptor nests, areas with abundant hollow-bearing trees, fallen debris, flora species specifically identified as providing habitat resources for threatened species etc.)*
- *mapping and/or imagery and photographs which illustrate threats that can be mapped, such as weeds and erosion. Baseline data of the current extent of each threat described should also be provided (baseline information is required to assess the change in the level of the threat and to monitor success over time against relevant performance targets)*
- *objectives for managing biodiversity values for each management area, strategies and timing to be implemented to manage biodiversity threats and to ensure that biodiversity values are improved*
- *identified measurable performance measures and targets, how progress is to be measured and reported and at what intervals,*
- *completion criteria for each threat in each management area eg the area or number of individuals of a weed species per management domain, based on the level of the acceptable threat. Targets should relate to actual biodiversity outcomes, including species requirements at different times, rather than simply inputs and outputs,*
- *a risk assessment, trigger points and subsequent corrective actions to be implemented if the monitoring program identifies that the performance targets and therefore biodiversity management objectives are not being met.*

MCCM would consider the above suggestions in relation to revisions to the RMP or BMP (whichever is most applicable to the individual point).

2 METHODS

This implementation plan was prepared by reviewing the factors likely to enhance the provision of habitat for threatened fauna species at the MCCM and offset areas, along with the factors likely to enhance the re-establishment and restoration of Box-Gum Woodland.

3 PROPOSED ACTIONS RELATING TO FACTORS LIKELY TO IMPEDE OR ENHANCE

Box-Gum Woodland

Many of the threatened fauna species listed in Table 2 use the Box-Gum Woodland as habitat. Table 3 provides a list of proposed actions relating to each factor likely to impede or enhance the re-establishment and restoration of Box-Gum Woodland (Whitehaven, 2014c).

Threatened Species

Table 4 was developed as part of the Investigation Report (Whitehaven, 2014b; Appendix A) and it provides a summary of the following information for each threatened species:

- the species habitat requirements relevant to the Rehabilitation Strategy and Offset Strategy;
- recognised threats to the species that are relevant to the Rehabilitation Strategy or Biodiversity Offset Strategy sourced from State and/or Commonwealth recovery plans or Government Websites (e.g. OEH, 2014b; Department of the Environment [DotE], 2014a); and
- recognised recovery actions for the species that are relevant to the Rehabilitation Strategy or Biodiversity Offset Strategy sourced from State and/or Commonwealth recovery plans or Government Websites (e.g. OEH, 2014b; DotE, 2014a).

Table 5 provides a list of proposed actions relating to each factor likely to impede or enhance the provision of habitat for threatened fauna species (based on the factors identified in the Investigation Report [Whitehaven, 2014b; Appendix A]).

Table 6 provides a summary of the proposed actions in Table 5 for each relevant threatened species. The actions are separated into those relevant to the Rehabilitation Strategy and those relevant to the Biodiversity Offset Strategy.

The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide a range of habitats that can be used by threatened fauna species. As discussed Section 1.1, the provision of suitable habitats does not in itself ensure the presence of any such species in the restored or remediated landscapes in the future. However it is possible to seek to optimise the potential for such species to ultimately locate into these landscapes.

Table 3
Proposed Actions Relating to Factors Likely to Impede or Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
1. Substrate	1a. Poor soil chemistry – depleted soil nutrients (Eddy, 2002)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Avoidance of soils with high or low pH, high salinity, low fertility or sodic soils. Rehabilitation trials focused on soil substrate. Nutrient management options: <ul style="list-style-type: none"> Amelioration of soils with agricultural gypsum, compost (i.e. mulch saved during clearing activities) or fertilisers depending on the nutrient deficiency. Addition of woody debris to increase carbon levels (Harmon <i>et al.</i>, 1986; Debeljak, 2006; Manning <i>et al.</i>, 2013; Goldin and Brookhouse, 2014). Use of Biochar to increase soil carbon³. 	<p>The RMP will:</p> <ul style="list-style-type: none"> provide parameters for the physical and chemical characteristics of topsoils and overburden based on likely suitable characteristics for establishment of Box-Gum Woodland. provide for soil testing to be undertaken on topsoil and overburden to identify issues with physical and chemical characteristics as well as determine amelioration requirements and rates. provide for rehabilitation trials (focusing on rehabilitation and revegetation of Box-Gum Woodland) to be undertaken on different rehabilitation substrates. provide for selective identification and placement (burial) of soils unsuitable for use as a growth media. describe options for ameliorating soils to improve the suitability of the soils as a growth media (e.g. amelioration with agricultural gypsum, compost (i.e. mulch saved during clearing activities) or fertilisers depending on the nutrient deficiency). describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch. provide for selective use of slow-release native plant fertiliser (e.g. rock minerals) to promote plant growth (if required).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Limited and selective use of specific fertilisers to facilitate growth of tube stock (Eddy, 2002). Placement of woody debris to increase carbon and moisture levels (Goldin and Brookhouse, 2014). 	<p>The BMP will:</p> <ul style="list-style-type: none"> provide for soil testing to be undertaken on soils in revegetation areas to identify issues with physical and chemical characteristics as well as determine amelioration requirements and rates. provide for selective use of slow-release fertiliser to promote plant growth (if required). describe procedures to reuse timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138),
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])		
	1b. Poor soil chemistry - elevated soil nutrients, salinity and acid soils (Rawlings <i>et al.</i> , 2010; Department of the Environment, Climate Change and Water [DECCW], 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Avoidance of soils with high or low pH, high salinity, low fertility or sodic soils. Application of minimum topsoil and subsoil depths (Condition 26[b] of the Approval Decision EPBC 2010/5566). Soil surveys and inventories prior to soil stripping (Condition 27[c] of the Approval Decision EPBC 2010/5566 and Condition 39 Schedule 3 of Project Approval 10_0138). Soil handling processes for removal, storage and re-layering of topsoil and subsoil (Condition 27[d] of the Approval Decision EPBC 2010/5566). Annual soil balances to manage soil handling (Condition 39 Schedule 3 of Project Approval 10_0138). Rehabilitation trials focused on soil substrate. 	<p>The RMP will:</p> <ul style="list-style-type: none"> provide parameters for the physical and chemical characteristics of topsoils and overburden based on likely suitable characteristics for establishment of Box-Gum Woodland. provide for soil testing to be undertaken on topsoil and overburden to identify issues with physical and chemical characteristics as well as determine amelioration requirements and rates. provide for selective identification and placement (burial) of soils unsuitable for use as a growth media. describe minimum topsoil and subsoil depths for revegetation (consistent with Condition 26[b] of the Approval Decision EPBC 2010/5566). provide for soil surveys and inventories to be undertaken prior to soil stripping (consistent with Condition 27[c] of the Approval Decision EPBC 2010/5566 and condition 39 Schedule 3 of Project Approval 10_0138) provide soil handling processes for removal, storage and re-layering of topsoil and subsoil (consistent with Condition 27[d] of the Approval Decision EPBC 2010/5566), including the length and mode of topsoil storage. This will specifically detail the stripping of topsoil likely to contain seeds. provide for annual soil balances to be undertaken to facilitate management of soil handling (consistent with Condition 39 Schedule 3 of Project Approval 10_0138). provide for rehabilitation trials (focusing on rehabilitation and revegetation of Box-Gum Woodland) to be undertaken on different rehabilitation substrates.

³ Not proposed to be used due to preferential use of mulch and woody debris from clearing activities.

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
1. Substrate (Cont.)	1c. Poor soil chemistry - elevated soil nutrients (Prober <i>et al.</i> , 2002; Rawlings <i>et al.</i> , 2010; DECCW, 2011)	Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No application of fertilizers on soils with elevated concentrations of the same nutrients (Rawlings <i>et al.</i>, 2010). Nutrient management options to lower soil nitrogen and phosphorus levels: <ul style="list-style-type: none"> Crash grazing periodically to remove nutrients locked in weeds (Rawlings <i>et al.</i>, 2010). Restriction of livestock access to limit further nutrient enrichment (Rawlings <i>et al.</i>, 2010). Hay cutting (Rawlings <i>et al.</i>, 2010)⁴. Controlled burns (Rawlings <i>et al.</i>, 2010). Carbohydrate addition (Rawlings <i>et al.</i>, 2010)⁵. Topsoil removal (scalping) (cleared land only) (Gibson-Roy <i>et al.</i>, 2010; Rawlings <i>et al.</i>, 2010)⁶. No kill and pasture cropping (Rawlings <i>et al.</i>, 2010)⁷. 	<p>The BMP will:</p> <ul style="list-style-type: none"> provide for soil testing to be undertaken on soils in revegetation areas to identify issues with physical and chemical characteristics as well as determine amelioration requirements and rates. describe the following nutrient reduction options: <ul style="list-style-type: none"> crash grazing periodically to remove nutrients locked in weeds; restriction of livestock access to limit further nutrient enrichment; and controlled burns.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])		
	1d. Poor soil chemistry – acid rock drainage	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Selective identification and placement (burial) of potentially acid forming interburden materials (Condition 39[c] Schedule 3 of Project Approval 10_0138). Application of minimum topsoil and subsoil depths (Condition 26[b] of the Approval Decision EPBC 2010/5566). 	<p>The RMP will:</p> <ul style="list-style-type: none"> provide for selective identification and placement (burial) of potentially acid forming interburden materials (consistent with Condition 39[c] Schedule 3 of Project Approval 10_0138). describe minimum topsoil and subsoil depths for revegetation (consistent with Condition 26[b] of the Approval Decision EPBC 2010/5566).
	1e. Erosion and sedimentation (Rawlings <i>et al.</i> , 2010; DECCW, 2011; Tongway and Ludwig, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Establishing vegetation cover as soon as practicable following disturbance. Application of a temporary sterile cover crop, or native grass covercrop established from native hays. Adjust seed and planting densities to maximise ground cover. Treatment of dispersive soils and spoils. Design of the batter slopes to be stable. Use of structural erosion controls (e.g. channel banks, slope drains and energy dissipaters). Exclusion of livestock (Rawlings <i>et al.</i>, 2010). Management of pressure from feral grazing animals and native grazing animals. Use of benign (hard rock) mulch to stabilise batter surfaces. Ecological function analysis to identify constraints and requirements for specific management measures (Tongway and Ludwig, 2011). 	<p>The RMP will:</p> <ul style="list-style-type: none"> provide for establishing vegetation cover as soon as practicable following disturbance to minimise the potential for erosion and weeds. This will involve the application of a temporary sterile cover crop (or native grasses) using species that are not likely to impede revegetation of the Box-Gum Woodland. provide options for remediating erosion including adjust seed and planning densities to maximise ground cover. provide options for minimising the risk of erosion including treatment of dispersive soils and spoils, as well as use of structural erosion controls (e.g. channel banks, slope drains and energy dissipaters). describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding). consider the use of benign (hard rock) mulch to stabilise batter surfaces that has been sourced onsite (i.e. salvaged from clearing areas or from waste material). include monitoring of landscape function. include provision to review the need for kangaroo control measures.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Targeting revegetation along drainage lines. Remediation of scalded areas. 	<p>The BMP will:</p> <ul style="list-style-type: none"> include a visual inspection of each mapped vegetation management unit in each offset area to identify constraints and requirements for specific management measures. describe targeted revegetation along drainage lines and scalded areas to minimise risk of erosion. describe restriction of livestock access to erosion prone areas (e.g. along watercourses). aim to locate new offset area management infrastructure (e.g. access roads) in stable locations. aim to maximise the re-use of existing infrastructure (e.g. access roads) instead of creating new infrastructure.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction of livestock access (particularly along drainage lines) (Rawlings <i>et al.</i>, 2010). Installation of new infrastructure in stable locations (e.g. access roads) (McIvor, 2002). Maximised re-use of existing infrastructure (e.g. access roads) instead of creating new infrastructure. Ecological function analysis to identify constraints and requirements for specific management measures (Tongway and Ludwig, 2011). 	
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])		

⁴ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

⁵ This method is only applicable over small areas (Rawlings *et al.*, 2010) and is therefore not proposed to be undertaken due to the extensive areas required to be revegetated.

⁶ This method is only applicable to the cleared lands but is not proposed to be undertaken due to the extensive areas required to be revegetated and high disturbance of the technique.

⁷ This method is only applicable to the derived grasslands but is not proposed to be undertaken in preference of other methods.

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
1. Substrate (Cont.)	1f. Soil compaction - inhibits germination of seeds or growth of seedlings (Eddy, 2002; Department of Sustainability and the Environment [DSE], 2005; Rawlings <i>et al.</i> , 2010; DECCW, 2011) Also adds to water logging issues.	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none">Restriction of vehicle access to avoid compacting soil (Eddy, 2002; DSE, 2005).Pre-planting site preparation (e.g. ripping) (Rawlings <i>et al.</i>, 2010).Exclusion of livestock (Rawlings <i>et al.</i>, 2010).Mulching (Rawlings <i>et al.</i>, 2010).Use of spiked rollers/ air jetting to aerate soils to depth of 30 cm.	The RMP will: <ul style="list-style-type: none">describe that vehicle access will be predominantly restricted to designated tracks on mine landforms that have been revegetated to minimise ground disturbance (e.g. compaction).describe site preparation (e.g. ripping or use of spiked rollers) to reduce soil compaction impacting the success of the revegetation.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none">Restriction of vehicle access to avoid compacting soil (Eddy, 2002; DSE, 2005).Restriction of livestock access (Rawlings <i>et al.</i>, 2010).Options for reducing compaction:<ul style="list-style-type: none">Mulching (Rawlings <i>et al.</i>, 2010)⁸.Hand aeration (Rawlings <i>et al.</i>, 2010)⁹.Deep air-jetting and mulching (Rawlings <i>et al.</i>, 2010)¹⁰.Cultivation followed by mulching (Rawlings <i>et al.</i>, 2010).	The BMP will: <ul style="list-style-type: none">describe that vehicle access will be predominantly restricted to designated tracks to minimise ground disturbance (e.g. compaction).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe site preparation in cleared land (e.g. ripping or use of spiked rollers) and (where relevant) in derived grassland (e.g. use of spiked rollers) to reduce soil compaction impacting the success of the revegetation.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none">Restriction of vehicle access to avoid compacting soil (Eddy, 2002; DSE, 2005).Restriction of livestock access (Rawlings <i>et al.</i>, 2010).	
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])		
	1g. Ground disturbance (Eddy, 2002; Rawlings <i>et al.</i> , 2010)	Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none">Restriction of vehicle access to avoid unnecessary ground disturbance (Eddy, 2002; DSE, 2005).Fencing and signage.	The BMP will: <ul style="list-style-type: none">describe that vehicle access will be predominantly restricted to designated tracks to minimise ground disturbance (e.g. compaction).describe provision of fencing and signage around the perimeter of the offset areas to manage livestock and avoid accidental clearance.restrict the use of revegetation techniques that involve high level of physical disturbance in existing Box-Gum Woodland and derived grasslands.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none">Avoidance of revegetation techniques that involve high level of physical disturbance (i.e. cultivation, ripping and excavation) (Eddy, 2002; DECCW, 2011).	
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none">Restriction of vehicle access to avoid unnecessary ground disturbance (DSE, 2005; Eddy, 2002).Fencing and signage.	
	1h. Depleted soil seed bank (DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none">Management of topsoil seed resource.Soil seed bank germination testing (rehabilitation trials).Supplementary seeding/tube stock planting (Gibson-Roy <i>et al.</i>, 2010).	The RMP will: <ul style="list-style-type: none">provide soil handling processes for removal, storage and re-layering of topsoil and subsoil (consistent with Condition 27[d] of the Approval Decision EPBC 2010/5566). This will specifically detail the stripping of topsoil likely to contain seeds.provide for soil seed bank germination testing to be undertaken on topsoil stockpiles.describe a contingency for supplementary seeding/tube stock planting if the regeneration from the soil seed bank is not sufficient.

⁸ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

⁹ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

¹⁰ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
1. Substrate (Cont.)	1h. Depleted soil seed bank (DECCW, 2011) (Cont.)	Offset Areas	<ul style="list-style-type: none"> Supplementary seeding/tube stock planting. 	The BMP will favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required.
	1i. Insufficient topsoil and/or topsoil depth (DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Application of minimum topsoil and subsoil depths (Condition 26[b] of the Approval Decision EPBC 2010/5566). Soil surveys and inventories prior to soil stripping (Condition 27[c] of the Approval Decision EPBC 2010/5566 and Condition 39 Schedule 3 of Project Approval 10_0138). Soil handling processes for removal, storage and re-layering of topsoil and subsoil (Condition 27[d] of the Approval Decision EPBC 2010/5566). Annual soil balances to manage soil handling (Condition 39 Schedule 3 of Project Approval 10_0138). 	<p>The RMP will:</p> <ul style="list-style-type: none"> describe minimum topsoil and subsoil depths for revegetation (consistent with Condition 26[b] of the Approval Decision EPBC 2010/5566). provide for soil surveys and inventories to be undertaken prior to soil stripping (consistent with Condition 27[c] of the Approval Decision EPBC 2010/5566 and condition 39 Schedule 3 of Project Approval 10_0138) provide soil handling processes for removal, storage and re-layering of topsoil and subsoil (consistent with Condition 27[d] of the Approval Decision EPBC 2010/5566). This will specifically detail the stripping of topsoil likely to contain seeds. provide for annual soil balances to be undertaken to facilitate management of soil handling (consistent with Condition 39 Schedule 3 of Project Approval 10_0138).
	1j. Poor soil water holding capacity (Eddy, 2002)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Amelioration of soils with compost/woody debris. Selective placement of soils. Addition of woody debris (Harmon <i>et al.</i>, 1986; Debeljak, 2006; Manning <i>et al.</i>, 2013; Goldin and Brookhouse, 2014) 	<p>The RMP will:</p> <ul style="list-style-type: none"> describe options for ameliorating soils to improve the suitability of the soils as a growth media (e.g. amelioration with agricultural gypsum, compost or fertilisers depending on the nutrient deficiency). provide for selective identification and placement (burial) of soils unsuitable for use as a growth media. describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch. describe matching flora to landform position.
	1k. Instability of the final landform	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Design of the batter slopes to be stable. Selective placement of soils. Use of benign (hard rock) mulch to stabilise batter surfaces. 	<p>The RMP will:</p> <ul style="list-style-type: none"> describe how the batter slopes have been designed to minimise instability of the final landform. provide for selective identification and placement (burial) of soils unsuitable for use as a growth media. consider the use of benign (hard rock) mulch to stabilise batter surfaces that has been sourced onsite (i.e. salvaged from clearing areas or from waste material).
	1l. Poor drainage of the final landform (Eddy, 2002)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Design of the batter slopes to be stable. Amelioration of soils with compost. 	<p>The RMP will</p> <ul style="list-style-type: none"> describe how the batter slopes have been designed to minimise instability of the final landform. describe options for ameliorating soils to improve the suitability of the soils as a growth media (e.g. amelioration with agricultural gypsum, compost or fertilisers depending on the nutrient deficiency).
	1m. Lack of soil mycorrhizae (Jasper, 2007)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Application of minimum topsoil and subsoil depths (Condition 26[b] of the Approval Decision EPBC 2010/5566). Soil surveys and inventories prior to soil stripping (Condition 27[c] of the Approval Decision EPBC 2010/5566 and Condition 39 Schedule 3 of Project Approval 10_0138). Soil handling processes for removal, storage and re-layering of topsoil and subsoil (Condition 27[d] of the Approval Decision EPBC 2010/5566). Use of rhizobial bacteria inoculants for acacia (CSIRO, 2005). 	<p>The RMP will:</p> <ul style="list-style-type: none"> describe minimum topsoil and subsoil depths for revegetation (consistent with Condition 26[b] of the Approval Decision EPBC 2010/5566). provide for soil surveys and inventories to be undertaken prior to soil stripping (consistent with Condition 27[c] of the Approval Decision EPBC 2010/5566 and condition 39 Schedule 3 of Project Approval 10_0138) provide soil handling processes for removal, storage and re-layering of topsoil and subsoil (consistent with Condition 27[d] of the Approval Decision EPBC 2010/5566), including the length and mode of topsoil storage. This will specifically detail the stripping of topsoil likely to contain seeds.

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
2. Clearing	2a. Incidental clearing, fragmentation and fire wood collection	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Restriction on clearing. 	The RMP will describe a that revegetation at the mine would not be cleared (unless for ecological thinning, maintenance or access for monitoring).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction on clearing. Restriction on fire wood collection. Fencing and signage. Maximised re-use of existing infrastructure (e.g. access roads) instead of creating new infrastructure. Installation of new infrastructure in cleared land (e.g. access roads). 	The BMP will: <ul style="list-style-type: none"> describe a restriction of clearing (unless for ecological thinning of density regrowth [i.e. selective removal of regrowth trees or shrubs], maintenance or access for monitoring). not permit firewood collection. describe provision of fencing and signage around the perimeter of the offset areas to manage livestock (i.e. exclusion or controlled entry of livestock for specific purposes) and avoid accidental clearance. aim to maximise the re-use of existing infrastructure (e.g. access roads) instead of creating new infrastructure. aim to locate new offset area management infrastructure (e.g. access roads) preferentially in cleared land.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction on clearing. Restriction on fire wood collection. Use of low disturbance methods for site preparation in derived grasslands and existing Box-Gum Woodland. 	
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])		
3. Livestock	3a. Grazing by cattle – ground disturbance, remove or destroy seeds, seedlings or plantings (DSE, 2005; Rawlings <i>et al.</i> , 2010)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Fencing of areas undergoing revegetation to exclude grazing livestock and prevent grazing of seedlings (Eddy, 2002). Maintenance of fencing used to exclude livestock. 	The RMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Fencing of areas undergoing revegetation to exclude grazing livestock and prevent grazing of seedlings (Eddy, 2002). Maintenance of fencing used to exclude livestock. 	The BMP will: <ul style="list-style-type: none"> describe restriction of livestock access to erosion prone areas (e.g. along watercourses). describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding). describe restriction of livestock access to areas not already subject to grazing. describe management of livestock to maintain ground cover and diversity of native plants. describe restriction of livestock access to protect plants that are known to be sensitive to grazing. describe the following controlled grazing management options: <ul style="list-style-type: none"> Rotational grazing system to promote and maintain plant diversity and cover. Removal of grazing livestock.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction of livestock access (particularly along drainage lines) (Rawlings <i>et al.</i>, 2010). Restriction of livestock access to protect plants that are known to be sensitive to grazing (Rawlings <i>et al.</i>, 2010). Restriction of livestock access to maintain ground cover. Maintenance of fencing used to exclude livestock. Controlled grazing management options: <ul style="list-style-type: none"> Crash grazing periodically to remove nutrients locked in weeds (Rawlings <i>et al.</i>, 2010). High intensity short duration rotational grazing (Rawlings <i>et al.</i>, 2010). Removal of grazing livestock. Low stocking rates. 	
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Exclusion of livestock grazing along watercourses (McIvor and McIntyre, 2002). Exclusion of livestock grazing in areas not already subject to grazing (DECCW, 2011). Maintenance of fencing used to exclude livestock. Controlled grazing management (low stocking rates). 	

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
4. Introduced flora species (weeds)	4a. Weed invasion – perennial and annual grasses, perennial herbs, annual and biennial herbs and woody weeds (DSE, 2005; Rawlings <i>et al.</i> , 2010; Gibson-Roy <i>et al.</i> , 2010; DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Weed control (Condition 27[a] of the Approval Decision EPBC 2010/5566). Establishing vegetation cover as soon as practicable following disturbance (Condition 27[b] of the Approval Decision EPBC 2010/5566). Application of a temporary sterile cover crop, or native grass covercrop established from native hays. Minimal unnecessary ground disturbance that may create opportunities for weeds (Rawlings <i>et al.</i>, 2010; DECCW, 2011). Nutrient management (e.g. exclusion of grazing livestock which add nutrients) (Prober <i>et al.</i>, 2002; Rawlings <i>et al.</i>, 2010). General weed hygiene (e.g. avoiding driving through weed infestations) (DECCW, 2011). Correct spacing for species when planting seedlings to avoid excessive shading (Rawlings <i>et al.</i>, 2010). Provisions to identify new invasive plant species (e.g. weed monitoring). Weed management options: <ul style="list-style-type: none"> Physical Removal (e.g. removing weeds by felling or pulling) (Gibson-Roy <i>et al.</i>, 2010; Rawlings <i>et al.</i>, 2010). Herbicide (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods) (DSE, 2005; Rawlings <i>et al.</i>, 2010; DECCW, 2011). Sowing of Kangaroo Grass to outcompete annual grass weeds (Prober <i>et al.</i>, 2002; Rawlings <i>et al.</i>, 2010). 	<p>The RMP will</p> <ul style="list-style-type: none"> describe procedures to prevent, monitor and control weeds. The RMP will also describe relevant targets and performance indicators for weed management (consistent with Condition 27[a] of the Approval Decision EPBC 2010/5566). provide for establishing vegetation cover as soon as practicable following disturbance to minimise the potential for erosion and weeds. This will involve the application of a temporary sterile cover crop (or native grasses) using species that are not likely to impede revegetation of the Box-Gum Woodland. provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading. include sowing of Kangaroo Grass (as this species is known to out-compete annual grass weeds and provide inter tussock spaces for a diversity of ground cover species [eg. wildflowers]).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Minimal unnecessary ground disturbance that may create opportunities for weeds (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i>, 2010). Correct spacing for species when planting seedlings to avoid excessive shading (DECCW, 2011). Weed management options: <ul style="list-style-type: none"> Crash grazing periodically to reduce annual and perennial grass weeds (Rawlings <i>et al.</i>, 2010). Nutrient management (e.g. exclusion of grazing livestock which add nutrients) (Rawlings <i>et al.</i>, 2010). Controlled burns during spring to reduce annual and perennial grass weeds (not broadleaf exotics) (Rawlings <i>et al.</i>, 2010). Physical Removal (e.g. removing weeds by felling or pulling) (Gibson-Roy <i>et al.</i>, 2010; Rawlings <i>et al.</i>, 2010). Herbicide (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods) (DSE, 2005; Rawlings <i>et al.</i>, 2010; DECCW, 2011). Sowing of Kangaroo Grass to outcompete annual grass weeds (Prober <i>et al.</i>, 2002; Rawlings <i>et al.</i>, 2010). Scalping to remove weed seed bank (Gibson-Roy <i>et al.</i>, 2010)¹¹. 	<p>The BMP will:</p> <ul style="list-style-type: none"> provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading. provide the following weed management options: <ul style="list-style-type: none"> Crash grazing periodically to reduce annual and perennial grass weeds. Nutrient management (e.g. exclusion of grazing livestock which add nutrients). Controlled burns (except in revegetation areas) during spring to reduce annual and perennial grass weeds (not broadleaf exotics). Physical Removal (e.g. removing weeds by felling or pulling). Targeted and timely herbicide application. include sowing of Kangaroo Grass (as this species is known to out-compete annual grass weeds and provide inter tussock spaces for a diversity of ground cover species [eg. wildflowers]). include provision to lightly graze derived grasslands in times of suitable climatic conditions for weed growth (e.g. autumn and/or winter) to reduce vigour of annual grass weeds.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Minimal unnecessary ground disturbance that may create opportunities for weeds (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i>, 2010). Light grazing in autumn and/or winter to reduce vigour of annual grass weeds (Rawlings <i>et al.</i>, 2010). 	

¹¹ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
4. Introduced flora species (weeds) (Cont.)	4a. Weed invasion – perennial and annual grasses, perennial herbs, annual and biennial herbs and woody weeds (DSE, 2005; Rawlings <i>et al.</i> , 2010; Gibson-Roy <i>et al.</i> , 2010; DECCW, 2011) (Cont.)	Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Minimal unnecessary ground disturbance that may create opportunities for weeds (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i>, 2010). 	
5. Herbicide	5a. Excessive herbicides – may have a negative effects on native species (Eddy, 2002)	All areas	<ul style="list-style-type: none"> Use herbicides sparingly (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods) (DSE, 2005; Rawlings <i>et al.</i>, 2010; DECCW, 2011). 	The RMP and BMP will provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).
6. Impacts from Animals (exotics and grazing native animals)	6a. Grazing by feral pigs and goats – remove or destroy seeds, seedlings or plantings (Eddy, 2002; Rawlings <i>et al.</i> , 2010; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Monitoring and control feral pigs and goats (Eddy, 2002; Rawlings <i>et al.</i>, 2010). Use of tree guards to protect young seedlings from browsing or grazing (Rawlings <i>et al.</i>, 2010). 	<p>The RMP and BMP will:</p> <ul style="list-style-type: none"> describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes). provide an option for using tree guards to protect young seedlings from browsing or grazing native animals.
	6b. Rabbits and hares (Eddy, 2002; DSE, 2005; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Monitoring and control of rabbits and hares (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i>, 2010). 	The RMP and BMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
	6c. Grazing native fauna species (e.g. kangaroos) (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Use of tree guards to protect young seedlings from browsing or grazing (Rawlings <i>et al.</i>, 2010). Fencing farm dams. 	<p>The RMP and BMP will provide:</p> <ul style="list-style-type: none"> an option for using tree guards to protect young seedlings from browsing or grazing native animals. provision to review the need for kangaroo control measures.
	6d. Feral foxes (Eddy, 2002; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Monitoring and control of feral foxes (Eddy, 2002; Rawlings <i>et al.</i>, 2010). 	The RMP and BMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
	6e. Honeybees (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Management of honeybees¹². 	-
	6f. Deer (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Management of Deer. 	The BMP will provide monitoring of deer and feral cats and control (if required).
	6g. Feral Cat (Eddy, 2002; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Management of the Feral Cat. 	The BMP will provide monitoring of deer and feral cats and control (if required).
	6h. Other Invasive Fauna	All areas	<ul style="list-style-type: none"> Provisions to identify new invasive fauna species (e.g. fauna monitoring). 	The BMP will provide provisions to identify new invasive fauna species (e.g. fauna monitoring).
7. Fire	7a. Uncontrolled bushfire (DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Maintain fire breaks and access. Assess fuel loads. 	The RMP will describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Maintain fire breaks and access. Assess fuel loads. 	<p>The BMP will:</p> <ul style="list-style-type: none"> describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken whilst vegetation is establishing). prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors. schedule for maintenance of fire breaks and fire trails. provide a schedule for assessing fuel loads. provide an option for using controlled grazing to reduce biomass.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Controlled grazing to reduce biomass (Rawlings <i>et al.</i>, 2010). Assess fuel loads. 	
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> DECCW (2011) suggests fire frequency should be a minimum interval of 5 years and a maximum interval of 40 years. Rawlings <i>et al.</i> (2010) recommends fire frequency in patches should be every 4 to 8 years. Spring or autumn burns depending on a range of factors (Gibson-Roy <i>et al.</i>, 2010; Rawlings <i>et al.</i>, 2010). Maintain fire breaks and access. Assess fuel loads. 	
	7b. Controlled burns – too infrequent - may result in overexposure of soil, erosive processes and weed invasion, or too frequent - may result in loss of species diversity (Gibson-Roy <i>et al.</i> , 2010; DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Assess fuel loads. 	The RMP will describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Assess fuel loads. 	The BMP will prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors.

¹² Not proposed.

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
7. Fire (Cont.)	7b. Controlled burns – too infrequent - may result in overexposure of soil, erosive processes and weed invasion, or too frequent - may result in loss of species diversity (Gibson-Roy <i>et al.</i> , 2010; DECCW, 2011) (Cont.)	<p>Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i>, 2010])</p> <p>Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i>, 2010])</p>	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Assess fuel loads. DECCW (2011) suggests fire frequency should be a minimum interval of 5 years and a maximum interval of 40 years. Rawlings <i>et al.</i> (2010) recommends fire frequency in patches should be every 4 to 8 years. Assess fuel loads. Spring or autumn burns depending on a range of factors (Rawlings <i>et al.</i>, 2010). Controlled burns should be undertaken in a mosaic (i.e. retain some unburned areas (DECCW, 2011). Maintain fire breaks and access. 	
8. Floristics	8a. Poor diversity in the seed mix or tube stock	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Monitoring of plant growth and survival (Rawlings <i>et al.</i>, 2010). Strategic and long term seed collection, management and storage. Site preparation and depth of sowing seed. Supplementary planting or reseedling of absent species. 	<p>The RMP will</p> <ul style="list-style-type: none"> describe how the growth and survival of the vegetation sown or planted will be monitored. describe procedures for seed collection, management and storage following the relevant Florabank guidelines. The RMP will describe procedures for sowing seed (e.g. appropriate sowing depths).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Strategic and long term seed collection, management and storage. Site preparation and depth of sowing seed. Supplementary planting or reseedling of absent species. 	<p>The BMP will:</p> <ul style="list-style-type: none"> describe procedures for seed collection, management and storage following the relevant Florabank guidelines. describe procedures for sowing seed (e.g. appropriate sowing depths). favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Favour natural regeneration over seeding or planting in the first instance followed by seeding or planting if required (McIntyre, 2002). 	
	8b. Unsuitable species in the seed mix or tube stock	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). 	<p>The RMP will provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source.</p>
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). 	<p>The BMP will</p> <ul style="list-style-type: none"> provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source. favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Favour natural regeneration over seeding or planting in the first instance followed by seeding or planting if required (McIntyre, 2002). 	
	8c. Shortage of sufficient seed or tube stock	All areas	<ul style="list-style-type: none"> Review commercial seed and tube stock availability. 	<p>The RMP and BMP will describe a seed and tube stock supply strategy including calculation of the amount and species of seed and tube stock required each year and how the seed and tube stock will be sourced and managed to meet the demand.</p>
	8d. Poor understorey diversity	All areas	<ul style="list-style-type: none"> Planting of trees and shrubs at appropriate densities (DECCW, 2011). Use local endemic (adapted) species (Eddy, 2002; Rawlings <i>et al.</i>, 2010). Restore linkages to existing woodland patches. Assess whether ecological thinning is necessary (Rawlings <i>et al.</i>, 2010). Consider causing disturbance (e.g. through fire or grazing) (Eddy, 2002). Include a wide diversity of species in the seed mix (Gibson-Roy <i>et al.</i>, 2010). 	<p>The RMP and BMP will</p> <ul style="list-style-type: none"> provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading. provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source. include provision to assess vegetation density and undertake ecological thinning (e.g. through selective clearance or fire) if necessary. provide measures to improve understorey diversity (e.g. replanting, causing disturbance through fire or grazing). aim to include a wide diversity of species in the seed mix.

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
8. Floristics (Cont.)	8e. Over-collection of seed for revegetation purposes (Eddy, 2002; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Review commercial seed and tube stock availability. Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2006a; Broadhurst <i>et al.</i>, 2006b; Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). 	<p>The RMP and BMP will</p> <ul style="list-style-type: none"> describe a seed and tube stock supply strategy including calculation of the amount and species of seed and tube stock required each year and how the seed and tube stock will be sourced and managed to meet the demand. provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source.
	8f. Lack of pollinators	All areas	<ul style="list-style-type: none"> Promotion of bees through provision of habitat (e.g. general revegetation and regeneration). 	The RMP and BMP will describe revegetation and regeneration measures.
9. Native plant growth	9a. Poor native plant growth	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Site preparation and depth of sowing seed. Fencing of areas undergoing revegetation to exclude grazing animals (e.g. livestock)¹³. Management of pressure from feral grazing animals and native grazing animals. Correct spacing for species when planting seedlings to avoid excessive shading (Rawlings <i>et al.</i>, 2010). Supplementary seeding or planting. Revegetation trials (Condition 15 of the Approval Decision EPBC 2010/5566). Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). Selective use of specific fertilisers only. 	<p>The RMP will</p> <ul style="list-style-type: none"> describe procedures for seed collection, management and storage following the relevant Florabank guidelines. The RMP will describe procedures for sowing seed (e.g. appropriate sowing depths). describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding). provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading. describe research that will aim to identify effective methodologies for achieving rehabilitation and revegetation of Box-Gum Woodland on the mine rehabilitation (consistent with Condition 15 of the Approval Decision EPBC 2010/5566). provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source. provide for selective use of slow-release fertiliser to promote plant growth (if required) including the use of trace elements. include provision to review the need for kangaroo control measures.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Site preparation and depth of sowing seed. Fencing of areas undergoing revegetation to exclude grazing livestock. 	<p>The BMP will</p> <ul style="list-style-type: none"> describe procedures for seed collection, management and storage following the relevant Florabank guidelines. The BMP will describe procedures for sowing seed (e.g. appropriate sowing depths). describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding). provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading. favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required. provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source. include provision to review the need for kangaroo control measures.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Management of pressure from feral grazing animals and native grazing animals. Correct spacing for species when planting seedlings to avoid excessive shading (Rawlings <i>et al.</i>, 2010). Supplementary seeding or planting. Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). 	
	9b. Poor seed germination	All areas	<ul style="list-style-type: none"> Supplementary seeding or planting. Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). Smoke water¹⁴. Seed scarification for acacia or heat treatment. 	<p>The RMP and BMP will:</p> <ul style="list-style-type: none"> favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required. The RMP and BMP will provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source.
	9c. Dense overstorey and midstorey revegetation (e.g. White Cypress Pine) – sometimes regeneration is too successful and trees may compete with each other for light, water and nutrients (Rawlings <i>et al.</i> , 2010; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Assess whether ecological thinning is necessary (Rawlings <i>et al.</i>, 2010). Thinning with fire or manually (Rawlings <i>et al.</i>, 2010). 	The RMP and BMP will include provision to assess vegetation density and undertake ecological thinning (e.g. through selective clearance or fire) if necessary.

¹³ Native animals would not be excluded. Feral animals would be controlled via other methods.

¹⁴ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
9. Native plant growth (Cont.)	9d. Dense grass cover	All areas	<ul style="list-style-type: none"> Consider causing disturbance (e.g. through fire or grazing) (Rawlings <i>et al.</i>, 2010). 	The RMP and BMP will provide measures to improve understorey diversity (e.g. replanting, causing disturbance through fire or grazing).
	9e. Disease (e.g. <i>Phytophthora cinnamomi</i>) (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Hygiene protocols to minimise the risk of plant diseases (Rawlings <i>et al.</i>, 2010). 	The RMP and BMP will include hygiene protocols to minimise the risk of plant diseases (i.e. restricting site access).
	9f. Fungi or pathogens – may cause germination failure (seeds) (Rawlings <i>et al.</i> , 2010).	All areas	<ul style="list-style-type: none"> Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). 	The RMP and BMP will provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source.
10. Fauna habitat	10a. Lack of bush rocks (Michael <i>et al.</i> , 2011)	All areas	<ul style="list-style-type: none"> Maximise salvage and reuse of bush rocks (Condition 39[b] Schedule 3 of Project Approval 10_0138). 	The RMP and BMP will describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).
	10b. Lack of fallen timber/hollow logs (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs (Condition 39[b] Schedule 3 of Project Approval 10_0138). 	<p>The RMP and BMP will describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including:</p> <ul style="list-style-type: none"> placement of hollow limbs or artificial hollows in some select trees without hollows; and use of artificial stag trees on the mine rehabilitation.
	10c. Lack of structural diversity (Manning <i>et al.</i> , 2011; Michael <i>et al.</i> , 2011; Freudenberger <i>et al.</i> , 2004)	All areas	<ul style="list-style-type: none"> Planting of scattered low shrubs, mid-sized shrubs and tall trees (Freudenberger <i>et al.</i>, 2004). Maximise salvage and reuse timber/hollow logs (Condition 39[b] Schedule 3 of Project Approval 10_0138). Increase woodland patch size within the offset area (Prober <i>et al.</i> 2002). 	<p>The RMP and BMP will:</p> <ul style="list-style-type: none"> describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat. describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138). describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including: <ul style="list-style-type: none"> placement of hollow limbs or artificial hollows in some select trees without hollows; and use of artificial stag trees on the mine rehabilitation. focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.
11. Surrounding land uses	11a. Agriculture -pesticides and herbicides	Offset Areas	<ul style="list-style-type: none"> Increase woodland patch size within the offset area (Rawlings <i>et al.</i>, 2010). Communication with surrounding land users (either NPWS or private). 	<p>The BMP will :</p> <ul style="list-style-type: none"> focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity. include a description of the Community Consultative Committee.
	11b. Agriculture -exotic species (including incursions of stock and feral animals)	Offset Areas	<ul style="list-style-type: none"> Increase woodland patch size within the offset area (Rawlings <i>et al.</i>, 2010). Communication with surrounding land users (either NPWS or private). Fencing and signage. Co-ordinated management of exotic species with surrounding land users. 	
	11c. Agriculture -increased runoff	Offset Areas	<ul style="list-style-type: none"> Increase woodland patch size within the offset area (Rawlings <i>et al.</i>, 2010). Communication with surrounding land users (either NPWS or private). 	
	11d. Agriculture -nutrient enrichment	Offset Areas	<ul style="list-style-type: none"> Increase woodland patch size within the offset area (Rawlings <i>et al.</i>, 2010). Communication with surrounding land users (either NPWS or private). 	

Table 3 (Continued)
Proposed Actions Relating to Factors Likely to Impede and Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
12. Weather	12a. Drought	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Monitoring for signs of water stress (dieback). Management of pressure from feral grazing animals and native grazing animals. Irrigation. Mulch. 	The RMP will: <ul style="list-style-type: none"> describe how the growth and survival of the vegetation sown or planted will be monitored. describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch. include provision to review the need for kangaroo control measures. describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Monitoring for signs of water stress (dieback). Limit grazing livestock during drought periods¹⁵ (DECCW, 2011). Management of pressure from feral grazing animals and native grazing animals. Irrigation¹⁶. Mulch¹⁷. 	The BMP will <ul style="list-style-type: none"> describe how the growth and survival of the vegetation sown or planted will be monitored. discuss an adaptive management framework and monitoring programme for the management of the Box-Gum Woodland EEC. provide a mechanism to reduce livestock grazing during drought periods. include provision to review the need for kangaroo control measures. describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])		
	12b. Flood/major rainfall	All areas	Refer to 1d. Erosion and sedimentation.	-
	12c. Wind	All areas	<ul style="list-style-type: none"> Only use healthy seedlings (Rawlings <i>et al.</i>, 2010). Use of tree guards to protect young seedlings (Rawlings <i>et al.</i>, 2010). 	<ul style="list-style-type: none"> The RMP and BMP will provide an option for using tree guards to protect young seedlings from browsing or grazing native animals. The RMP will provide for establishing vegetation cover as soon as practicable following disturbance to minimise the potential for erosion and weeds. This will involve the application of a temporary sterile cover crop (or native grasses) using species that are not likely to impede revegetation of the Box-Gum Woodland.
	12d. Climate change (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Restoration of Box-Gum Woodland (DECCW, 2011). Use of genetically diverse collections of seed sourced from large and health populations. Increase woodland patch size within the offset area (to provide links for movement of plant propagules and fauna). Provide increased connectivity through revegetation of cleared land. 	<p>The RMP and BMP will:</p> <ul style="list-style-type: none"> focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity. provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source. <p>An aim of the offset strategy is to provide connectivity through the eastern and western offset areas and includes improve connectivity by revegetation of low diversity derived native grassland, pasture improved and cultivated land.</p>
13. Management	13a. Unclear objectives	All areas	<ul style="list-style-type: none"> Define objectives (Eddy, 2002; Rawlings <i>et al.</i>, 2010). Management for patchiness (diversity) (Rawlings <i>et al.</i>, 2010). 	The RMP and BMP will: <ul style="list-style-type: none"> define the objectives for the Box-Gum Woodland EEC. discuss an adaptive management framework and monitoring programme for the management of the Box-Gum Woodland EEC.
	13b. Lack of maintenance	All areas	Adaptive management (Rawlings <i>et al.</i> , 2010; Tongway and Ludwig, 2011).	
	13c. Poor monitoring design (measurement of success)	All areas	<ul style="list-style-type: none"> Monitor to determine effectiveness (Eddy, 2002; DECCW, 2011). Monitoring closely linked to objectives. Use of photo-points to monitor changes over time (Eddy, 2002). 	
	13d. Unqualified personnel	All areas	Engage suitability qualified personnel	The RMP and BMP will describe roles for suitability qualified personnel (e.g. restoration ecologist to provide direction about the rehabilitation and restoration of the Box-Gum Woodland EEC).

Note: The highlighted rows relate only to the Rehabilitation Strategy.

¹⁵ Native animals would not be limited during drought periods. General feral animal control measures would continue.

¹⁶ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

¹⁷ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

Table 4
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Pale-headed Snake	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). This species is found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest (OEH, 2014b). In drier environments, it appears to favour habitats close to riparian areas (OEH, 2014b). The Pale-headed Snake shelters between loose bark and tree-trunks, or in hollow trunks and limbs of dead trees (OEH, 2014b). The main prey of this species is tree frogs although lizards and small mammals are also taken (OEH, 2014b). 	<ul style="list-style-type: none"> Too frequent burning or grazing management which destroys old and dead trees and removes understorey vegetation (OEH, 2014b). Absence of suitable prey species, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation (e.g. development of tree hollows). 	None defined (OEH, 2014b).
Black-necked Stork	<ul style="list-style-type: none"> Mainly associated with wetlands that are not relevant to the Rehabilitation Strategy and Offset Strategy. Occasionally individuals will stray into open grass, woodland areas or flooded paddocks in search of food (Australian Museum, 2014). Usually forage in water 5-30 cm deep for vertebrate and invertebrate prey (OEH, 2014b). Build large nests high in tall trees close to water (OEH, 2014b). 	<ul style="list-style-type: none"> None relevant to RMP/BMP (OEH, 2014b). Absence of appropriate wetlands particularly in post-mine landscape. Absence of suitable prey species particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	None relevant to RMP/BMP (OEH, 2014b).
Square-tailed Kite	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses (OEH, 2014b). In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia scrub and patches of low open eucalypt woodland (OEH, 2014b). Forages over inland riparian woodland. It particularly favours box-ironbark-gum woodlands on the inland slopes, and Coolibah/River Red Gum on the inland plains (Marchant & Higgins 1993). Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage (OEH, 2014b). Nest sites generally located along or near watercourses, in a fork or on large horizontal limbs (OEH, 2014b). 	<ul style="list-style-type: none"> Clearing, logging, burning, and grazing of habitats resulting in a reduction in nesting and feeding resources (OEH, 2014b). Absence of suitable prey species particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable water courses. 	<ul style="list-style-type: none"> Protect known habitat from fires (OEH, 2014b). Retain and protect nesting and foraging habitat, particularly along watercourses (OEH, 2014b).
Spotted Harrier	<ul style="list-style-type: none"> Occurs in grassy open woodland including <i>Acacia</i> and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland (OEH, 2014b). Builds a stick nest in a tree (OEH, 2014b). Preys on terrestrial mammals (e.g. bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion (OEH, 2014b). 	<ul style="list-style-type: none"> Secondary poisoning from rabbit baiting (OEH, 2014b). Secondary poisoning from rodenticides (OEH, 2014b). Absence of suitable prey species, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Protect areas of habitat from overgrazing (OEH, 2014b). Retain and protect nesting and foraging habitat (OEH, 2014b).
Little Eagle	<ul style="list-style-type: none"> Habitats rich in prey (eats birds, reptiles and mammals, and occasionally large insects and carrion) (OEH, 2014b). Occupies open eucalypt forest, woodland or open woodland. Sheoak or <i>Acacia</i> woodlands and riparian woodlands of interior NSW are also used (OEH, 2014b). Nests in tall living trees within a remnant patch (OEH, 2014b). 	<ul style="list-style-type: none"> Secondary poisoning from rabbit baiting (OEH, 2014b). Absence of suitable prey species, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Rehabilitate known and potential habitat (OEH, 2014b). Retain and protect nesting and foraging habitat (OEH, 2014b).
Little Lorikeet	<ul style="list-style-type: none"> Forages primarily in the canopy of open <i>Eucalyptus</i> forest and woodland, especially box–ironbark species including White Box (<i>Eucalyptus albens</i>) and Yellow Box (<i>E. melliodora</i>), where they forage in the canopy of flowering trees (BirdLife Australia, 2014; OEH, 2014b). Also finds food in <i>Angophora</i>, <i>Melaleuca</i> and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity (OEH, 2014b). Feeds mostly on nectar and pollen (OEH, 2014b). Roosts in treetops, often distant from feeding areas (OEH, 2014b). Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Riparian trees often chosen, including species like <i>Allocasuarina</i> (OEH, 2014b). Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species (OEH, 2014b). 	<ul style="list-style-type: none"> Lack of old hollow bearing trees (OEH, 2014b). Competition with the introduced Honeybee for both nectar and hollows (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Retain large old trees, especially those that are hollow-bearing (OEH, 2014b). Provide for recruitment of trees into the mature age class so that there is not a lag period of decades between the death of old trees and hollow formation in younger trees (OEH, 2014b). Protect large flowering Eucalyptus trees throughout the habitats frequented by this species. Manage remnant woodlands and forest for recovery of old-growth characteristics (OEH, 2014b).

Table 4 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Little Lorikeet (Cont.)			<ul style="list-style-type: none"> Where natural tree recruitment is inadequate, replant local species to maintain foraging habitat and breeding sites (OEH, 2014b). Reduce the abundance of feral Honeybees and limit the exploitation of nectar by domestic bees where resources are spatially or temporally sparse (e.g. in years of drought) (OEH, 2014b).
Turquoise Parrot	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland (OEH, 2014b). Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants, or browsing on vegetable matter (OEH, 2014b). Nests in tree hollows, logs or posts (OEH, 2014b). 	<ul style="list-style-type: none"> Lack of hollow-bearing trees (OEH, 2014b). Degradation of habitat through heavy grazing, firewood collection and establishment of exotic pastures (OEH, 2014b). Predation by foxes and cats (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Undertake fox and feral cat control programs in key habitat areas (OEH, 2014b). Retain areas of open woodland with grassy under-storey and adjoining grassland (OEH, 2014b). Protect hollow-bearing trees for nest sites. Younger mature trees should also be retained to provide replacements for the older trees when they eventually die and fall over (OEH, 2014b). Protect sites where Turquoise Parrots forage and nest from heavy, prolonged grazing (OEH, 2014b).
Swift Parrot	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Inhabits dry sclerophyll eucalypt forests, particularly box-ironbark, and woodlands (DotE, 2014b). Favoured feed trees include winter flowering species such as Swamp Mahogany (<i>Eucalyptus robusta</i>), Spotted Gum (<i>Corymbia maculata</i>), Red Bloodwood (<i>C. gummifera</i>), Mugga Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>) (OEH, 2014b). 	<ul style="list-style-type: none"> Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Retain stands of winter-flowering feed-trees, particularly large mature individuals (OEH, 2014b). Revegetate with winter-flowering tree species where appropriate (OEH, 2014b).
Superb Parrot	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest (OEH, 2014b), including Box-Gum Woodland EEC (DotE, 2014b). Forages in box eucalypt woodland, particularly that dominated by Yellow Box (<i>Eucalyptus melliodora</i>) or Grey Box (<i>E. microcarpa</i>), and occasionally Black Box (<i>E. largiflorens</i>)¹. (DotE, 2014b; OEH, 2014b). Diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain (OEH, 2014b). Mainly breed in hollows of River Red Gum (<i>Eucalyptus camaldulensis</i>) and Blakely's Red Gum (<i>E. blakelyi</i>) (Department of Environment and Heritage, 2005; OEH, 2014b), also known to use Yellow Box (<i>E. melliodora</i>), White Box (<i>E. albens</i>), Apple Box (<i>E. bridgesiana</i>) and Red Box (<i>E. intertexta</i>) (DotE, 2014b; OEH, 2014b). 	<ul style="list-style-type: none"> Lack of hollow bearing trees (OEH, 2014b). Competition for hollows with feral bees and native and exotic hollow-nesting birds (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation (e.g. development of tree hollows). 	<ul style="list-style-type: none"> Retain and protect hollow-bearing trees (OEH, 2014b). Retain and protect woodland remnants (OEH, 2014b). Remove feral bee colonies from hollows in Superb Parrot habitat, or report them to NPWS officers (OEH, 2014b).
White-throated Needletail	<ul style="list-style-type: none"> In Australia, the White-throated Needletail is almost exclusively aerial (DotE, 2014b). Recorded most often above wooded areas, including open forest and rainforest, and less commonly recorded flying above woodland (Higgins 1999). 	<ul style="list-style-type: none"> Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	None listed (DotE, 2014b).
Fork-tailed Swift	<ul style="list-style-type: none"> The Fork-tailed Swift is almost exclusively aerial (DotE, 2014b). Mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh (DotE, 2014b). Sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines (Higgins 1999). They sometimes feed aerially among tree-tops in open forest (Higgins 1999). 	<ul style="list-style-type: none"> Predation by feral animals (DotE, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	None listed (DotE, 2014b).
Rainbow Bee-eater	<ul style="list-style-type: none"> Known from open woodlands and shrublands, including mallee, and in open forests that are usually dominated by eucalypts. It also occurs in grasslands and, especially in arid or semi-arid areas, in riparian, floodplain or wetland vegetation assemblages (DotE, 2014b; Higgins, 1999). 	<ul style="list-style-type: none"> Predation on eggs and nestlings by introduced Cane Toad (<i>Bufo marinus</i>). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Lack of suitable riparian banks for breeding activities. 	None listed (DotE, 2014b).

Table 4 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidance	Relevant Recovery Actions Defined in the Government Guidance
Satin Flycatcher	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (DotE, 2014b) (i.e. the factors in Table 3 are relevant to this species' habitat). Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests (DotE, 2014b). They also occur in eucalypt woodlands with open understorey and grass ground cover, and are generally absent from rainforest (DotE, 2014b). They sometimes also occur in dry sclerophyll forests and woodlands, usually dominated by eucalypts such as Blakely's Red Gum (<i>Eucalyptus blakelyi</i>), Mugga Ironbark (<i>E. sideroxylon</i>), Yellow Box (<i>E. melliodora</i>), White Box (<i>E. albens</i>), Manna Gum (<i>E. viminalis</i>) or stringybarks, including Red Stringybark (<i>E. macrorhyncha</i>) and Broad-leaved Stringybark (<i>E. caliginosa</i>), usually with open understorey (DotE, 2014b). Nesting requirements? 	<ul style="list-style-type: none"> Loss of mature forests (DotE, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	None listed (DotE, 2014b).
Masked Owl	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Lives in dry eucalypt forests and woodlands from sea level to 1100 metres (OEH, 2014b). A forest owl, but often hunts along the edges of forests, including roadsides (OEH, 2014b). The typical diet consists of tree-dwelling and ground mammals, especially rats (OEH, 2014b). Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of mature hollow-bearing trees and changes to forest and woodland structure, which leads to fewer such trees in the future (OEH, 2014b). A combination of grazing and regular burning is a threat, through the effects on the quality of ground cover for mammal prey, particularly in open, grassy forests (OEH, 2014b). Secondary poisoning from rodenticides (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain hollow-bearing trees as well as large, mature trees that will provide hollows in the future (OEH, 2014b). Limit the use of pesticides used in suitable native habitat (OEH, 2014b).
Barking Owl	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile soils (OEH, 2014b). Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as <i>Acacia</i> and <i>Casuarina</i> species (OEH, 2014b). Preferentially hunts small arboreal mammals such as Squirrel Gliders and Ringtail Possums, but when loss of tree hollows decreases these prey populations the owl becomes more reliant on birds, invertebrates and terrestrial mammals such as rodents and rabbits (OEH, 2014b). Requires very large permanent territories in most habitats due to sparse prey densities (OEH, 2014b). 	<ul style="list-style-type: none"> Firewood harvesting resulting in the removal of fallen logs and felling of large dead trees (OEH, 2014b). Too-frequent fire leading to degradation of understorey vegetation which provides shelter and foraging substrates for prey species (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Apply a mosaic pattern during fire hazard reduction to ensure the same areas are not burned too frequently (OEH, 2014b). Protect woodland and open forest remnants, especially those containing hollow-bearing trees (OEH, 2014b). Retain and enhance vegetation along watercourses and surrounding areas to protect important habitat of the owls and their prey (OEH, 2014b). Maintain a buffer of undisturbed native vegetation at least 200 metres radius around known nest sites (OEH, 2014b). Retain standing dead trees and large fallen logs (OEH, 2014b). Fence habitat remnants and protect from heavy grazing (OEH, 2014b).

Table 4 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidance	Relevant Recovery Actions Defined in the Government Guidance
Brown Treecreeper (eastern subspecies)	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range (OEH, 2014b). Mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. Also found in mallee and River Red Gum (<i>Eucalyptus camaldulensis</i>) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses. Usually not found in woodlands with a dense shrub layer. Fallen timber is an important habitat component for foraging. Forage for insects and other invertebrates amongst the litter, tussocks and fallen timber, and along trunks and lateral branches. Nectar from Mugga Ironbark (<i>Eucalyptus sideroxylon</i>) and paperbarks, and sap from an unidentified eucalypt are also eaten, along with lizards and food scraps (OEH, 2014b). 	<ul style="list-style-type: none"> Ongoing degradation of habitat, particularly the loss of tree hollows and fallen timber from firewood collection and overgrazing (OEH, 2014b). Lack of regeneration of eucalypt overstorey in woodland due to overgrazing and too-frequent fires (OEH, 2014b). Loss of ground litter from compaction and overgrazing (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Modify grazing management practices that will maintain or improve habitat values and still allow some grazing to occur at strategic times of the year (OEH, 2014b). Do not allow further loss of dead standing or fallen timber from firewood collection or on-farm practices such as 'tidying up'; do not allow removal of hollow-bearing dead or living trees and stumps on private and public lands (OEH, 2014b). Fencing of known habitat to protect natural features and to allow natural regeneration (OEH, 2014b). Increase remnant size and connectivity through incentives and OEH threatened species extension services (OEH, 2014b).
Speckled Warbler	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Lives in a wide range of <i>Eucalyptus</i> dominated dry sclerophyll forests and woodlands that have a grassy understorey, often on rocky ridges or in gullies (Birdlife Australia, 2014; OEH, 2014b; OEH, 2014b). Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy (OEH, 2014b). Large, relatively undisturbed remnants are required for the species to persist in an area (OEH, 2014b). Nest is located in a slight hollow in the ground or the base of a low dense plant, often among grass tussocks, fallen branches and other litter (OEH, 2014b; OEH, 2014b) 	<ul style="list-style-type: none"> Poor regeneration of grassy woodland habitats (OEH, 2014b). Modification and destruction of ground habitat through removal of litter and fallen timber, introduction of exotic pasture grasses, heavy grazing and compaction by stock and frequent fire (OEH, 2014b). Nest failure due to predation by native and non-native birds, cats, dogs and foxes particularly in fragmented and degraded habitats (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Undertake fox and feral cat control programs (OEH, 2014b). Retain dead timber on the ground in open woodland areas (OEH, 2014b). Limit firewood collection (OEH, 2014b). Encourage regeneration of habitat by fencing remnant stands (OEH, 2014b). Fence suitable woodland habitats, particularly those with unimproved pasture and an intact native ground plant layer (OEH, 2014b). Increase the size of existing remnants, planting trees and establishing buffer zones of unimproved uncultivated pasture around woodland remnants (OEH, 2014b).
Black-chinned Honeyeater (eastern subspecies)	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (<i>Eucalyptus sideroxylon</i>), White Box (<i>E. albens</i>), Inland Grey Box (<i>E. microcarpa</i>), Yellow Box (<i>E. melliodora</i>), Blakely's Red Gum (<i>E. blakelyi</i>) and Forest Red Gum (<i>E. tereticornis</i>) (OEH, 2014b). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees (OEH, 2014b). 	<ul style="list-style-type: none"> Poor regeneration of open forest and woodland habitats because of intense grazing (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Increase the size and connectivity of existing remnants, planting trees and establishing buffer zones of unimproved uncultivated pasture around woodland remnants (OEH, 2014b).
Regent Honeyeater	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak (OEH, 2014b). Favours habitats on the wettest, most fertile soils, such as along creek flats and broad river valleys (DotE, 2014a). Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes (OEH, 2014b). In NSW, riparian forests containing River Oak (<i>Casuarina cunninghamiana</i>), and with Needle-leaf Mistletoe (<i>Amyema cabbagei</i>), are important for feeding and breeding (DotE, 2014a). Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoaks. Also nest in mistletoe haustoria (OEH, 2014b). 	<ul style="list-style-type: none"> Suppression of natural regeneration of overstorey tree species and shrub species from overgrazing. Riparian gallery forests have been particularly impacted by overgrazing (OEH, 2014b). Firewood harvesting in Box-Ironbark woodlands can remove important habitat components (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable riparian areas particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain mature key nectar tree species (OEH, 2014b). Protect and enhance key breeding and foraging habitats (OEH, 2014b). Encourage natural regeneration and increase the remnant size of known and potential Regent Honeyeater habitats (OEH, 2014b).

Table 4 (Continued)
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Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidance	Relevant Recovery Actions Defined in the Government Guidance
Painted Honeyeater	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests (OEH, 2014b). A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> (OEH, 2014b). Insects and nectar from mistletoe or eucalypts are occasionally eaten (OEH, 2014b). Nest within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe branches (OEH, 2014b). During breeding it requires berries from just two species, Needle-leaved Mistletoe (<i>Amyema cambagei</i>) and Grey Mistletoe (<i>A. quandang</i>) which grow on nitrogen-fixing hosts such as Acacias and Casuarinas (Barea, 2008). 	<ul style="list-style-type: none"> Heavy grazing of grassy woodlands (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of mistletoe species, particularly in post-mine landscape 	<ul style="list-style-type: none"> Manage grazing on sites where Painted Honeyeater habitat occurs (OEH, 2014b). Encourage regeneration of habitat by fencing remnant stands and undertaking new plantings (OEH, 2014b). Regenerate and replant local flora species to maintain breeding and foraging habitat (OEH, 2014b).
Hooded Robin (south-eastern form)	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas (OEH, 2014b). Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses (OEH, 2014b). Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey (OEH, 2014b). 	<ul style="list-style-type: none"> Modification and destruction of ground habitat through heavy grazing and compaction by stock, removal of litter and fallen timber, introduction of exotic pasture grasses and frequent fire (OEH, 2014). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Retain dead timber on the ground in open woodland areas (OEH, 2014b). Enhance potential habitat through regeneration by reducing the intensity and duration of grazing (OEH, 2014b). Fence habitat to protect from long-term, intense grazing (OEH, 2014b). Increase the size of existing remnants, by planting trees and establishing buffer zones of un-modified, uncultivated pasture around woodland remnants (OEH, 2014b).
Grey-crowned Babbler (eastern subspecies)	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains (OEH, 2014b). Open woodlands dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs (OEH, 2014b). Feed on invertebrates, either by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses (OEH, 2014b). Nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts. (OEH, 2014b). 	<ul style="list-style-type: none"> Heavy grazing and removal of coarse, woody debris within woodland remnants (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain existing woodland vegetation (OEH, 2014b). Retain dead timber on the ground in open woodland areas (OEH, 2014b). Encourage regeneration of habitat by fencing remnant stands (OEH, 2014b). Increase the size of existing remnants, planting trees and establishing buffer zones of unimproved uncultivated pasture around woodland remnants (OEH, 2014b).
Varied Sittella	<ul style="list-style-type: none"> Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and <i>Acacia</i> woodland (OEH, 2014b). Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy (OEH, 2014b). 	<ul style="list-style-type: none"> Firewood collection (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Increase the size of existing remnants by planting trees and establishing buffer zones (OEH, 2014b). Limit firewood collection and retain dead timber in open forest and woodland areas (OEH, 2014b). Encourage regeneration of habitat by fencing remnant stands and managing the intensity and duration of grazing (OEH, 2014b). Control weeds in areas of known habitat (OEH, 2014b).

Table 4 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidance	Relevant Recovery Actions Defined in the Government Guidance
Diamond Firetail	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (<i>Eucalyptus pauciflora</i>) Woodlands (OEH, 2014b). Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities (OEH, 2014b). Often found in riparian areas (rivers and creeks) (OEH, 2014b). Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season) (OEH, 2014b). Roosts in dense shrubs or in smaller nests built especially for roosting (OEH, 2014b). 	<ul style="list-style-type: none"> Firewood collection (OEH, 2014b). Poor regeneration of open forest and woodland habitats. Invasion of weeds, resulting in the loss of important food plants (OEH, 2014b). Modification and destruction of ground- and shrub layers within habitat through: removal of native plants, litter and fallen timber; introduction of exotic pasture grasses; heavy grazing and compaction by stock; and frequent fire (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable riparian areas particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain dead timber on the ground in open woodland areas (OEH, 2014b). Reduce heavy grazing by domestic stock in areas of known or potential habitat, to enable flowering and subsequent seeding of grasses and forbs that this species requires (OEH, 2014b). Control weeds in areas of known habitat, especially the exotic, winter-fruited shrubs such as cotoneasters, hawthorns, firethorns and privets that support Pied Currawongs (OEH, 2014b).
Koala	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Inhabit eucalypt woodlands and forests (OEH, 2014b). Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species (OEH, 2014b). Appropriate food trees in high densities, and floristic diversity are important for this species (Department of Environment and Climate Change, 2008). Cypress pines and brush box are examples of shading trees necessary for the Koala (Department of Environment and Climate Change, 2008). 	<ul style="list-style-type: none"> Predation by feral and domestic dogs (OEH, 2014b). Intense fires that scorch or kill the tree canopy (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable browse trees particularly in post-mine landscape. 	<ul style="list-style-type: none"> Undertake feral predator control (OEH, 2014b). Apply low intensity, mosaic pattern fuel reduction burns in or adjacent to Koala habitat (OEH, 2014b). Revegetate with suitable feed tree species and develop habitat corridors between populations (OEH, 2014b).
Squirrel Glider	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 3 are relevant to this species' habitat). Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas (OEH, 2014b). Prefers mixed species stands with a shrub or <i>Acacia</i> midstorey (OEH, 2014b). Diet varies seasonally and consists of <i>Acacia</i> gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein (OEH, 2014b). Require abundant tree hollows for refuge and nest sites (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of hollow-bearing trees (OEH, 2014b). Loss of flowering understorey and midstorey shrubs in forests (OEH, 2014b). Loss of hollow availability due to takeover by feral honeybees and exotic birds (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species/vegetation resources, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain den trees and recruitment trees (future hollow-bearing trees) (OEH, 2014b). Retain food resources, particularly sap-feeding trees and understorey feed species such as <i>Acacias</i> and <i>banksias</i> (OEH, 2014b).
Yellow-bellied Sheath-tail-bat	<ul style="list-style-type: none"> Roosts singly in tree hollows and buildings. In treeless areas they are known to utilise mammal burrows (OEH, 2014b). Forages in most habitats across its very wide range, with and without trees (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of hollow-bearing trees (OEH, 2014b). Pesticides and herbicides may reduce the availability of insects, or result in the accumulation of toxic residues in individuals' fat stores (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain stands of native vegetation, especially those with hollow-bearing trees (including dead trees), and retain other structures containing bats (OEH, 2014b). Reduce the use of pesticides in the environment (OEH, 2014b). Encourage regeneration and replanting of local flora species to maintain bat foraging habitat (OEH, 2014b).

Table 4 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidance	Relevant Recovery Actions Defined in the Government Guidance
Eastern Bentwing-bat	<ul style="list-style-type: none"> Forages in rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, <i>Melaleuca</i> forests and open grasslands (Churchill, 2008). 	<ul style="list-style-type: none"> Disturbance by recreational cave climbers and general public accessing the cave and adjacent areas particularly during winter or breeding (OEH, 2014b). Loss of foraging habitat (OEH, 2014b). Loss of food resources and indirect poisoning of individuals from nearby use of herbicides / insecticides (OEH, 2014b). Predation by feral cats and foxes (OEH, 2014b). Introduction of exotic pathogens, specifically known White-nosed fungus (OEH, 2014b). Potential for large scale wildfire to impact on resource availability in surrounding habitat. Direct threats at caves from fire (OEH, 2014b). Weeds (blackberry) encroaching over cave entrances restrict access; need to ensure sympathetic control techniques for blackberry (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Control foxes and feral cats around roosting sites, particularly maternity caves (OEH, 2014b). Protect roosting sites from damage or disturbance (OEH, 2014b).
Corben's Long-eared Bat (Listed as South-eastern Long-eared Bat under EPBC)	<ul style="list-style-type: none"> Occurs in a range of inland woodland vegetation types, including box, ironbark and cypress pine woodlands (DotE, 2014b). The species also occurs in Buloke woodland; Brigalow woodland; Belah woodland; Smooth-barked Apple (<i>Angophora leiocarpa</i>) woodland; River Red Gum (<i>Eucalyptus camaldulensis</i>) forests lining watercourses and lakes; Black Box (<i>E. largiflorens</i>) woodland; and dry sclerophyll forest (DotE, 2014b). In the Hunter Valley, NSW, the species has primarily been recorded in moister woodland of various eucalypt species with a distinct shrub layer frequently adjacent to watercourses. There are a small number of records from closed forest adjacent to dry sclerophyll woodlands (DotE, 2014b). Roosts in tree hollows, crevices, and under loose bark (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of remnant semi-arid woodland and mallee habitat (OEH, 2014b) Loss of hollow-bearing trees (OEH, 2014b). Application of pesticides in or adjacent to foraging areas (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain remnant woodland and mallee vegetation (OEH, 2014b). Retain hollow-bearing trees and provide for hollow tree recruitment (OEH, 2014b). Minimise the use of pesticides in and adjacent to foraging areas (OEH, 2014b).
Large-eared Pied Bat	<ul style="list-style-type: none"> This species requires a combination of sandstone cliff/escarpment to provide roosting habitat that is adjacent to higher fertility sites, particularly box gum woodlands or river/rainforest corridors which are used for foraging (DotE, 2014b). Roosting has also been observed in disused mine shafts, caves, overhangs and it also possibly roosts in the hollows of trees (DotE, 2014b). 	<ul style="list-style-type: none"> Loss of foraging habitat close to cliffs, caves and old mine workings from forestry activities and too-frequent burning, usually associated with grazing (OEH, 2014b). Damage to roosting and maternity sites from mining operations, and recreational caving activities (OEH, 2014b). Use of pesticides. Disturbance to roosting areas by goats (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Protect known and potential habitat from burning at too-frequent intervals (OEH, 2014b). Avoid damage to known roosting and maternity sites from mining activities, and from recreational caving by contacting the OEH prior to activities (OEH, 2014b). Reduce the use of pesticides and consider alternatives where available (OEH, 2014b). Control goats to reduce disturbance to roosting sites (OEH, 2014b).

Table 4 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidance	Relevant Recovery Actions Defined in the Government Guidance
Little Pied Bat	<ul style="list-style-type: none"> Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil Box (<i>Eucalyptus populnea</i>) woodlands (OEH, 2014b). In the more arid parts of its range in Queensland, NSW and South Australia it has been recorded from Mulga (<i>Acacia aneura</i>) woodlands, from patches of Black Box (<i>Eucalyptus largiflorens</i>) woodlands (NSW) and riverine River Red Gum (<i>E. camaldulensis</i>) dominated communities (Environment Australia, 1999). Roosts in caves, rocky outcrops, mine shafts, tunnels, tree hollows and buildings (OEH, 2014b). 	<ul style="list-style-type: none"> Predation by cats (OEH, 2014b). Application of pesticides in or adjacent to foraging areas (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Control feral cats (OEH, 2014b). Minimise the use of pesticides within or adjacent to areas where insectivorous bats occur (OEH, 2014b).
Eastern False Pipistrelle	<ul style="list-style-type: none"> Prefers moist habitats, with trees taller than 20 m (OEH, 2014b). Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of trees for foraging and hollow-bearing trees for roosting (OEH, 2014b). Application of pesticides in or adjacent to foraging areas (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain native vegetation that is floristically and structurally diverse (OEH, 2014b). Minimise the use of pesticides within or adjacent to areas where insectivorous bats occur (OEH, 2014b).
Eastern Cave Bat	<ul style="list-style-type: none"> A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs (OEH, 2014b). Occasionally found along cliff-lines in wet eucalypt forest and rainforest (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of suitable feeding habitat near roosting and maternity sites as a result of modifications from timber harvesting and inappropriate fire regimes usually associated with grazing (OEH, 2014b). Pesticides and herbicides may reduce the availability of invertebrates, or result in the accumulation of toxic residues in individuals' fat stores (OEH, 2014b). Probable predation by cats and foxes (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Undertake fox and feral cat control programs. Protect known and potential habitat from burning at too-frequent intervals. Avoid damage or disturbance to known roosting and maternity sites from mining activities, and from recreational caving activities (OEH, 2014b). Reduce the use of pesticides in habitat areas (OEH, 2014b).

Table 5
Proposed Actions Relating to Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
<p>1. Adequate availability of prey species</p> <p>The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform, together with the salvage and re-use of logs, hollows and surface litter, will over time provide a range of suitable habitats for invertebrates and vertebrates that provide a potential source of food for various threatened fauna species.</p> <p>The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.</p>	1a. Lack of invertebrates as a food source (Spotted Harrier, Little Eagle, Barking Owl, Brown Treecreeper, Painted Honeyeater, Grey-crowned Babbler, Varied Sittella, Squirrel Glider) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs and surface litter from the mine vegetation clearance activities to encourage invertebrates that provide a potential food source (Condition 39[b] Schedule 3 of Project Approval 10_0138). Mulching to encourage invertebrates that provide a potential food source. 	<ul style="list-style-type: none"> The RMP and BMP will describe procedures to reuse timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138). The RMP will describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.
	1b. Lack of reptiles as a food source (Pale-headed Snake, Spotted Harrier, Little Eagle) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of bush rocks from the mine vegetation clearance activities to encourage reptiles that provide a potential food source (Condition 39[b] Schedule 3 of Project Approval 10_0138). Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities to encourage reptiles that provide a potential food source (Condition 39[b] Schedule 3 of Project Approval 10_0138). 	<p>The RMP and BMP will:</p> <ul style="list-style-type: none"> describe procedures to reuse bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138). describe procedures to reuse timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).
	1c. Lack of birds as a food source (Square-tailed Kite, Spotted Harrier, Little Eagle, Barking Owl) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Plant scattered low shrubs, mid-sized shrubs and tall trees to encourage birds that provide a potential food source. Provisions of large areas of suitable woodland within the offset area to encourage birds that provide a potential food source (Prober <i>et al.</i>, 2002). 	<p>The RMP and BMP will describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.</p>
	1d. Lack of small mammals as a food source (Pale-headed Snake, Spotted Harrier, Little Eagle, Masked Owl, Barking Owl) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities to encourage small mammals that provide a potential food source (Condition 39[b] Schedule 3 of Project Approval 10_0138). Place hollow limbs/nest boxes (in young trees without hollows) from the mine vegetation clearance activities to encourage small mammals that would provide a potential food source for predators. 	<p>The RMP and BMP will describe procedures to reuse timber/hollow logs salvaged during vegetation clearance and/or suitable nest boxes (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows and/or appropriate nest boxes.</p>
<p>2. Nesting (mainly birds)</p> <p>The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform will over time provide suitable vegetation in which some threatened fauna species may nest. Additionally, salvage and re-use of logs, hollows and surface litter could facilitate other threatened fauna species to nest in the short-term.</p> <p>The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.</p>	2a. Lack of suitable vegetation (Spotted Harrier, Little Eagle, Speckled Warbler) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> As part of a diverse seed mix/tube stock planting list, plant tall tree species. As part of a diverse seed mix/tube stock planting list, plant low, dense species (Speckled Warbler). As part of a diverse seed mix/tube stock planting list, plant eucalypts (Masked Owl, Regent Honeyeater, Painted Honeyeater, Grey-crowned Babbler). As part of a diverse seed mix/tube stock planting list, plant native, tussocky grasses (Speckled Warbler). As part of a diverse seed mix/tube stock planting list, plant <i>Allocasuarina/Casuarina</i> species (Regent Honeyeater, Painted Honeyeater). As part of a diverse seed mix/tube stock planting list, plant <i>Acacia</i> species (Painted Honeyeater). 	<p>The RMP and BMP will:</p> <ul style="list-style-type: none"> describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitats. include the planting (in appropriate soil landscapes) of a variety of eucalypt species. include the planting of a variety of native grasses including tussock grass species. include the planting of <i>Allocasuarina</i> and <i>Casuarina</i> species. include the planting of <i>Acacia</i> species, including both tree and shrub varieties.
	2b. Lack of hollows (Little Lorikeet, Turquoise Parrot, Superb Parrot, Masked Owl, Squirrel Glider) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and restoration of existing habitat in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities (Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs in some select trees without hollows or as components of stag trees. 	<p>The RMP and BMP will describe procedures to reuse timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.</p>

Table 5 (Continued)
Proposed Actions Relating to Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
2. Nesting (mainly birds) (Cont.)	2c. Lack of fallen timber (Speckled Warbler) (OEH, 2014b)	Predominantly relevant to: <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of fallen timber/hollow logs from the mine vegetation clearance activities (Condition 39[b] Schedule 3 of Project Approval 10_0138). 	The RMP and BMP will describe procedures to reuse fallen timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).
	2d. Lack of suitable vegetation along/near watercourses (Square-tailed Kite, Barking Owl) (OEH, 2014b)	Predominantly relevant to watercourses in the offset areas.	<ul style="list-style-type: none"> As part of a diverse seed mix/tube stock planting list, plant trees (particularly eucalypts) along water courses (Square-tailed Kite, Barking Owl). 	The RMP and BMP will include the planting of eucalypt species along water courses where applicable within the rehabilitation area.
3. Flora (mainly for foraging and roosting habitat) The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform will over time provide suitable vegetation in which some threatened fauna species may forage and roost. The additional material provided in the columns to the right , provide specific examples of relevant threatened fauna species and how such goals can be achieved.	3a. Lack of suitable tree species (Square-tailed Kite, Spotted Harrier, Little Eagle, Little Lorikeet, Turquoise Parrot, Superb Parrot, Rainbow Bee-eater, Satin Flycatcher, Masked Owl, Barking Owl, Brown Treecreeper, Speckled Warbler, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Hooded Robin, Grey-Crowned Babbler, Varied Sittella, Diamond Firetail, Koala, Squirrel Glider, Eastern Bentwing-bat, Corben's Long-eared Bat, Large-eared Pied Bat, Little Pied Bat, Eastern False Pipistrelle, Eastern Cave Bat) (Marchant & Higgins, 1993; Environment Australia, 1999; Higgins, 1999; Barea, 2008; Churchill, 2008; Department of Environment and Climate Change, 2008; DotE, 2014b; OEH, 2014b)	Predominantly relevant to: <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Plant eucalypts (Pale-headed Snake, Little Eagle, Turquoise Parrot, Superb Parrot, Rainbow Bee-eater, Satin Flycatcher, Masked Owl, Brown Treecreeper, Speckled Warbler, Painted Honeyeater, Hooded Robin, Grey-crowned Babbler, Varied Sittella, Koala, Squirrel Glider, Corben's Long-eared Bat, Eastern Cave Bat), in particular: <ul style="list-style-type: none"> box, ironbark and gum species (Square-tailed Kite, Black-chinned Honeyeater, Painted Honeyeater, Squirrel Glider); White Box (<i>Eucalyptus albens</i>) (Little Lorikeet, Swift Parrot, Superb Parrot, Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Grey-Crowned Babbler, Diamond Firetail, Large-eared Pied Bat); Yellow Box (<i>E. melliodora</i>) (Little Lorikeet, Superb Parrot, Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Grey-Crowned Babbler, Diamond Firetail, Large-eared Pied Bat); <i>Angophora</i> species (Little Lorikeet); Swamp Mahogany (<i>E. robusta</i>)² (Swift Parrot); Mugga Ironbark (<i>E. sideroxylon</i>)² (Swift Parrot, Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater); Apple Box (<i>E. bridgesiana</i>) (Superb Parrot); Spotted Gum (<i>Corymbia maculata</i>)² and Red Bloodwood (<i>C. gummifera</i>)² (Swift Parrot); Blakely's Red Gum (<i>E. blakelyi</i>) (Superb Parrot, Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Grey-Crowned Babbler, Diamond Firetail, Large-eared Pied Bat); Manna Gum (<i>E. viminalis</i>)² (Satin Flycatcher); Red Stringybark (<i>E. macrorhyncha</i>) and Broad-leaved Stringybark (<i>E. caliginosa</i>) (Satin Flycatcher); 	The RMP and BMP will: <ul style="list-style-type: none"> include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species which are all known to occur in the Leard State Forest or offset areas, these may include: <ul style="list-style-type: none"> White Box (<i>Eucalyptus albens</i>); Yellow Box (<i>E. melliodora</i>); <i>Angophora</i> species; Apple Box (<i>E. bridgesiana</i>); Blakely's Red Gum (<i>E. blakelyi</i>); Red Stringybark (<i>E. macrorhyncha</i>); River Red Gum (<i>E. camaldulensis</i>); and Inland Grey Box (<i>E. microcarpa</i>). include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties. include the planting of <i>Allocasuarina</i> species. include the planting of <i>Casuarina</i> species include the planting of <i>Melaleuca</i> species describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.

Table 5 (Continued)
Proposed Actions Relating to Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
3. Flora (mainly for foraging and roosting habitat) (Cont.)	3a. Lack of suitable tree species (Square-tailed Kite, Spotted Harrier, Little Eagle, Little Lorikeet, Turquoise Parrot, Superb Parrot, Rainbow Bee-eater, Satin Flycatcher, Masked Owl, Barking Owl, Brown Treecreeper, Speckled Warbler, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Hooded Robin, Grey-Crowned Babbler, Varied Sittella, Diamond Firetail, Koala, Squirrel Glider, Eastern Bentwing-bat, Corben's Long-eared Bat, Large-eared Pied Bat, Little Pied Bat, Eastern False Pipistrelle, Eastern Cave Bat) (Marchant & Higgins, 1993; Environment Australia, 1999; Higgins, 1999; Barea, 2008; Churchill, 2008; Department of Environment and Climate Change, 2008; DotE, 2014b; OEH, 2014b) (Cont.)		<ul style="list-style-type: none"> - stringybark species (Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater); - rough-barked species (Brown Treecreeper, Varied Sittella); - River Red Gum (<i>E. camaldulensis</i>) (Superb Parrot, Brown Treecreeper, Squirrel Glider, Corben's Long-eared Bat, Little Pied Bat); - Inland Grey Box (<i>E. microcarpa</i>) (Superb Parrot, Black-chinned Honeyeater); and - Forest Red Gum (<i>E. tereticornis</i>)² (Black-chinned Honeyeater). - smooth-barked gum species (Black-chinned Honeyeater, Varied Sittella); - Snow Gum (<i>E. pauciflora</i>)² (Diamond Firetail); and - Black Box (<i>E. largiflorens</i>)² (Corben's Long-eared Bat, Little Pied Bat). • Plant <i>Acacia</i> tree species (Spotted Harrier, Little Eagle, Barking Owl, Brown Treecreeper, Painted Honeyeater, Squirrel Glider and Little Pied Bat). • Plant <i>Allocasurina</i> species (Little Eagle). • Plant <i>Casuarina</i> species (Little Eagle, Barking Owl, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater) in particular: <ul style="list-style-type: none"> - River Oak (<i>Casuarina cunninghamiana</i>) (Regent Honeyeater). • Plant <i>Melaleuca</i> species (Little Lorikeet, Eastern Bentwing-bat). • Plant tall tree species (Eastern False Pipistrelle). 	
	3b. Lack of suitable shrubs (Square-tailed Kite, Spotted Harrier, Brown Treecreeper) (OEH, 2014b)	Predominantly relevant to: <ul style="list-style-type: none"> • establishment of habitat on the post-mine landform; • re-establishment of habitat from derived grasslands in the offset areas; and • re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> • Plant <i>Acacia</i> shrub species (Square-tailed Kite, Spotted Harrier, Hooded Robin). • Plant native shrubs (Brown Treecreeper). • Plant tall shrub species (Grey-crowned Babbler). • Plant dense shrub species (Diamond Firetail). 	The RMP and BMP will: <ul style="list-style-type: none"> • include the planting of <i>Acacia</i> species, including both tree and shrub varieties including shrub varieties. • include the planting of a variety of native shrubs. • describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.
	3c. Lack of suitable ground cover (Square-tailed Kite, Spotted Harrier, Turquoise Parrot, Rainbow Bee-eater, Satin Flycatcher, Brown Treecreeper, Speckled Warbler, Hooded Robin, Grey-crowned Babbler, Diamond Firetail) (DotE, 2014b; OEH, 2014b)	Predominantly relevant to: <ul style="list-style-type: none"> • establishment of habitat on the post-mine landform; • re-establishment of habitat from derived grasslands in the offset areas; and • re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> • Plant native grasses. • Plant native herbs (Turquoise Parrot, Diamond Firetail). • Plant native forbs (Grey-crowned Babbler). 	The RMP and BMP will include the planting of a variety of native grasses, herbs and forbs.

Table 5 (Continued)
Proposed Actions Relating to Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
3. Flora (mainly for foraging and roosting habitat) (Cont.)	3c. Lack of suitable ground cover (Square-tailed Kite, Spotted Harrier, Turquoise Parrot, Rainbow Bee-eater, Satin Flycatcher, Brown Treecreeper, Speckled Warbler, Hooded Robin, Grey-crowned Babbler, Diamond Firetail) (DotE, 2014b; OEH, 2014b) (Cont.)	Predominantly relevant to: <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Correct spacing for species when planting seedlings. 	<ul style="list-style-type: none"> The RMP and BMP will provide application rates for seeds as well as planting densities for tube stock.
	3d. Dense shrub layer (Brown Treecreeper, Speckled Warbler) (OEH, 2014b)	Predominantly relevant to: <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Correct spacing for species when planting seedlings. 	<ul style="list-style-type: none"> The RMP and BMP will provide application rates for seeds as well as planting densities for tube stock.
	3e. Poor floristic diversity (Koala) (Department of Environment and Climate Change, 2008; OEH, 2014b)	Predominantly relevant to: <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Control for floristic diversity be means of planting a high number of both eucalypt and non-eucalypt species (Koala). 	<ul style="list-style-type: none"> The RMP and BMP will aim to include a wide diversity of species in the seed mix.
4. Remnant Area and Ecological Connectivity The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform will over time increase the size of the existing vegetation patches. The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.	4a. Small patch area are size (Barking Owl, Speckled Warbler, Black-chinned Honeyeater, Grey-crowned Babbler) (OEH, 2014b)	Predominantly relevant to: <ul style="list-style-type: none"> re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Increase woodland patch area within the offset area (Prober <i>et al.</i>, 2002). 	<ul style="list-style-type: none"> The BMP will focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity through revegetation to create linkages.
5. Structural Diversity The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform, together with the salvage and re-use of logs, hollows and surface litter, will over time provide a range of suitable habitats for threatened fauna species. The additional material provided in the columns to the right provide specific examples of relevant threatened fauna species and how such goals can be achieved.	5a. Lack of dead stumps or fallen timber (Turquoise Parrot, Barking Owl, Brown Treecreeper, Speckled Warbler, Regent Honeyeater, Hooded Robin, Varied Sittella, Diamond Firetail, Eastern Cave Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities (Condition 39[b] Schedule 3 of Project Approval 10_0138). Restriction on firewood collection (OEH, 2014b). Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities (Condition 39[b] Schedule 3 of Project Approval 10_0138). Place hollow limbs in young trees without hollows in particular: <ul style="list-style-type: none"> in eucalypts (Pale-headed Snake, Eastern False Pipistrelle). 	<ul style="list-style-type: none"> The BMP will not permit firewood collection. The RMP and BMP will describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.
	5b. Lack of tree hollows (Pale-headed Snake, Superb Parrot, Brown Treecreeper, Yellow-bellied Sheath-tail-bat, Corben's Long-eared Bat, Little Pied Bat, Eastern False Pipistrelle) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.		
6. Feral Animals The RMP and BMP will describe procedures to monitor, prevent and control feral animals in the ongoing restoration, replanting and remediation phase of the Project. The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.	6a. Loss of food sources or indirect poisoning as a results of use of pesticides, insecticides or herbicides (Spotted Harrier, Little Eagle, Masked Owl, Yellow-bellied Sheath-tail-bat, Eastern Bentwing-bat, Corben's Long-eared Bat, Large-eared Pied Bat, Little Pied Bat, Eastern False Pipistrelle, Eastern Cave Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Limit use of pesticides used in suitable native habitat (OEH, 2014b). Use herbicides sparingly (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods) (DSE, 2005; Rawlings <i>et al.</i>, 2010; DECCW, 2011). 	<p>The RMP and BMP will provide:</p> <ul style="list-style-type: none"> methods for the safe use of pesticides. methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).

Table 5 (Continued)
Proposed Actions Relating to Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance	Actions
6. Feral Animals (Cont.)	6b. Competition with introduced Honeybees/ exotic birds for nectar, pollen and tree hollows (Little Lorikeet, Superb Parrot, Squirrel Glider) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Management of Honeybees¹. Management of exotic bird species. 	<ul style="list-style-type: none"> The RMP and BMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
	6c. Predation by feral animals (including foxes, cats, exotic birds and dogs) (Turquoise Parrot, Fork-tailed Swift, Rainbow Bee-eater, Speckled Warbler, Koala, Eastern Bentwing-bat, Little Pied Bat, Eastern Cave Bat) (DotE, 2014b; OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Undertake feral predator control. 	<ul style="list-style-type: none"> As above.
	6d. Disturbance to roosting sites by goats (Large-eared Pied Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Monitoring and control feral pigs and goats (Eddy, 2002; Rawlings <i>et al.</i>, 2010). 	<ul style="list-style-type: none"> As above.
7. Weeds The RMP will describe procedures to prevent, monitor and control weeds. The RMP will also describe relevant targets and performance indicators for weed management. The additional material provided in the columns to the right , provide specific examples of relevant threatened fauna species and how such goals can be achieved.	7a. Invasion of weeds, resulting in loss of important food plants (Varied Sittella, Diamond Firetail, Eastern Bentwing-bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Weed control (Condition 27[a] of the Approval Decision EPBC 2010/5566). 	<ul style="list-style-type: none"> The RMP will describe procedures to prevent, monitor and control weeds. The RMP will also describe relevant targets and performance indicators for weed management (consistent with Condition 27[a] of the Approval Decision EPBC 2010/5566).
8. Regeneration The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform, together with the salvage and re-use of logs, hollows and surface litter, will over time provide a range of suitable habitats for threatened fauna species. The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.	8a. Poor regeneration of habitat (Superb Parrot, Speckled Warbler, Black-chinned Honeyeater, Diamond Firetail) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Encourage regeneration by fencing (OEH, 2014b). Undertake new plantings (OEH, 2014b), Reduce intensity of grazing (OEH, 2014b). 	<ul style="list-style-type: none"> Encouraging regeneration of native fauna habitat is an aim of the RMP and BMP through measures such as fencing, planting and grazing management.
9. Management See additional description provide in column one above.	9a. Too frequent grazing management (Pale-headed Snake, Square-tailed Kite, Turquoise Parrot, Masked Owl, Barking Owl, Brown Treecreeper, Speckled Warbler, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Hooded Robin, Grey-crowned Babbler, Varied Sittella, Diamond Firetail, Large-eared Pied Bat, Eastern Cave Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Fencing of areas undergoing revegetation to exclude grazing livestock and prevent grazing of seedlings (Eddy, 2002). Maintenance of fencing used to exclude livestock. Restriction of livestock access to maintain ground cover. Low stocking rates. 	<ul style="list-style-type: none"> The RMP and BMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding). The BMP will describe management of livestock to maintain ground cover and diversity of native plants.
	9b. Too frequent burning management (Pale-headed Snake, Square-tailed Kite, Masked Owl, Barking Owl, Speckled Warbler, Koala, Large-eared Pied Bat, Eastern Cave Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Assess fuel loads. DECCW (2011) suggests fire frequency should be a minimum interval of 5 years and a maximum interval of 40 years. Rawlings <i>et al.</i> (2010) recommends fire frequency in patches should be every 4 to 8 years. Controlled burns should be undertaken in a mosaic (i.e. retain some unburned areas (DECCW, 2011). 	<ul style="list-style-type: none"> The RMP will describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing). The BMP will prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).

¹ Not proposed.

² This species has not been recorded in the surrounds of the area to be rehabilitated and is therefore not proposed to be planted.

Table 6
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act ¹	EPBC Act ²			
Reptiles						
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will</p> <ul style="list-style-type: none">describe procedures to maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities to encourage prey for this species.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).	<p>The BMP will</p> <ul style="list-style-type: none">describe procedures to maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities to encourage prey for this species.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).
Birds						
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">provide for establishing vegetation cover as soon as practicable following disturbance to minimise the potential for erosion and weeds. This will involve the application of a temporary sterile cover crop (or native grasses) using species that are not likely to impede revegetation of the Box-Gum Woodland;describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding);provide methods for the use of herbicides sparingly as part of weed control (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods); anddescribe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.	<p>The BMP will describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.</p>
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will</p> <ul style="list-style-type: none">describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting of eucalypt species along water courses where applicable within the rehabilitation area.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species including box, ironbark and gum species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties.include the planting of a variety of native grasses.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).	<p>The BMP will</p> <ul style="list-style-type: none">describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.include the planting (in appropriate soil landscapes) of eucalypt species along water courses.include the planting of a variety of box, ironbark and gum eucalypt species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties.include the planting of a variety of native grasses.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Birds (Cont.)						
<i>Circus assimilis</i>	Spotted Harrier	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance to encourage prey for this species (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows to encourage prey for this species.describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.include the planting of a variety of native grasses.provide methods for the safe use of pesticides.	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance to encourage prey for this species (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows to encourage prey for this species.describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.include the planting of a variety of native grasses.provide methods for the safe use of pesticides.
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance to encourage prey for this species (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance to encourage prey for this species (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.include the planting of <i>Casuarina</i> species.provide methods for the safe use of pesticides.	<p>The BMP will</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance to encourage prey for this species (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance to encourage prey for this species (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.include the planting of <i>Casuarina</i> species.provide methods for the safe use of pesticides.
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); and<i>Angophora</i> species.include the planting of <i>Melaleuca</i> species.	<p>The BMP will</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); and<i>Angophora</i> species.include the planting of <i>Melaleuca</i> species.

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Birds (Cont.)						
<i>Potytelis swainsonii</i>	Superb Parrot	V	V	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Apple Box (<i>E. bridgesiana</i>);Blakely's Red Gum (<i>E. blakelyi</i>); andInland Grey Box (<i>E. microcarpa</i>).	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Apple Box (<i>E. bridgesiana</i>);Blakely's Red Gum (<i>E. blakelyi</i>);andInland Grey Box (<i>E. microcarpa</i>).
<i>Neophema pulchella</i>	Turquoise Parrot	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of a variety of native grasses.include the planting of a variety of native herbs.describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of a variety of native grasses.include the planting of a variety of native herbs.not permit firewood collection.describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.
<i>Lathamus discolour</i>	Swift Parrot	E	E	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<ul style="list-style-type: none">The RMP will include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including White Box (<i>Eucalyptus albens</i>) and Mugga Ironbark (<i>E. sideroxylon</i>)¹.	<p>The BMP will include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including White Box (<i>Eucalyptus albens</i>).</p>
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	M	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<ul style="list-style-type: none">General rehabilitation of the post-mine landform.	<ul style="list-style-type: none">General enhancement of the offset areas.

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Birds (Cont.)						
<i>Apus pacificus</i>	Fork-tailed Swift	-	M	The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources. The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.	<ul style="list-style-type: none">The RMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).	<ul style="list-style-type: none">The BMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
<i>Merops ornatus</i>	Rainbow Bee-eater	-	M	The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources. The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.	The RMP will <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of a variety of native grasses.describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).	The BMP will <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of a variety of native grasses.describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	-	M	The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources. The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.	The RMP will <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Blakely’s Red Gum (<i>E. blakelyi</i>); andManna Gum (<i>E. ciminalis</i>).include the planting of a variety of native grasses.	The BMP will <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Blakely’s Red Gum (<i>E. blakelyi</i>); andRed Stringybark (<i>E. macrorhyncha</i>).include the planting of a variety of native grasses.
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources. The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.	The RMP will <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).	The BMP will <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Birds (Cont.)						
<i>Ninox connivens</i>	Barking Owl	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.include the planting (in appropriate soil landscapes) of eucalypt species along water courses where applicable within the rehabilitation area.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.include the planting of <i>Casuarina</i> species.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.include the planting (in appropriate soil landscapes) of eucalypt species along water courses where applicable within the rehabilitation area.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.include the planting of <i>Casuarina</i> species.not permit firewood collection.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).
<i>Climacteris picumnus victoricae</i>	Brown Treecreeper (eastern subspecies)	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Mugga Ironbark (<i>E. sideroxylon</i>)¹;Blakely’s Red Gum (<i>E. blakelyi</i>);stringybark species; andrough-barked species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.include the planting of a variety of native shrubs.include the planting of a variety of native grasses.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); andBlakely’s Red Gum (<i>E. blakelyi</i>).include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.include the planting of a variety of native shrubs.include the planting of a variety of native grasses.not permit firewood collection.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Birds (Cont.)						
<i>Chthonicola sagittata</i>	Speckled Warbler	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting of a variety of native grasses including tussock grass species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).	<p>The BMP will:</p> <ul style="list-style-type: none">describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting of a variety of native grasses including tussock grass species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.not permit firewood collection.describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Blakely’s Red Gum (<i>E. blakelyi</i>); andInland Grey Box (<i>E. microcarpa</i>).include the planting of <i>Casuarina</i> species.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Blakely’s Red Gum (<i>E. blakelyi</i>); andInland Grey Box (<i>E. microcarpa</i>).include the planting of <i>Casuarina</i> species.focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Birds (Cont.)						
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	E	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Mugga Ironbark (<i>E. sideroxylon</i>)¹; andBlakely's Red Gum (<i>E. blakelyi</i>).include the planting of <i>Allocasuarina</i> and <i>Casuarina</i> species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); andBlakely's Red Gum (<i>E. blakelyi</i>).include the planting of <i>Allocasuarina</i> and <i>Casuarina</i> species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).not permit firewood collection.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.
<i>Grantiella picta</i>	Painted Honeyeater	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.include the planting of <i>Allocasuarina</i> and <i>Casuarina</i> species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); andBlakely's Red Gum (<i>E. blakelyi</i>).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting of <i>Allocasuarina</i> and <i>Casuarina</i> species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); andBlakely's Red Gum (<i>E. blakelyi</i>).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Birds (Cont.)						
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including shrub varieties.include the planting of a variety of native grasses.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including shrub varieties.include the planting of a variety of native grasses.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).not permit firewood collection.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); andBlakely’s Red Gum (<i>E. blakelyi</i>).describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting of a variety of native grasses.include the planting of a variety of native forbs.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); andBlakely’s Red Gum (<i>E. blakelyi</i>).describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting of a variety of native grasses.include the planting of a variety of native forbs.focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Birds (Cont.)						
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">rough-barked species; andsmooth-barked species.describe procedures to prevent, monitor and control weeds. The RMP will also describe relevant targets and performance indicators for weed management (consistent with Condition 27[a] of the Approval Decision EPBC 2010/5566).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">rough-barked species; andsmooth-barked species.not permit firewood collection.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.
<i>Stagonopleura guttata</i>	Diamond Firetail	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>);Blakely's Red Gum (<i>E. blakelyi</i>); andSnow Gum (<i>E. pauciflora</i>)¹.describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting of a variety of native grasses.include the planting of a variety of native herbs.describe procedures to prevent, monitor and control weeds. The RMP will also describe relevant targets and performance indicators for weed management (consistent with Condition 27[a] of the Approval Decision EPBC 2010/5566).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).	<p>The BMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, these may include:<ul style="list-style-type: none">White Box (<i>Eucalyptus albens</i>);Yellow Box (<i>E. melliodora</i>); andBlakely's Red Gum (<i>E. blakelyi</i>).describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.include the planting of a variety of native grasses.include the planting of a variety of native herbs.not permit firewood collection.describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Mammals						
<i>Phascolarctos cinereus</i>	Koala	V	V	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.aim to include a wide diversity of species in the seed mix.describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).	<p>The BMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.aim to include a wide diversity of species in the seed mix.describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.include the planting of <i>Acacia</i> species, including both tree and shrub varieties including tree varieties.
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).	<p>The BMP will:</p> <ul style="list-style-type: none">describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">include the planting of <i>Melaleuca</i> species.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe procedures to prevent, monitor and control weeds. The RMP will also describe relevant targets and performance indicators for weed management (consistent with Condition 27[a] of the Approval Decision EPBC 2010/5566).	<p>The BMP will:</p> <ul style="list-style-type: none">include the planting of <i>Melaleuca</i> species.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Mammals (Cont.)						
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat (Listed as South-eastern Long-eared Bat under EPBC)	V	V	The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources. The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.	The RMP will: <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).	The BMP will: <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources. The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.	The RMP will: <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including White Box (<i>Eucalyptus albens</i>) and Yellow Box (<i>E. melliodora</i>).provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).	The BMP will: <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species, including White Box (<i>Eucalyptus albens</i>) and Yellow Box (<i>E. melliodora</i>).provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).
<i>Chalinolobus picatus</i>	Little Pied Bat	V	-	The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources. The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.	The RMP will: <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).	The BMP will: <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).

Table 6 (Continued)
A Summary of Actions Relevant to Threatened Fauna

Scientific Name	Common Name	Conservation Status		General Aim	Actions Relevant to the Rehabilitation Strategy	Actions Relevant to the Biodiversity Offset Strategy
		TSC Act	EPBC Act			
Mammals (Cont.)						
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).	<p>The BMP will:</p> <ul style="list-style-type: none">describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V	-	<p>The restoration of native vegetation communities in the offset areas and/or revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide potential habitat for this species including its required food and breeding resources.</p> <p>The additional material provided in the columns to the right, provide specific examples of how such goals can be achieved.</p>	<p>The RMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).	<p>The BMP will:</p> <ul style="list-style-type: none">include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species.describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).not permit firewood collection.provide methods for the safe use of pesticides.provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).describe management of livestock to maintain ground cover and diversity of native plants.prescribe any controlled burns in patches of Box-Gum Woodland EEC to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).

¹ This species has not been recorded in the surrounds of the area to be rehabilitated and is therefore not proposed to be planted.

4 IMPLEMENTATION PLAN

There are two parts to the implementation plan:

- the first part of the implementation plan relates to the mine rehabilitation (Rehabilitation Strategy) (Table 7); and
- the second part of the implementation plan relates to the offset areas (Biodiversity Offset Strategy) (Table 8).

The investigation has resulted in the identification of 22 individual actions relating to the Rehabilitation Strategy (Table 7) and 21 individual actions relating to the Biodiversity Offset Strategy (Table 8). Once approved by DP&E, the actions in Table 7 will be addressed in a revised RMP and the actions in Table 8 will be addressed in a revised BMP (due to submission to the DP&E in April 2015) (Figure 5).

The actions listed in Table 7 will apply to different situations associated with rehabilitation of the mine disturbance areas. For example, some actions may be relevant to the revegetation of less disturbed areas (such as the soil stockpile locations or infrastructure areas) and others would be relevant to the revegetation of more disturbed areas (such as the backfilled mine void and waste dumps). The application of the actions will be described in the RMP.

Similarly, all of the actions listed in Table 8 may not necessarily apply across the entire offset area and will depend on the situation such as the current condition of the vegetation. For example, weed control may only be relevant to particular weed infested areas. Particular actions may also be trialled in certain areas to determine which are more effective. The application of the actions will be further detailed in a revision to the BMP.

The actions listed in Tables 7 and 8 are not necessarily the only actions that will be considered in the future to improve the prospects of the Rehabilitation Strategy and Biodiversity Offset Strategy. Actions may be modified over time to adapt to management outcomes, new threatening processes (e.g. a new weed incursion) or to apply new techniques and technologies. Any changes will be facilitated through revisions to the BMP.

As stated in Section 3, the restoration of native vegetation communities in the offset areas and revegetation of the post mine landform, together with the provision of supplementary habitat resources, will over time provide a range of habitats that can be used by threatened fauna species. The provision of suitable habitats does not in itself ensure the presence of any such species in the restored or remediated landscapes in the future. However it is possible to seek to optimise the potential for such species to ultimately locate into these landscapes.

Table 7
Implementation Plan for Provision of Habitat for Threatened Fauna on Mine Rehabilitation

Actions for Implementing the Rehabilitation Strategy in the RMP	
Seed and Tube Stock Supply	
1.	The RMP will describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.
Revegetation	
2.	The RMP will provide for establishing vegetation cover as soon as practicable following disturbance to minimise the potential for erosion and weeds. This will involve the application of a temporary sterile cover crop (or native grasses) using species that are not likely to impede revegetation of the Box-Gum Woodland.
3.	The RMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).
4.	The RMP will include the planting of a variety of native grasses including tussock grass species.
5.	The RMP will include the planting of <i>Allocasuarina</i> or <i>Casuarina</i> species.
6.	The RMP will include the planting of <i>Acacia</i> species, including both tree and shrub varieties.
7.	The RMP will include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species including: <ul style="list-style-type: none"> - White Box (<i>Eucalyptus albens</i>); - Yellow Box (<i>E. melliodora</i>); - <i>Angophora</i> species; - Apple Box (<i>E. bridgesiana</i>); - Blakely's Red Gum (<i>E. blakelyi</i>); - Red Stringybark (<i>E. macrorhyncha</i>); and - Inland Grey Box (<i>E. microcarpa</i>).
8.	The RMP will include the planting of <i>Melaleuca</i> species.
9.	The RMP will include the planting of a variety of native shrubs.
10.	The RMP will include the planting of a variety of native herbs.
11.	The RMP will include the planting of a variety of native forbs.
12.	The RMP will provide application rates for seeds as well as planting densities for tube stock.
13.	The RMP will aim to include a wide diversity of species in the seed mix.
14.	The RMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).
Habitat Features	
15.	The RMP will describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).
16.	The RMP will describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.
17.	The RMP will describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.
Feral Animal Management	
18.	The RMP will provide methods for the safe use of pesticides.
19.	The RMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).

Table 7 (Continued)
Implementation Plan for Provision of Habitat for Threatened Fauna on Mine Rehabilitation

Actions for Implementing the Rehabilitation Strategy in the RMP	
Weed Management	
20.	The RMP will describe procedures to prevent, monitor and control weeds. The RMP will also describe relevant targets and performance indicators for weed management (consistent with Condition 27[a] of the Approval Decision EPBC 2010/5566).
21.	The RMP will provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).
Fire Management	
22.	The RMP will describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).

Table 8
Implementation Plan for the Provision of Habitat for Threatened Fauna in the Offset Areas

Actions for Implementing the Biodiversity Offset Strategy in the BMP	
Revegetation , Seeds and Tube Stock	
1.	The BMP will describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.
2.	The BMP will aim to include a wide diversity of species in the seed mix.
3.	The BMP will include the planting of <i>Allocasuarina</i> or <i>Casuarina</i> species.
4.	The BMP will include the planting of <i>Acacia</i> species, including both tree and shrub varieties.
5.	The BMP will include the planting of a variety of box, ironbark and gum eucalypt species including: <ul style="list-style-type: none"> - White Box (<i>Eucalyptus albens</i>); - Yellow Box (<i>E. melliodora</i>); - <i>Angophora</i> species; - Apple Box (<i>E. bridgesiana</i>); - River Red Gum (<i>E. camaldulensis</i>); - Blakely's Red Gum (<i>E. blakelyi</i>); - Red Stringybark (<i>E. macrorhyncha</i>); and - Inland Grey Box (<i>E. microcarpa</i>).
6.	The BMP will include the planting of <i>Melaleuca</i> species.
7.	The BMP will include the planting of a variety of native shrubs.
8.	The BMP will include the planting of a variety of native grasses, including tussock grass species.
9.	The BMP will include the planting of a variety of native herbs.
10.	The BMP will include the planting of a variety of native forbs.
11.	The BMP will focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.
Habitat Features	
12.	The BMP will describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).
13.	The BMP will describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.
14.	The BMP will not permit firewood collection.

Table 8 (Continued)
Implementation Plan for the Provision of Habitat for Threatened Fauna in the Offset Areas

Actions for Implementing the Biodiversity Offset Strategy in the BMP	
<i>Grazing Management</i>	
15.	The BMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).
16.	The BMP will describe management of livestock to maintain ground cover and diversity of native plants.
<i>Weed Management</i>	
17.	The BMP will provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).
<i>Feral Animal Management</i>	
18.	The BMP will provide methods for the safe use of pesticide.
19.	The BMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
<i>Fire Management</i>	
20.	The BMP will describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken whilst vegetation is establishing).
21.	The BMP will prescribe any controlled burns in patches of Box-Gum Woodland EEC (existing woodland or derived grasslands) to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors (except in revegetation areas).

¹ This species will be planted as a dominant species within woodland habitat.

As recognised in Section 3, many of the threatened fauna species that are the subject of this report (and listed in Table 2) use the Box-Gum Woodland as habitat. The Box-Gum Woodland EEC Implementation Plan identified 46 individual actions relating to the Rehabilitation Strategy (Table 9) and 52 individual actions relating to the Biodiversity Offset Strategy (Table 10). Once approved by DP&E, these actions will also be incorporated into the relevant plans as described in the Box-Gum Woodland EEC Implementation Plan (Whitehaven, 2014d).

Table 9
Implementation Plan for Re-establishing Box-Gum Woodland in the Mine Rehabilitation Phase

Actions for Implementing the Rehabilitation Strategy in the RMP	
<i>Planning</i>	
1.	The RMP will define the objectives for the Box-Gum Woodland EEC.
2.	The RMP will discuss an adaptive management framework and monitoring programme for the management of the Box-Gum Woodland EEC.
3.	The RMP will include monitoring of landscape function.
4.	The RMP will describe roles for suitability qualified personnel (e.g. restoration ecologist to provide direction about the rehabilitation and restoration of the Box-Gum Woodland EEC).
<i>Landform Design</i>	
5.	The RMP will describe how the batter slopes have been designed to minimise instability of the final landform.
<i>Soil Stripping and Handling</i>	
6.	The RMP will provide for soil surveys and inventories to be undertaken prior to soil stripping (consistent with Condition 27[c] of the Approval Decision EPBC 2010/5566 and condition 39 Schedule 3 of Project Approval 10_0138).
7.	The RMP will provide for selective identification and placement (burial) of potentially acid forming interburden materials (consistent with Condition 39[c] Schedule 3 of Project Approval 10_0138).
8.	The RMP will provide for selective identification and placement (burial) of soils unsuitable for use as a growth media.
9.	The RMP will provide soil handling processes for removal, storage and re-layering of topsoil and subsoil (consistent with Condition 27[d] of the Approval Decision EPBC 2010/5566). This will specifically detail the stripping of topsoil likely to contain seeds.

Table 9 (Continued)
Implementation Plan for Re-establishing Box-Gum Woodland in the Mine Rehabilitation Phase

Actions for Implementing the Rehabilitation Strategy in the RMP	
<i>Soil Stripping and Handling (Cont.)</i>	
10.	The RMP will provide for annual soil balances to be undertaken to facilitate management of soil handling (consistent with Condition 39 Schedule 3 of Project Approval 10_0138).
11.	The RMP will provide options for minimising the risk of erosion including treatment of dispersive soils and spoils, as well as use of structural erosion controls (e.g. channel banks, slope drains and energy dissipaters).
12.	The RMP will describe minimum topsoil and subsoil depths for revegetation (consistent with Condition 26[b] of the Approval Decision EPBC 2010/5566).
13.	The RMP will describe the incorporation of vegetative material (cleared at the mine site) into the soil used for rehabilitation or as mulch.
<i>Soil Testing</i>	
14.	The RMP will provide parameters for the physical and chemical characteristics of topsoils and overburden based on likely suitable characteristics for establishment of Box-Gum Woodland.
15.	The RMP will provide for soil testing to be undertaken on topsoil and overburden to identify issues with physical and chemical characteristics as well as determine amelioration requirements and rates.
<i>Soil Amelioration</i>	
16.	The RMP will describe options for ameliorating soils to improve the suitability of the soils as a growth media (e.g. amelioration with agricultural gypsum, compost (i.e. mulch saved during clearing activities) or native plant fertilisers depending on the nutrient deficiency).
<i>Surface Preparation</i>	
17.	The RMP will describe site preparation (e.g. ripping or use of spike rollers) to reduce soil compaction impacting the success of the revegetation.
18.	The RMP will consider the use of benign (hard rock) mulch to stabilise batter surfaces.
<i>Research Trials</i>	
19.	The RMP will describe research that will aim to identify effective methodologies for achieving rehabilitation and revegetation of Box-Gum Woodland on the mine rehabilitation (consistent with Condition 15 of the Approval Decision EPBC 2010/5566).
20.	The RMP will provide for soil seed bank germination testing to be undertaken on topsoil stockpiles.
21.	The RMP will provide for rehabilitation trials (focusing on rehabilitation and revegetation of Box-Gum Woodland) to be undertaken on different rehabilitation substrates.
<i>Seed and Tube Stock Supply</i>	
22.	The RMP will describe procedures for seed collection, management and storage following the relevant Florabank guidelines. The RMP will describe procedures for sowing seed (e.g. appropriate sowing depths).
23.	The RMP will describe a seed and tube stock supply strategy including calculation of the amount and species of seed and tube stock required each year and how the seed and tube stock will be sourced and managed to meet the demand.
24.	The RMP will provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source.
<i>Revegetation</i>	
25.	The RMP will provide for establishing vegetation cover as soon as practicable following disturbance to minimise the potential for erosion and weeds. This will involve the application of a temporary sterile cover crop (or native grasses) using species that are not likely to impede revegetation of the Box-Gum Woodland.
26.	The RMP will provide options for remediating erosion including adjust seed and planting densities to maximise ground cover.
27.	The RMP will describe that vehicle access will be predominantly restricted to designated tracks on mine landforms that have been revegetated to minimise ground disturbance (e.g. compaction).
28.	The RMP will provide for selective use of slow-release native plant fertiliser to promote plant growth (if required).
29.	The RMP will describe a contingency for supplementary seeding/tube stock planting if the regeneration from the soil seed bank is not sufficient.
30.	The RMP will provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading.
31.	The RMP will provide measures to improve understorey diversity (e.g. replanting, causing disturbance through fire or grazing).

Table 9 (Continued)
Implementation Plan for Re-establishing Box-Gum Woodland in the Mine Rehabilitation Phase

Actions for Implementing the Rehabilitation Strategy in the RMP	
Revegetation (Cont.)	
32.	The RMP will describe that revegetation at the mine would not be cleared (unless for ecological thinning, maintenance or access for monitoring).
33.	The RMP will include provision to assess vegetation density and undertake ecological thinning (e.g. through selective clearance or fire) if necessary.
34.	The RMP include sowing of Kangaroo Grass (as this species is known to out-compete annual grass weeds and provide inter tussock spaces for a diversity of ground cover species [eg. wildflowers]).
35.	The RMP will describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.
36.	The RMP will provide an option for using tree guards to protect young seedlings from browsing or grazing native animals.
37.	The RMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).
38.	The RMP will describe how the growth and survival of the vegetation sown or planted will be monitored.
39.	The RMP will aim to include a wide diversity of species in the seed mix.
40.	The RMP will include hygiene protocols to minimise the risk of plant diseases (i.e. restricting site access).
41.	The RMP will include provision to review the need for kangaroo control measures.
Habitat Features	
42.	The RMP will describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).
43.	The RMP will describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including: <ul style="list-style-type: none"> - placement of hollow limbs or artificial hollows in some select trees without hollows; and - use of artificial stag trees on the mine rehabilitation.
Feral Animal Management	
44.	The RMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
Weed Management	
45.	The RMP will provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).
Fire Management	
46.	The RMP will describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken on the mine rehabilitation whilst vegetation is establishing).

Table 10
Implementation Plan for the Box-Gum Woodland in the Offset Areas

Actions for Implementing the Biodiversity Offset Strategy in the BMP	
Planning	
1.	The BMP will define the objectives for the Box-Gum Woodland EEC.
2.	The BMP will discuss an adaptive management framework and monitoring programme for the management of the Box-Gum Woodland EEC.
3.	The BMP will include a visual inspection of each mapped vegetation management unit in each offset area to identify constraints and requirements for specific management measures.
4.	The BMP will describe targeted revegetation along drainage lines and scalded areas to minimise risk of erosion.
5.	The BMP will aim to maximise the re-use of existing infrastructure (e.g. access roads) instead of creating new infrastructure.
6.	The BMP will aim to locate new offset area management infrastructure (e.g. access roads) preferentially in cleared land.
7.	The BMP will aim to locate new offset area management infrastructure (e.g. access roads) in stable locations.

Table 10 (Continued)
Implementation Plan for the Box-Gum Woodland in the Offset Areas

Actions for Implementing the Biodiversity Offset Strategy in the BMP	
Planning (Cont.)	
8.	The BMP will describe provision of fencing and signage around the perimeter of the offset areas to manage livestock and avoid accidental clearance.
9.	The BMP will describe roles for suitability qualified personnel (e.g. restoration ecologist to provide direction about the rehabilitation and restoration of the Box-Gum Woodland EEC).
Soil Testing and Nutrient Management	
10.	The BMP will provide for soil testing to be undertaken on soils in revegetation areas to identify issues with physical and chemical characteristics as well as determine amelioration requirements and rates.
11.	The BMP will describe the following nutrient reduction options and the relevant situations where they would be applied: <ul style="list-style-type: none"> - crash grazing periodically to remove nutrients locked in weeds; - restriction of livestock access to limit further nutrient enrichment; and - controlled burns.
Surface Preparation	
12.	The BMP will describe site preparation in cleared land (e.g. ripping or use of spiked rollers) and (where relevant) in derived grassland (e.g. use of spiked rollers) to reduce soil compaction impacting the success of the revegetation.
13.	The BMP will restrict the use of revegetation techniques that involve high level of physical disturbance in existing Box-Gum Woodland and derived grasslands.
Revegetation, Seeds and Tube Stock	
14.	The BMP will describe a seed and tube stock supply strategy including calculation of the amount and species of seed and tube stock required each year and how the seed and tube stock will be sourced and managed to meet the demand.
15.	The BMP will describe procedures for strategic and long term seed collection, management and storage following the relevant Florabank guidelines. The BMP will describe procedures for sowing seed (e.g. appropriate sowing depths).
16.	The BMP will favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required.
17.	The RMP will provide for the preferential use of local endemic (adapted) species, however consideration would be given to the use of a high quality seed source further from the site over a low quality more local seed source.
18.	The BMP will provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading.
19.	The BMP will focus on increasing woodland patch size within the offset area and aim to enhance ecological connectivity.
20.	The BMP will describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.
21.	The BMP include sowing of Kangaroo Grass (as this species is known to out-compete annual grass weeds and provide inter tussock spaces for a diversity of ground cover species [eg. wildflowers]).
22.	The BMP will aim to include a wide diversity of species in the seed mix.
23.	The BMP will include provision to review the need for kangaroo control measures.
Maintenance	
24.	The BMP will include provision to assess vegetation density and undertake ecological thinning (e.g. through selective clearance or fire) if necessary.
25.	The BMP will provide measures to improve understorey diversity (e.g. replanting, causing disturbance through fire or grazing).
26.	The BMP will provide for selective use of slow-release native plant fertiliser to promote plant growth (if required).
27.	The BMP will provide an option for using tree guards to protect young seedlings from browsing or grazing native animals.
28.	The BMP will describe how the growth and survival of the vegetation sown or planted will be monitored.
29.	The BMP will include hygiene protocols to minimise the risk of plant diseases (i.e. restricting site access).
30.	The BMP will describe a restriction of clearing (unless for ecological thinning, maintenance or access for monitoring).

Table 10 (Continued)
Implementation Plan for the Box-Gum Woodland in the Offset Areas

Actions for Implementing the Biodiversity Offset Strategy in the BMP	
Habitat Features	
31.	The BMP will describe procedures to reuse of bush rocks salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138).
32.	The BMP will describe procedures to reuse of timber/hollow logs salvaged during vegetation clearance (consistent with Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs or artificial hollows in some select trees without hollows.
33.	The BMP will not permit firewood collection.
Grazing Management	
34.	The BMP will describe restriction of livestock access to erosion prone areas (e.g. along watercourses).
35.	The BMP will describe how livestock will be excluded from areas undergoing active revegetation (i.e. planting or seeding).
36.	The BMP will describe restriction of livestock access to areas not already subject to grazing.
37.	The BMP will describe management of livestock to maintain ground cover and diversity of native plants.
38.	The BMP will describe restriction of livestock access to protect plants that are known to be sensitive to grazing.
39.	The BMP will include provision to lightly graze derived grasslands in times of suitable climatic conditions for weed growth (e.g. autumn and/or winter) to reduce vigour of annual grass weeds.
40.	The BMP will provide a mechanism to reduce livestock grazing during drought periods.
41.	<p>The BMP will describe the following controlled grazing management options and the relevant situations where they would be applied:</p> <ul style="list-style-type: none"> - Rotational grazing system to promote and maintain plant diversity and cover. - Removal of grazing livestock.
Weed Management	
42.	<p>The BMP will provide the following weed management options and the relevant situations where they would be applied:</p> <ul style="list-style-type: none"> - Crash grazing periodically to reduce annual and perennial grass weeds. - Nutrient management (e.g. exclusion of grazing livestock which add nutrients). - Controlled burns during spring to reduce annual and perennial grass weeds (not broadleaf exotics). - Physical Removal (e.g. removing weeds by felling or pulling). - Targeted and timely herbicide application.
43.	The BMP will provide methods for the use of herbicides (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods).
Feral Animal Management	
44.	The BMP will describe procedures to prevent, monitor and control feral animals (including feral pigs, goats, rabbits and foxes).
45.	The BMP will provide monitoring of deer and feral cats and control (if required).
Fire Management	
46.	The BMP will describe measures to prevent fires, such as maintaining fire breaks and access (i.e. no controlled burns would be undertaken whilst vegetation is establishing).
47.	The BMP will prescribe any controlled burns in patches of Box-Gum Woodland EEC (existing woodland) to be no less than 5 years and then to occur in spring or autumn burns depending on a range of factors.
48.	The BMP will schedule for maintenance of fire breaks and fire trails.
49.	The BMP will provide a schedule for assessing fuel loads.
50.	The BMP will provide an option for using controlled grazing to reduce biomass or controlled burns of derived grasslands.
General	
51.	The BMP will describe that vehicle access will be predominantly restricted to designated tracks to minimise ground disturbance (e.g. compaction).
52.	The BMP will include a description of the Community Consultative Committee.

5 CONCLUSION

This implementation plan has been developed to maximise the likely prospects for the provision of suitable habitats for threatened fauna on the offset areas and on the post mining landform. The investigation has resulted in the identification of 22 individual actions relating to the Rehabilitation Strategy and 21 individual actions relating to the Biodiversity Offset Strategy. The approved implementation plan will be incorporated into a revised MCCM BMP (due to be submitted to the DP&E in April 2015) and a revised RMP.

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APPENDIX A

MAULES CREEK MINE THREATENED FAUNA INVESTIGATION REPORT

MAULES CREEK COAL MINE
THREATENED FAUNA INVESTIGATION REPORT



PREPARED BY
WHITEHAVEN COAL LIMITED

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EXECUTIVE SUMMARY

Maules Creek Coal Pty Ltd (MCC) owns the Maules Creek Coal Mine (MCCM) located approximately 40 kilometres south-east of Narrabri, New South Wales (NSW). The MCCM commenced construction in December 2013 under State (NSW) and Commonwealth Project approvals.

As part of the NSW Project approval for the MCCM, MCC will implement a Rehabilitation Strategy to progressively rehabilitate the post-mine landforms and re-establish vegetation and habitat for native flora and fauna (including threatened species). MCC will also implement a Biodiversity Offset Strategy in the surrounding region. The Biodiversity Offset Strategy involves management and restoration of predominantly woodland and forest habitats.

An investigation of factors likely to enhance or impede the effective long-term provision of suitable habitat for a number of threatened fauna species was undertaken in 2014. This report documents the outcomes of that investigation to satisfy Conditions 50 (a) and (b) of the MCCM NSW Project Approval (PA 10_0138). The provision of suitable habitats to support individual or populations of threatened species does not in itself ensure the presence of any such species in the restored or remediated landscapes in the future. However it is possible to seek to optimise the potential for such species to ultimately locate into these landscapes.

Condition 50 of MCCM Project Approval (PA 10_0138) requires the investigation to include the following threatened species:

- **Threatened birds:** Spotted Harrier (*Circus assimilis*), Little Eagle (*Hieraaetus morphnoides*), Little Lorikeet (*Glossopsitta pusilla*), Turquoise Parrot (*Neophema pulchella*), Masked Owl (*Tyto novaehollandiae*), Barking Owl (*Ninox connivens*), Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*), Speckled Warbler (*Chthonicola sagittata*), Black-chinned Honeyeater (eastern subspecies) (*Melithreptus gularis gularis*), Regent Honeyeater (*Anthochaera phrygia*), Painted Honeyeater (*Grantiella picta*), Hooded Robin (south-eastern form) (*Melanodryas cucullata cucullata*), Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*), Varied Sittella (*Daphoenositta chrysoptera*) and Diamond Firetail (*Stagonopleura guttata*).
- **Threatened bats:** Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*), Corben's Long-eared Bat (Greater Long-eared Bat or South-eastern Long-eared Bat) (*Nyctophilus corbeni*), Little Pied Bat (*Chalinolobus picatus*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*).

The above listed species were deemed to be potentially significantly impacted by the MCCM (in the Director General's Assessment Report). These species all inhabit woodland and forest habitats.

This investigation report also covers the additional threatened and migratory species listed under Condition 49 of MCCM Project Approval (PA 10_0138) as these species are also required to be a focus of the Rehabilitation Strategy and Biodiversity Offset Strategy:

- **Threatened birds:** Black-necked Stork (*Ephippiorhynchus asiaticus*), Square-tailed Kite (*Lophoictinia isura*) and Swift Parrot (*Lathamus discolor*).
- **Threatened mammals:** Koala (*Phascolarctos cinereus*), Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*) and Eastern Cave Bat (*Vespadelus troughtoni*).
- **Migratory species:** White-throated Needletail (*Hirundapus caudacutus*), Fork-tailed Swift (*Apus pacificus*), Rainbow Bee-eater (*Merops ornatus*) and Satin Flycatcher (*Myiagra cyanoleuca*).

Other threatened species that have recently been recorded in the vicinity of the MCCM and/or associated offset areas are also covered by this investigation, namely: Pale-headed Snake (*Hoplocephalus bitorquatus*), Superb Parrot (*Potytelis swainsonii*), Squirrel Glider (*Petaurus norfolcensis*) and Large-eared Pied Bat (*Chalinolobus dwyeri*).

The investigation involved:

- consideration of the threatened fauna listing advice/final determinations;
- consideration of relevant threatened fauna management guidelines;
- consideration of relevant threatened fauna recovery plans;
- consideration of scientific literature pertaining to rehabilitation and restoration;
- consideration of reports published by Boggabri Coal Pty Ltd (in recognition of the proximity of the Boggabri Coal Mine to the MCCM);
- consultation with suitably qualified restoration specialists;
- consultation with the NSW Office of Environment and Heritage and North West Local Land Services; and
- consideration of relevant conditions under the MCCM Project Approval (PA 10_0138) and Commonwealth Approval Decision 2010/5566.

A variety of different factors relevant to the provision of suitable habitat for the suite of threatened species have been identified. However of these, the following two appear to be the most important – provision of habitat resources for each species across the restored and rehabilitated landscape and managing threatening processes. The actual return of such threatened species to these future landscapes will also depend on source populations being available away from the restored remediated landscapes and the availability of potential movement pathways for such species between potential source populations and the restored and rehabilitated landscapes.

A separate Implementation Plan has been developed to maximise the prospects for provision of viable areas of suitable habitat for threatened species on the offset areas and the mine site.

1 INTRODUCTION

1.1 BACKGROUND

The Maules Creek Coal Mine (MCCM) an open cut coal mining operation is located approximately 40 kilometres south-east of Narrabri, New South Wales (NSW) (Figures 1 and 2). The MCCM is owned by Maules Creek Coal Pty Ltd (MCC), a joint venture between Aston Coal 2 Pty Limited (a wholly owned subsidiary of Whitehaven Coal Limited [Whitehaven]) (75 percent [%]), ITOCHU Corporation (15%) and J-Power Corporation Pty Limited (10%).

The MCCM was granted NSW Project approval under the NSW *Environmental Planning and Assessment Act* by the Planning Assessment Commission under delegation of the Minister for Planning and Infrastructure on 23 October 2012. The MCCM was granted approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 11 February 2013 (Commonwealth Approval Decision 2010/5566).

As part of the NSW Project approval for the MCCM, MCC will implement:

- a Rehabilitation Strategy to progressively rehabilitate the post-mine landforms and re-establish vegetation and habitat for native flora and fauna (including threatened species); and
- a Biodiversity Offset Strategy in the surrounding region with habitat for a number of threatened fauna species.

Rehabilitation Strategy

Condition 44 of Maules Creek Coal Mine Project Approval (PA 10_0138) requires 2,078 hectares (ha)¹ of vegetation to be re-established on the post-mine landforms. An objective is to revegetate the post-mine landforms with a mixture of native grassy woodland, shrubby woodland/open forest, riparian forest and Box-Gum Woodland EEC (Hansen Bailey, 2013). The rehabilitation areas will be designed to provide habitat for native flora and fauna (albeit, some habitat resources [e.g. natural tree hollows] will be absent for many decades).

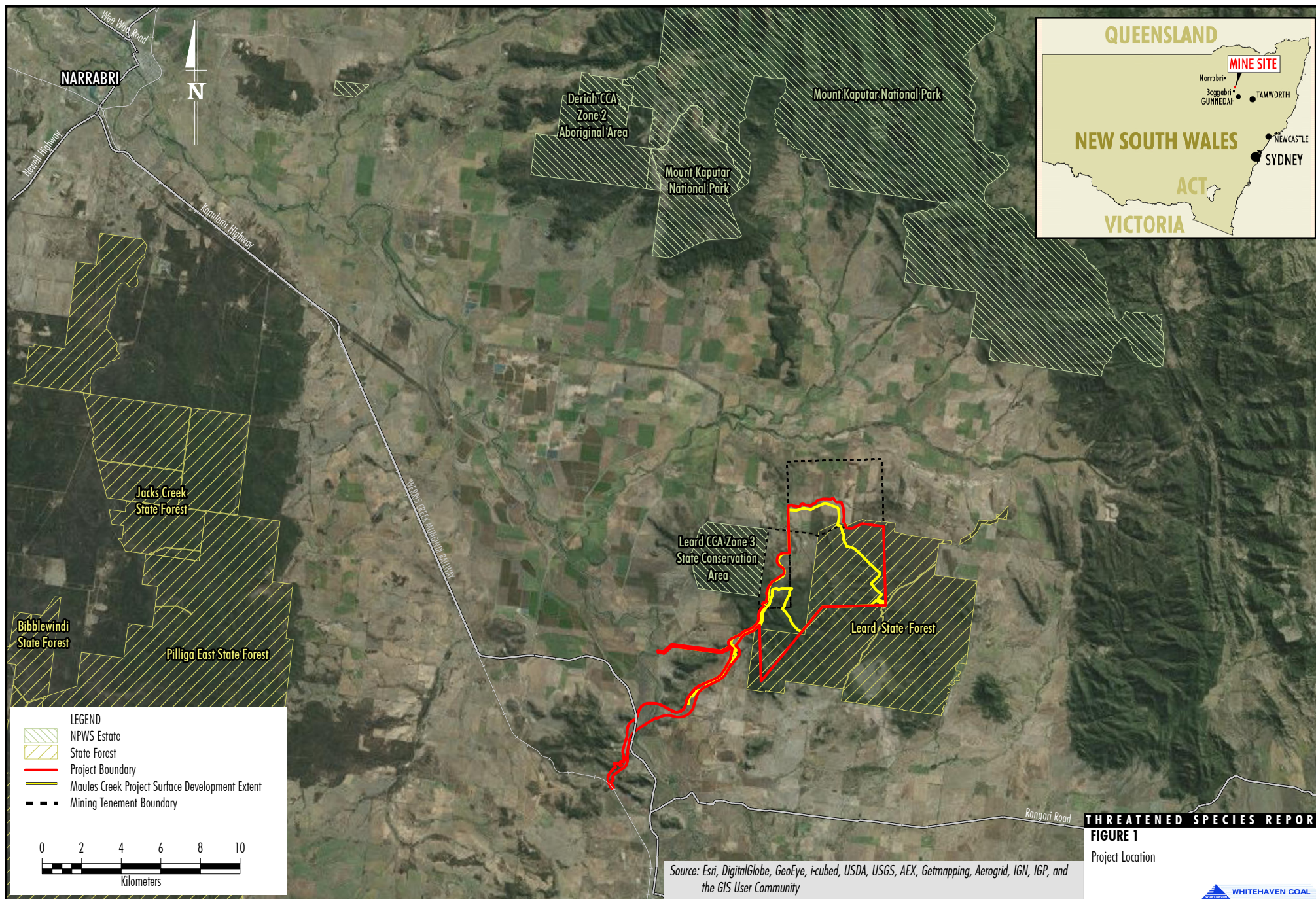
Biodiversity Offset Strategy

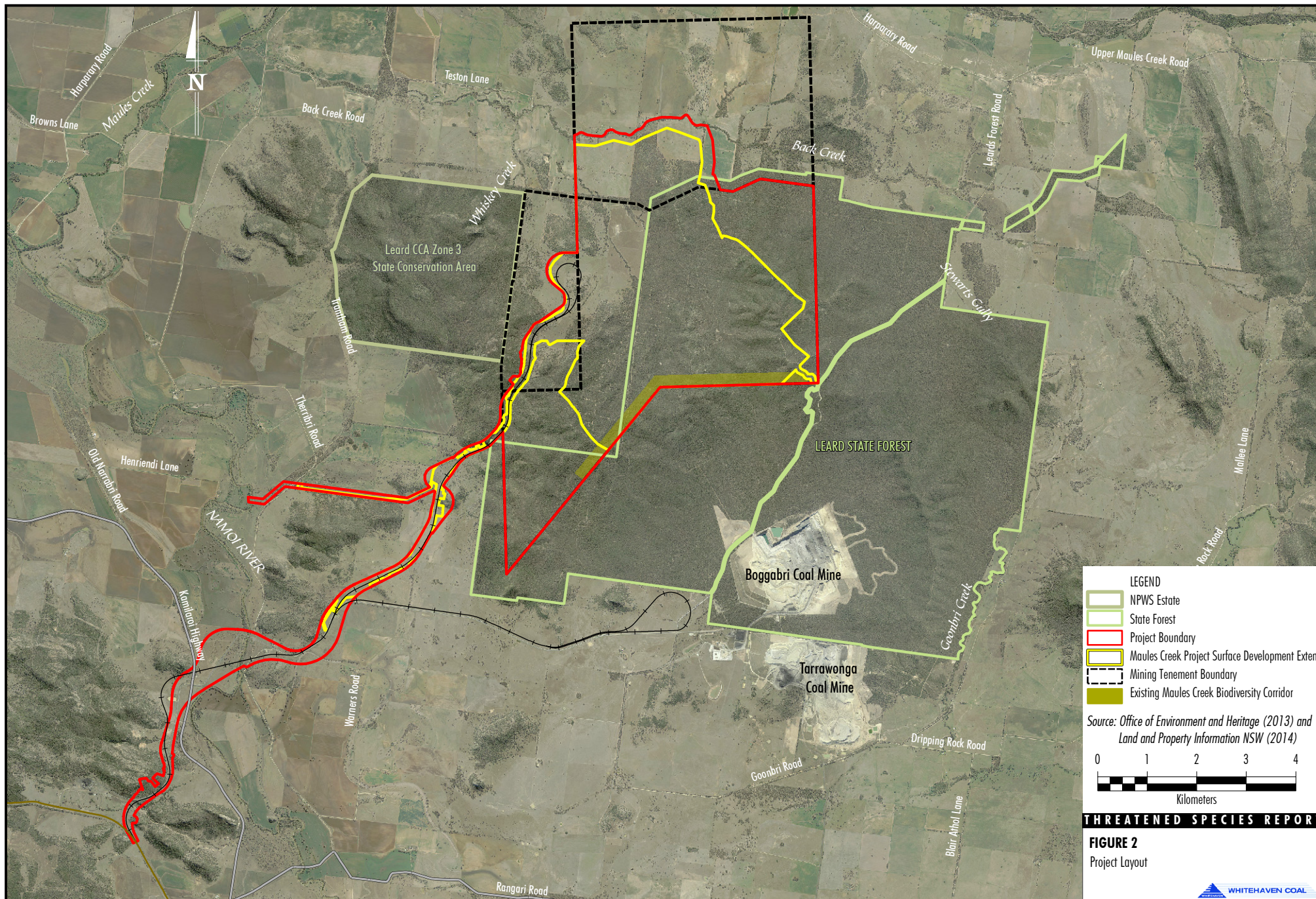
The biodiversity offset areas under Condition 44 of Maules Creek Coal Mine Project Approval (PA 10_0138) are required to cover a minimum of 10,333 ha² of land (Figure 3). The objectives of the offset areas are defined in the MCC Biodiversity Management Plan (BMP) (Whitehaven, 2014a):

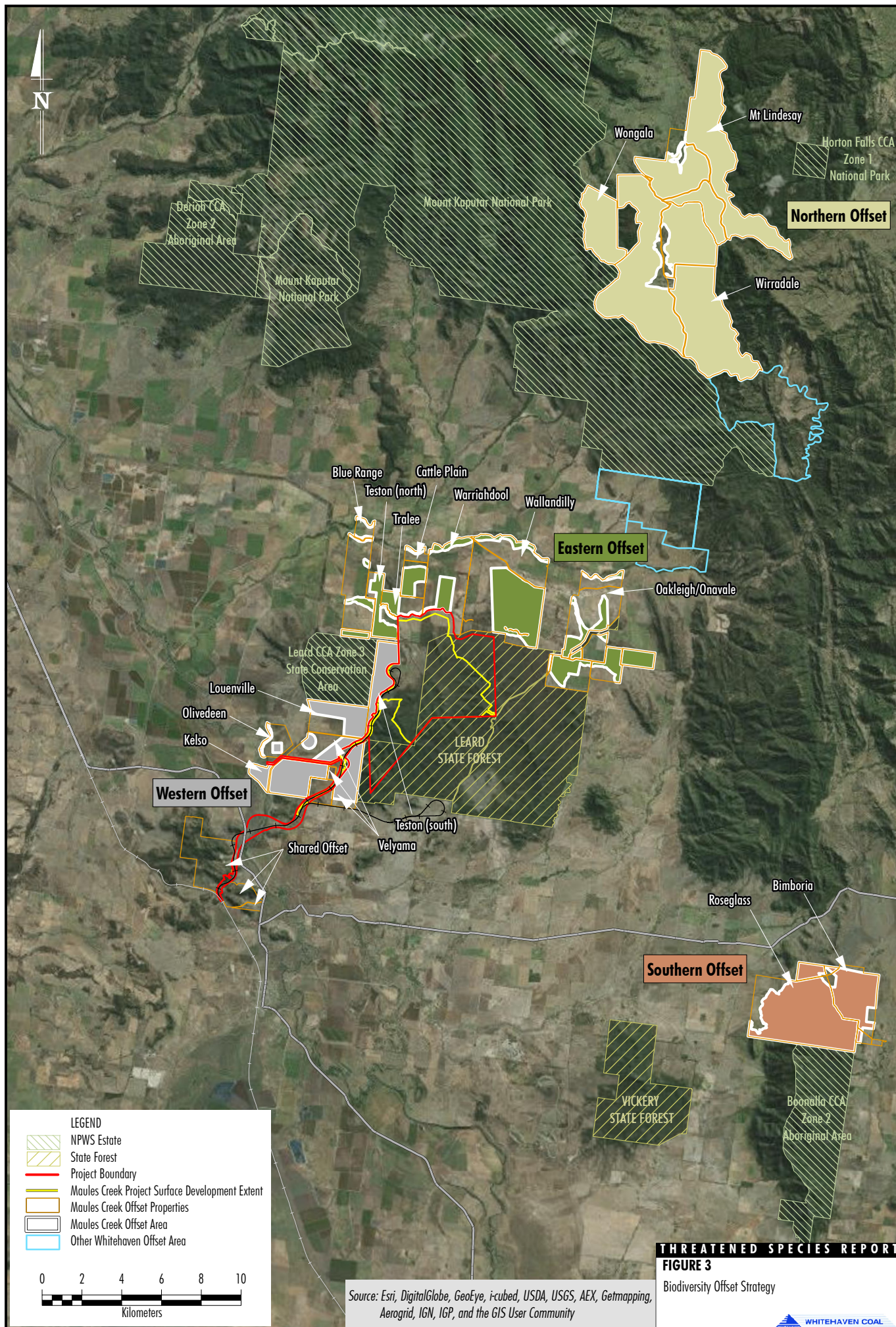
- *to protect and enhance existing native woodland/forest;*
- *to protect and enhance areas of semi-cleared woodland/forest;*
- *to restore self-sustaining vegetation communities within derived native grassland;*
- *to restore the woodland form of Box Gum Woodland within existing areas of Box Gum Woodland EEC/CEEC (derived native grassland); and*
- *to restore self-sustaining vegetation communities within areas of low diversity derived native grassland, pasture improved and cultivated land.*

¹ Less the area of the minimised final void.

² Note: Additional offset areas will be established for the MCCM under the EPBC Act approval. These additional offset areas are not subject to this investigation report. The Oakleigh/Onavale, Bimboria and Roseglass offset areas shown on Figure 3 are relevant to the offset required under the EPBC Act. The Oakleigh/Onavale, Bimboria and Roseglass offset areas may be used to satisfy the 1,000 ha additional offset requirement under Condition 44.







Long-term Maintenance

The long-term maintenance of Box-Gum Woodland/provision of habitat would be facilitated through:

1. long-term security of the offset areas and woodland on the rehabilitation areas by the mechanisms specified in the Project Approval (i.e. management will be required to be undertaken in accordance with a conservation agreement and/or protected area [e.g. National Park or Nature Reserve] management arrangement).
2. lodgement of conservation and biodiversity bond for the offset areas with the DP&E (noting that the bond will only be released once the offset strategy is completed generally in accordance with completion criteria).

Threatened Species Investigation

Condition 50 of MCCM Project Approval (PA 10_0138) requires:

1. an investigation of factors likely to enhance or impede the prospects for providing viable stands (areas) of suitable habitat for threatened fauna species (i.e. an Investigation Report – this document);
2. an implementation plan to maximise the prospects for providing viable stands (areas) of suitable habitat for threatened fauna species on the offset areas and on the mine site (i.e. an Implementation Plan); and
3. revision of the BMP.

Figure 4 contains a flow diagram that shows how the Investigation Report, Implementation Plan and the BMP (and MCCM Rehabilitation Management Plan [RMP]) relate to each other.

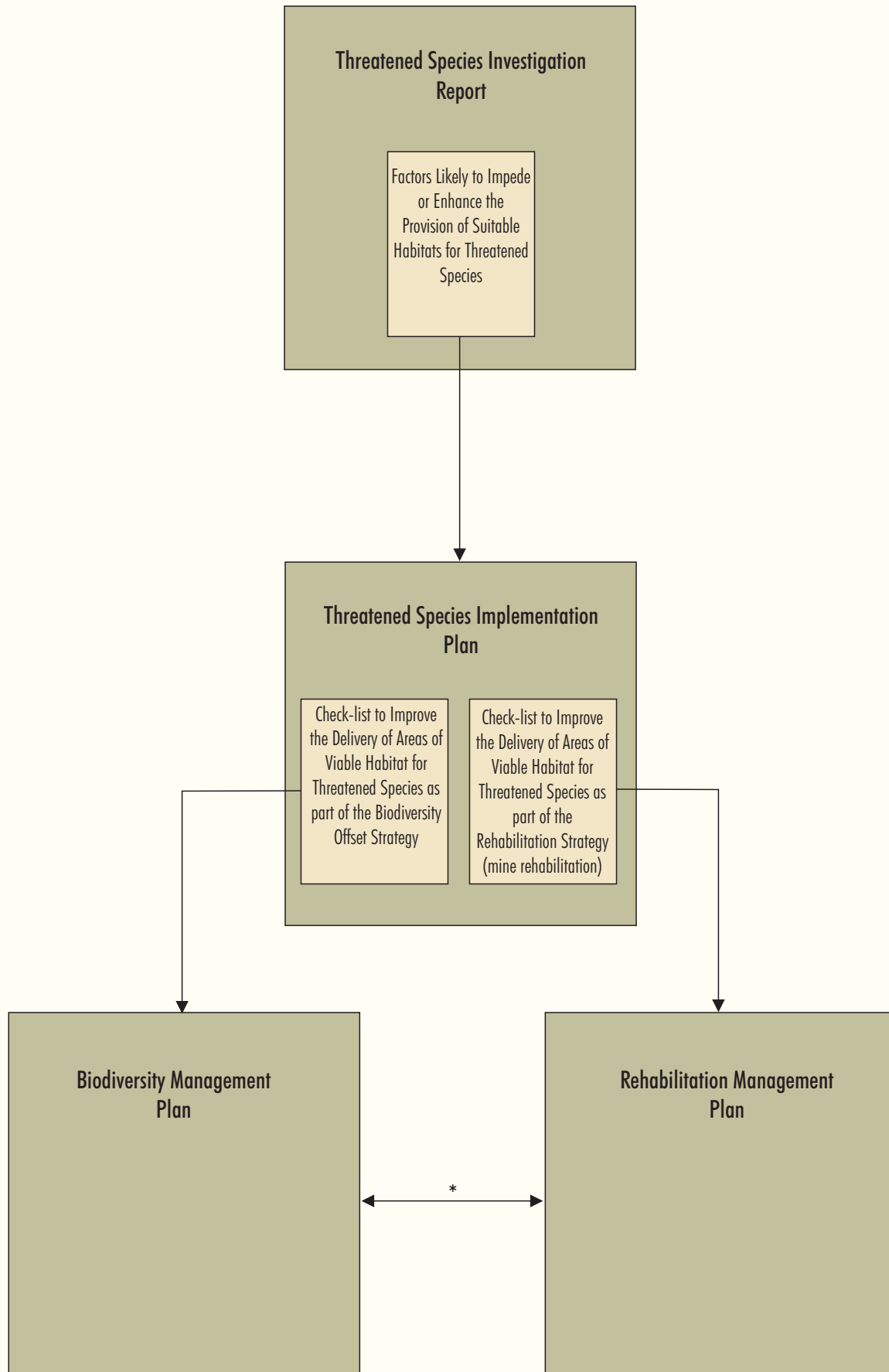
This document (the Investigation Report) identifies factors likely to enhance or impede the prospects for providing viable areas of suitable habitat for threatened fauna species. The factors identified in this report will be considered in the Implementation Plan to maximise the likely prospects for providing viable areas of suitable habitat for threatened fauna species on the offset areas and on the mine site.

The outcome of the Implementation Plan is the creation of 'checklists' for implementing the Rehabilitation Strategy and Biodiversity Offset Strategy (where they relate to provision of habitat for threatened species). The approved Implementation Plan will be incorporated into a revised BMP (due to be submitted to the Department of Planning and Environment [DP&E] in April 2015) and a revised RMP.

Relevant Threatened Species

Condition 50 of MCCM Project Approval (PA 10_0138) requires the investigation to include the following threatened species:

- **Threatened birds:** Spotted Harrier (*Circus assimilis*), Little Eagle (*Hieraaetus morphnoides*), Little Lorikeet (*Glossopsitta pusilla*), Turquoise Parrot (*Neophema pulchella*), Masked Owl (*Tyto novaehollandiae*), Barking Owl (*Ninox connivens*), Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*), Speckled Warbler (*Chthonicola sagittata*), Black-chinned Honeyeater (eastern subspecies) (*Melithreptus gularis gularis*), Regent Honeyeater (*Anthochaera phrygia*), Painted Honeyeater (*Grantiella picta*), Hooded Robin (south-eastern form) (*Melanodryas cucullata cucullata*), Grey-crowned Babbler (eastern subspecies) (*Pomatostomus temporalis temporalis*), Varied Sittella (*Daphoenositta chrysoptera*) and Diamond Firetail (*Stagonopleura guttata*).



** Integration of relevant mine rehabilitation components in the Biodiversity Management Plan.*

THREATENED SPECIES REPORT

FIGURE 4

Threatened Species Investigation and Implementation Plan

- **Threatened bats:** Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*), Corben's Long-eared Bat (Greater Long-eared Bat or South-eastern Long-eared Bat) (*Nyctophilus corbeni*), Little Pied Bat (*Chalinolobus picatus*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*).

The above listed species were deemed to be potentially significantly impacted by the MCCM (in the Director-General's Assessment Report). These species all inhabit woodland and forest habitats.

This investigation report also covers the additional threatened and migratory species listed under Condition 49 of MCCM Project Approval (PA 10_0138) as these species are also required to be a focus of the Rehabilitation Strategy and Biodiversity Offset Strategy:

- **Threatened birds:** Black-necked Stork (*Ephippiorhynchus asiaticus*), Square-tailed Kite (*Lophoictinia isura*) and Swift Parrot (*Lathamus discolor*).
- **Threatened mammals:** Koala (*Phascolarctos cinereus*), Eastern Bentwing-bat (*Miniopterus schreibersii oceanensis*) and Eastern Cave Bat (*Vespadelus troughtoni*).
- **Migratory species:** White-throated Needletail (*Hirundapus caudacutus*), Fork-tailed Swift (*Apus pacificus*), Rainbow Bee-eater (*Merops ornatus*) and Satin Flycatcher (*Myiagra cyanoleuca*).

Other threatened species that have recently been recorded in the vicinity of the MCCM and/or associated offset areas are also covered by this investigation, namely: Pale-headed Snake (*Hoplocephalus bitorquatus*), Superb Parrot (*Polytelis swainsonii*), Squirrel Glider (*Petaurus norfolcensis*) and Large-eared Pied Bat (*Chalinolobus dwyeri*).

In 2014, a second investigation was undertaken by Whitehaven into the factors likely to enhance or impede the effective restoration or re-establishment of the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland Endangered Ecological Community (Box-Gum Woodland EEC) listed under the NSW *Threatened Species Conservation Act, 1995* (Whitehaven, 2014b). This implementation plan recognises that many of the threatened fauna species use the Box-Gum Woodland as habitat and therefore this implementation plan incorporates actions aimed at enhancing prospects for the effective restoration and rehabilitation of this habitat.

The provision of suitable habitats to support individual or populations of threatened species does not in itself ensure the presence of any such species in the restored or remediated landscapes in the future. However it is possible to seek to optimise the potential for such species to ultimately locate into these landscapes. The actual return of such threatened species to these future landscapes will also depend on source populations being available away from the restored remediated landscapes and the availability of potential movement pathways for such species between potential source populations and the restored and rehabilitated landscapes

1.2 OBJECTIVES

The purpose of this report is to satisfy Conditions 49 and 50 (a) and (b) of MCCM Project Approval (PA 10_0138) (Table 1) by documenting the investigation of factors likely to enhance or impede the protection, rehabilitation and long-term maintenance and provision of viable stands (areas) of suitable habitat for the species listed in Section 1.1, specifically focusing on:

- effective restoration of degraded remnants of potential habitat for the threatened species in offset areas; and
- re-establishment of viable habitat in the longer term for threatened species on disturbed areas (both offset areas and the site).

Table 1
Conditions 49 and 50 of Project Approval (PA 10_0138)

Condition
<p>49. For all threatened species on site, the Proponent shall ensure that the Biodiversity Offset Strategy and Rehabilitation Strategy are focused on protection, rehabilitation and long-term maintenance of viable stands of suitable habitat for these species.</p> <p>Note: the threatened fauna species on site include: Regent Honeyeater, Fork Tailed Swift, White Throated Needletail, Rainbow Bee-eater, Satin Flycatcher, Speckled Warbler, Swift Parrot, Brown Treecreeper, Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Little Lorikeet, Varied Sittella, White-browed Woodswallow¹, Black Chinned Honeyeater, Painted Honeyeater, Little Eagle, Spotted Harrier, Black Necked Stork, Square Tailed Kite, Turquoise Parrot, Barking Owl, Masked Owl, Eastern False Pipistrelle, Greater Long-eared Bat, Yellow-bellied Sheath Tail Bat, Eastern Cave Bat, Eastern Bent-wing Bat, Little Pied Bat and Koala.</p> <p>50. The Proponent shall:</p> <p>(a) investigate, in consultation with OEH and the Namoi CMA, all factors likely to enhance or impede the effective long term provision of suitable habitat(s) for the following species: Regent Honeyeater, Speckled Warbler, Brown Treecreeper, Diamond Firetail, Grey-crowned Babbler, Hooded Robin, Little Lorikeet, Varied Sittella, Black Chinned Honeyeater, Painted Honeyeater, Little Eagle, Spotted Harrier, Turquoise Parrot, Barking Owl, Masked Owl, Eastern False Pipistrelle, Greater Long-eared Bat, Yellow-bellied Sheath Tail Bat and Little Pied Bat;</p> <p>(b) within 24 months of the date of this approval (and if possible, in conjunction with Stage 2 of the Leard Forest Mining Precinct Regional Biodiversity Strategy), submit a report of this investigation and provide an implementation plan to ensure delivery of suitable areas of viable habitat for the species included in (a) above, for approval by the Director-General; and</p> <p>(c) incorporate the approved implementation plan into the revised Biodiversity Management Plan, required under condition 52.</p> <p>Note: the species listed in (a) are those identified in the Director-General's Assessment Report as likely to be significantly impacted by the project.</p>

¹ The proposed vulnerable species listing for the White-browed Woodswallow was rejected by the NSW Scientific Committee in 2010 (OEH, 2014a).

A complete list of species covered by this investigation is provided in Table 2.

Table 2
Threatened Fauna Species Relevant to the RMP and BMP

Scientific Name	Common Name	Conservation Status	
		TSC Act ¹	EPBC Act ²
Reptiles			
<i>Hoplocephalus bitorquatus</i>	Pale-headed Snake	V	-
Birds			
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	E	-
<i>Lophoictinia isura</i>	Square-tailed Kite	V	-
<i>Circus assimilis</i>	Spotted Harrier	V	-
<i>Hieraaetus morphnoides</i>	Little Eagle	V	-
<i>Glossopsitta pusilla</i>	Little Lorikeet	V	-
<i>Polytelis swainsonii</i>	Superb Parrot	V	V
<i>Neophema pulchella</i>	Turquoise Parrot	V	-
<i>Lathamus discolor</i>	Swift Parrot	E	E
<i>Hirundapus caudacutus</i>	White-throated Needletail	-	M
<i>Apus pacificus</i>	Fork-tailed Swift	-	M
<i>Merops ornatus</i>	Rainbow Bee-eater	-	M
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	-	M
<i>Tyto novaehollandiae</i>	Masked Owl	V	-

Table 2 (Continued)
Threatened Fauna Species Relevant to the RMP and BMP

Scientific Name	Common Name	Conservation Status	
		TSC Act ¹	EPBC Act ²
Birds (Continued)			
<i>Ninox connivens</i>	Barking Owl	V	-
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)	V	-
<i>Chthonicola sagittata</i>	Speckled Warbler	V	-
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	v	-
<i>Anthochaera phrygia</i>	Regent Honeyeater	CE	E
<i>Grantiella picta</i>	Painted Honeyeater	V	-
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	V	-
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler (eastern subspecies)	V	-
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-
<i>Stagonopleura guttata</i>	Diamond Firetail	V	-
Mammals			
<i>Phascolarctos cinereus</i>	Koala	V	V
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	-
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bentwing-bat	V	-
<i>Nyctophilus corbeni</i>	Corben's Long-eared Bat (Listed as South-eastern Long-eared Bat under EPBC)	V	V
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V
<i>Chalinolobus picatus</i>	Little Pied Bat	V	-
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V	-

It has not been possible to prepare this report in conjunction with Stage 2 of the Leard Forest Mining Precinct Regional Biodiversity Strategy being co-ordinated by the DP&E as it is yet to be developed. Nevertheless, this report is consistent with the intent of the Stage 2 of the Leard Forest Mining Precinct Regional Biodiversity Strategy in that it seeks to improve the performance of the offset areas and has been prepared jointly with the Tarrawonga Coal Mine.

1.3 CONSULTATION

This investigation report was finalised following consultation with the following stakeholders in accordance with Condition 50(a) of MCCM Project Approval (PA 10_0138) (Table 1):

- Office of Environment and Heritage (OEH);
- North West Local Land Services (formerly the Namoi Catchment Management Authority); and
- DP&E.

This investigation report was revised in light of comments by or discussions with those stakeholders before it was submitted to DP&E for approval.

In their letter (dated 20 October 2014), OEH provided the following comments not directly related to this investigation report:

OEH offers the following suggestions regarding the level of detail it expects should be included in the revisions of the RMP and BMP. This includes:

- *detailed descriptions, maps and area on each offset property for each condition state of the EEC and other vegetation types, and management area, if different*
- *maps and area of the estimated area of habitat of each threatened species, and condition class if known*
- *details of the presence of important structural, floristic and habitat elements present (eg caves, cliff lines, raptor nests, areas with abundant hollow-bearing trees, fallen debris, flora species specifically identified as providing habitat resources for threatened species etc.)*
- *mapping and/or imagery and photographs which illustrate threats that can be mapped, such as weeds and erosion. Baseline data of the current extent of each threat described should also be provided (baseline information is required to assess the change in the level of the threat and to monitor success over time against relevant performance targets)*
- *objectives for managing biodiversity values for each management area, strategies and timing to be implemented to manage biodiversity threats and to ensure that biodiversity values are improved*
- *identified measurable performance measures and targets, how progress is to be measured and reported and at what intervals,*
- *completion criteria for each threat in each management area eg the area or number of individuals of a weed species per management domain, based on the level of the acceptable threat. Targets should relate to actual biodiversity outcomes, including species requirements at different times, rather than simply inputs and outputs,*
- *a risk assessment, trigger points and subsequent corrective actions to be implemented if the monitoring program identifies that the performance targets and therefore biodiversity management objectives are not being met.*

MCCM would consider the above suggestions in relation to revisions to the RMP or BMP (whichever is most applicable to the individual point).

2 METHODS

This investigation report has been prepared through:

- consideration of the threatened fauna species' profiles (OEH, 2014b; Department of the Environment [DotE], 2014b);
- consideration of the threatened fauna species' listing advice/final determinations (OEH, 2014b; DotE, 2014b);
- consideration of relevant threatened fauna recovery plans (e.g. Department of the Environment, Climate Change and Water [DECCW], 2011);
- consideration of scientific literature pertaining to rehabilitation and restoration (e.g. Noss, 1990; Freudenberger *et al.*, 2004; Society for Ecological Restoration International Science & Policy Working Group, 2004; Prober and Thiele, 2005; Gibson-Roy, 2010; Tongway and Ludwig, 2011; Goldin and Brookhouse, 2014);
- consideration of reports published by Boggabri Coal Pty Ltd (in recognition of the proximity of the Boggabri Coal Mine to the MCCM);
- consultation with suitably qualified restoration specialists;
- consultation with OEH and North West Local Land Services;
- consideration of relevant conditions under the MCCM Project Approval (PA 10_0138) and Commonwealth Approval Decision 2010/5566; and
- consideration of survey data (e.g. vegetation mapping).

3 RESULTS

Table 3 provides a summary of the following information for each threatened species:

- the species habitat requirements relevant to the Rehabilitation Strategy and Offset Strategy;
- recognised threats to the species that are relevant to the Rehabilitation Strategy or Biodiversity Offset Strategy sourced from State and/or Commonwealth recovery plans or Government Websites (e.g. OEH, 2014b; DotE, 2014b); and
- recognised recovery actions for the species that are relevant to the Rehabilitation Strategy or Biodiversity Offset Strategy sourced from State and/or Commonwealth recovery plans or Government Websites (e.g. OEH, 2014b; DotE, 2014b).

Table 4 provides factors likely to impede or enhance the provision of habitat for threatened fauna in consideration of the information in Table 3.

As discussed in Section 1.1, a second investigation was undertaken by Whitehaven into the factors likely to enhance or impede the effective restoration or re-establishment of Box-Gum Woodland EEC) (Whitehaven, 2014b). It is recognised that many of the threatened fauna species use Box-Gum Woodland as habitat and therefore Table 5 brings together a list of factors likely to impede or enhance the re-establishment and restoration of Box-Gum Woodland (sourced from Whitehaven, 2014b).

Table 3
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Pale-headed Snake	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). This species is found mainly in dry eucalypt forests and woodlands, cypress forest and occasionally in rainforest or moist eucalypt forest (OEH, 2014b). In drier environments, it appears to favour habitats close to riparian areas (OEH, 2014b). The Pale-headed Snake shelters between loose bark and tree-trunks, or in hollow trunks and limbs of dead trees (OEH, 2014b). The main prey of this species is tree frogs although lizards and small mammals are also taken (OEH, 2014b). 	<ul style="list-style-type: none"> Too frequent burning or grazing management which destroys old and dead trees and removes understorey vegetation (OEH, 2014b). Absence of suitable prey species, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation (e.g. development of tree hollows). 	None defined (OEH, 2014b).
Black-necked Stork	<ul style="list-style-type: none"> Mainly associated with wetlands that are not relevant to the Rehabilitation Strategy and Offset Strategy. Occasionally individuals will stray into open grass, woodland areas or flooded paddocks in search of food (Australian Museum, 2014). Usually forage in water 5-30 cm deep for vertebrate and invertebrate prey (OEH, 2014b). Build large nests high in tall trees close to water (OEH, 2014b). 	<ul style="list-style-type: none"> None relevant to RMP/BMP (OEH, 2014b). Absence of appropriate wetlands particularly in post-mine landscape. Absence of suitable prey species particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	None relevant to RMP/BMP (OEH, 2014b).
Square-tailed Kite	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses (OEH, 2014b). In arid north-western NSW, has been observed in stony country with a ground cover of chenopods and grasses, open acacia shrub and patches of low open eucalypt woodland (OEH, 2014b). Forages over inland riparian woodland. It particularly favours box-ironbark-gum woodlands on the inland slopes, and Coolibah/River Red Gum on the inland plains (Marchant & Higgins 1993). Is a specialist hunter of passerines, especially honeyeaters, and most particularly nestlings, and insects in the tree canopy, picking most prey items from the outer foliage (OEH, 2014b). Nest sites generally located along or near watercourses, in a fork or on large horizontal limbs (OEH, 2014b). 	<ul style="list-style-type: none"> Clearing, logging, burning, and grazing of habitats resulting in a reduction in nesting and feeding resources (OEH, 2014b). Absence of suitable prey species particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable water courses. 	<ul style="list-style-type: none"> Protect known habitat from fires (OEH, 2014b). Retain and protect nesting and foraging habitat, particularly along watercourses (OEH, 2014b).
Spotted Harrier	<ul style="list-style-type: none"> Occurs in grassy open woodland including <i>Acacia</i> and mallee remnants, inland riparian woodland, grassland and shrub steppe. It is found most commonly in native grassland (OEH, 2014b). Builds a stick nest in a tree (OEH, 2014b). Preys on terrestrial mammals (e.g. bandicoots, bettongs, and rodents), birds and reptile, occasionally insects and rarely carrion (OEH, 2014b). 	<ul style="list-style-type: none"> Secondary poisoning from rabbit baiting (OEH, 2014b). Secondary poisoning from rodenticides (OEH, 2014b). Absence of suitable prey species, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Protect areas of habitat from overgrazing (OEH, 2014b). Retain and protect nesting and foraging habitat (OEH, 2014b).
Little Eagle	<ul style="list-style-type: none"> Habitats rich in prey (eats birds, reptiles and mammals, and occasionally large insects and carrion) (OEH, 2014b). Occupies open eucalypt forest, woodland or open woodland. Sheoak or <i>Acacia</i> woodlands and riparian woodlands of interior NSW are also used (OEH, 2014b). Nests in tall living trees within a remnant patch (OEH, 2014b). 	<ul style="list-style-type: none"> Secondary poisoning from rabbit baiting (OEH, 2014b). Absence of suitable prey species, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Rehabilitate known and potential habitat (OEH, 2014b). Retain and protect nesting and foraging habitat (OEH, 2014b).
Little Lorikeet	<ul style="list-style-type: none"> Forages primarily in the canopy of open <i>Eucalyptus</i> forest and woodland, especially box–ironbark species including White Box (<i>Eucalyptus albens</i>) and Yellow Box (<i>E. melliodora</i>), where they forage in the canopy of flowering trees (BirdLife Australia, 2014; OEH, 2014b). Also finds food in <i>Angophora</i>, <i>Melaleuca</i> and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity (OEH, 2014b). Feeds mostly on nectar and pollen (OEH, 2014b). Roosts in treetops, often distant from feeding areas (OEH, 2014b). Nests in proximity to feeding areas if possible, most typically selecting hollows in the limb or trunk of smooth-barked Eucalypts. Riparian trees often chosen, including species like <i>Allocasuarina</i> (OEH, 2014b). Isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees also help sustain viable populations of the species (OEH, 2014b). 	<ul style="list-style-type: none"> Lack of old hollow bearing trees (OEH, 2014b). Competition with the introduced Honeybee for both nectar and hollows (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Retain large old trees, especially those that are hollow-bearing (OEH, 2014b). Ensure recruitment of trees into the mature age class so that there is not a lag period of decades between the death of old trees and hollow formation in younger trees (OEH, 2014b). Protect large flowering Eucalyptus trees throughout the habitats frequented by this species. Manage remnant woodlands and forest for recovery of old-growth characteristics (OEH, 2014b).

Table 3 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Little Lorikeet (Cont.)			<ul style="list-style-type: none"> Where natural tree recruitment is inadequate, replant local species to maintain foraging habitat and breeding sites (OEH, 2014b). Reduce the abundance of feral Honeybees and limit the exploitation of nectar by domestic bees where resources are spatially or temporally sparse (e.g. in years of drought) (OEH, 2014b).
Turquoise Parrot	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Lives on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland (OEH, 2014b). Prefers to feed in the shade of a tree and spends most of the day on the ground searching for the seeds or grasses and herbaceous plants, or browsing on vegetable matter (OEH, 2014b). Nests in tree hollows, logs or posts (OEH, 2014b). 	<ul style="list-style-type: none"> Lack of hollow-bearing trees (OEH, 2014b). Degradation of habitat through heavy grazing, firewood collection and establishment of exotic pastures (OEH, 2014b). Predation by foxes and cats (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Undertake fox and feral cat control programs in key habitat areas (OEH, 2014b). Retain areas of open woodland with grassy under-storey and adjoining grassland (OEH, 2014b). Protect hollow-bearing trees for nest sites. Younger mature trees should also be retained to provide replacements for the older trees when they eventually die and fall over (OEH, 2014b). Protect sites where Turquoise Parrots forage and nest from heavy, prolonged grazing (OEH, 2014b).
Swift Parrot	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Inhabits dry sclerophyll eucalypt forests, particularly box-ironbark, and woodlands (DotE, 2014b). Favoured feed trees include winter flowering species such as Swamp Mahogany (<i>Eucalyptus robusta</i>), Spotted Gum (<i>Corymbia maculata</i>), Red Bloodwood (<i>C. gummifera</i>), Mugga Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>) (OEH, 2014b). 	<ul style="list-style-type: none"> Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Retain stands of winter-flowering feed-trees, particularly large mature individuals (OEH, 2014b). Revegetate with winter-flowering tree species where appropriate (OEH, 2014b).
Superb Parrot	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Inhabit Box-Gum, Box-Cypress-pine and Boree Woodlands and River Red Gum Forest (OEH, 2014b), including Box-Gum Woodland EEC (DotE, 2014b). Forages in box eucalypt woodland, particularly that dominated by Yellow Box (<i>Eucalyptus melliodora</i>) or Grey Box (<i>E. microcarpa</i>), and occasionally Black Box (<i>E. largiflorens</i>)¹. (DotE, 2014b; OEH, 2014b). Diet consists mainly of grass seeds and herbaceous plants. Also eaten are fruits, berries, nectar, buds, flowers, insects and grain (OEH, 2014b). Mainly breed in hollows of River Red Gum (<i>Eucalyptus camaldulensis</i>) and Blakely's Red Gum (<i>E. blakelyi</i>) (Department of Environment and Heritage, 2005; OEH, 2014b), also known to use Yellow Box (<i>E. melliodora</i>), White Box (<i>E. albens</i>), Apple Box (<i>E. bridgesiana</i>) and Red Box (<i>E. intertexta</i>) (DotE, 2014b; OEH, 2014b). 	<ul style="list-style-type: none"> Lack of hollow bearing trees (OEH, 2014b). Competition for hollows with feral bees and native and exotic hollow-nesting birds (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation (e.g. development of tree hollows). 	<ul style="list-style-type: none"> Retain and protect hollow-bearing trees (OEH, 2014b). Retain and protect woodland remnants (OEH, 2014b). Remove feral bee colonies from hollows in Superb Parrot habitat, or report them to NPWS officers (OEH, 2014b).
White-throated Needletail	<ul style="list-style-type: none"> In Australia, the White-throated Needletail is almost exclusively aerial (DotE, 2014b). Recorded most often above wooded areas, including open forest and rainforest, and less commonly recorded flying above woodland (Higgins 1999). 	<ul style="list-style-type: none"> Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	None listed (DotE, 2014b).
Fork-tailed Swift	<ul style="list-style-type: none"> The Fork-tailed Swift is almost exclusively aerial (DotE, 2014b). Mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low shrub, heathland or saltmarsh (DotE, 2014b). Sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines (Higgins 1999). They sometimes feed aerially among tree-tops in open forest (Higgins 1999). 	<ul style="list-style-type: none"> Predation by feral animals (DotE, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	None listed (DotE, 2014b).
Rainbow Bee-eater	<ul style="list-style-type: none"> Known from open woodlands and shrublands, including mallee, and in open forests that are usually dominated by eucalypts. It also occurs in grasslands and, especially in arid or semi-arid areas, in riparian, floodplain or wetland vegetation assemblages (DotE, 2014b; Higgins, 1999). 	<ul style="list-style-type: none"> Predation on eggs and nestlings by introduced Cane Toad (<i>Bufo marinus</i>). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Lack of suitable riparian banks for breeding activities. 	None listed (DotE, 2014b).

Table 3 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Satin Flycatcher	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (DotE, 2014b) (i.e. the factors in Table 4 are relevant to this species' habitat). Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests (DotE, 2014b). They also occur in eucalypt woodlands with open understorey and grass ground cover, and are generally absent from rainforest (DotE, 2014b). They sometimes also occur in dry sclerophyll forests and woodlands, usually dominated by eucalypts such as Blakely's Red Gum (<i>Eucalyptus blakelyi</i>), Mugga Ironbark (<i>E. sideroxylon</i>), Yellow Box (<i>E. melliodora</i>), White Box (<i>E. albens</i>), Manna Gum (<i>E. viminalis</i>) or stringybarks, including Red Stringybark (<i>E. macrorhyncha</i>) and Broad-leaved Stringybark (<i>E. caliginosa</i>), usually with open understorey (DotE, 2014b). Nesting requirements? 	<ul style="list-style-type: none"> Loss of mature forests (DotE, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	None listed (DotE, 2014b).
Masked Owl	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Lives in dry eucalypt forests and woodlands from sea level to 1100 metres (OEH, 2014b). A forest owl, but often hunts along the edges of forests, including roadsides (OEH, 2014b). The typical diet consists of tree-dwelling and ground mammals, especially rats (OEH, 2014b). Roosts and breeds in moist eucalypt forested gullies, using large tree hollows or sometimes caves for nesting (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of mature hollow-bearing trees and changes to forest and woodland structure, which leads to fewer such trees in the future (OEH, 2014b). A combination of grazing and regular burning is a threat, through the effects on the quality of ground cover for mammal prey, particularly in open, grassy forests (OEH, 2014b). Secondary poisoning from rodenticides (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain hollow-bearing trees as well as large, mature trees that will provide hollows in the future (OEH, 2014b). Limit the use of pesticides used in suitable native habitat (OEH, 2014b).
Barking Owl	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland. It is flexible in its habitat use, and hunting can extend in to closed forest and more open areas. Sometimes able to successfully breed along timbered watercourses in heavily cleared habitats (e.g. western NSW) due to the higher density of prey on these fertile soils (OEH, 2014b). Roost in shaded portions of tree canopies, including tall midstorey trees with dense foliage such as <i>Acacia</i> and <i>Casuarina</i> species (OEH, 2014b). Preferentially hunts small arboreal mammals such as Squirrel Gliders and Ringtail Possums, but when loss of tree hollows decreases these prey populations the owl becomes more reliant on birds, invertebrates and terrestrial mammals such as rodents and rabbits (OEH, 2014b). Requires very large permanent territories in most habitats due to sparse prey densities (OEH, 2014b). 	<ul style="list-style-type: none"> Firewood harvesting resulting in the removal of fallen logs and felling of large dead trees (OEH, 2014b). Too-frequent fire leading to degradation of understorey vegetation which provides shelter and foraging substrates for prey species (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Apply a mosaic pattern during fire hazard reduction to ensure the same areas are not burned too frequently (OEH, 2014b). Protect woodland and open forest remnants, especially those containing hollow-bearing trees (OEH, 2014b). Retain and enhance vegetation along watercourses and surrounding areas to protect important habitat of the owls and their prey (OEH, 2014b). Maintain a buffer of undisturbed native vegetation at least 200 metres radius around known nest sites (OEH, 2014b). Retain standing dead trees and large fallen logs (OEH, 2014b). Fence habitat remnants and protect from heavy grazing (OEH, 2014b).

Table 3 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Brown Treecreeper (eastern subspecies)	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range (OEH, 2014b). Mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. Also found in mallee and River Red Gum (<i>Eucalyptus camaldulensis</i>) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses. Usually not found in woodlands with a dense shrub layer. Fallen timber is an important habitat component for foraging. Forage for insects and other invertebrates amongst the litter, tussocks and fallen timber, and along trunks and lateral branches. Nectar from Mugga Ironbark (<i>Eucalyptus sideroxylon</i>) and paperbarks, and sap from an unidentified eucalypt are also eaten, along with lizards and food scraps (OEH, 2014b). 	<ul style="list-style-type: none"> Ongoing degradation of habitat, particularly the loss of tree hollows and fallen timber from firewood collection and overgrazing (OEH, 2014b). Lack of regeneration of eucalypt overstorey in woodland due to overgrazing and too-frequent fires (OEH, 2014b). Loss of ground litter from compaction and overgrazing (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Modify grazing management practices that will maintain or improve habitat values and still allow some grazing to occur at strategic times of the year (OEH, 2014b). Do not allow further loss of dead standing or fallen timber from firewood collection or on-farm practices such as 'tidying up'; do not allow removal of hollow-bearing dead or living trees and stumps on private and public lands (OEH, 2014b). Fencing of known habitat to protect natural features and to allow natural regeneration (OEH, 2014b). Increase remnant size and connectivity through incentives and OEH threatened species extension services (Doerr <i>et al.</i>, 2011; OEH, 2014b).
Speckled Warbler	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Lives in a wide range of <i>Eucalyptus</i> dominated dry sclerophyll forests and woodlands that have a grassy understorey, often on rocky ridges or in gullies (Birdlife Australia, 2014; OEH, 2014b; OEH, 2014b). Typical habitat would include scattered native tussock grasses, a sparse shrub layer, some eucalypt regrowth and an open canopy (OEH, 2014b). Large, relatively undisturbed remnants are required for the species to persist in an area (OEH, 2014b). Nest is located in a slight hollow in the ground or the base of a low dense plant, often among grass tussocks, fallen branches and other litter (OEH, 2014b; OEH, 2014b) 	<ul style="list-style-type: none"> Poor regeneration of grassy woodland habitats (OEH, 2014b). Modification and destruction of ground habitat through removal of litter and fallen timber, introduction of exotic pasture grasses, heavy grazing and compaction by stock and frequent fire (OEH, 2014b). Nest failure due to predation by native and non-native birds, cats, dogs and foxes particularly in fragmented and degraded habitats (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Undertake fox and feral cat control programs (OEH, 2014b). Retain dead timber on the ground in open woodland areas (OEH, 2014b). Limit firewood collection (OEH, 2014b). Encourage regeneration of habitat by fencing remnant stands (OEH, 2014b). Fence suitable woodland habitats, particularly those with unimproved pasture and an intact native ground plant layer (OEH, 2014b). Increase the size of existing remnants, planting trees and establishing buffer zones of unimproved uncultivated pasture around woodland remnants (Watson <i>et al.</i>, 2001; OEH, 2014b).
Black-chinned Honeyeater (eastern subspecies)	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Occupies mostly upper levels of drier open forests or woodlands dominated by box and ironbark eucalypts, especially Mugga Ironbark (<i>Eucalyptus sideroxylon</i>), White Box (<i>E. albens</i>), Inland Grey Box (<i>E. microcarpa</i>), Yellow Box (<i>E. melliodora</i>), Blakely's Red Gum (<i>E. blakelyi</i>) and Forest Red Gum (<i>E. tereticornis</i>) (OEH, 2014b). Also inhabits open forests of smooth-barked gums, stringybarks, ironbarks, river sheoaks (nesting habitat) and tea-trees (OEH, 2014b). 	<ul style="list-style-type: none"> Poor regeneration of open forest and woodland habitats because of intense grazing (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Increase the size and connectivity of existing remnants, planting trees and establishing buffer zones of unimproved uncultivated pasture around woodland remnants (OEH, 2014b).
Regent Honeyeater	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak (OEH, 2014b). Favours habitats on the wettest, most fertile soils, such as along creek flats and broad river valleys (DotE, 2014a). Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes (OEH, 2014b). In NSW, riparian forests containing River Oak (<i>Casuarina cunninghamiana</i>), and with Needle-leaf Mistletoe (<i>Amyema cabbagei</i>), are important for feeding and breeding (DotE, 2014a). Regent Honeyeaters usually nest in horizontal branches or forks in tall mature eucalypts and Sheoaks. Also nest in mistletoe haustoria (OEH, 2014b). 	<ul style="list-style-type: none"> Suppression of natural regeneration of overstorey tree species and shrub species from overgrazing. Riparian gallery forests have been particularly impacted by overgrazing (OEH, 2014b). Firewood harvesting in Box-Ironbark woodlands can remove important habitat components (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable riparian areas particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain mature key nectar tree species (OEH, 2014b). Protect and enhance key breeding and foraging habitats (OEH, 2014b). Encourage natural regeneration and increase the remnant size of known and potential Regent Honeyeater habitats (OEH, 2014b).

Table 3 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Painted Honeyeater	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests (OEH, 2014b). A specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias. Prefers mistletoes of the genus <i>Amyema</i> (OEH, 2014b). Insects and nectar from mistletoe or eucalypts are occasionally eaten (OEH, 2014b). Nest within the outer canopy of drooping eucalypts, she-oak, paperbark or mistletoe branches (OEH, 2014b). During breeding it requires berries from just two species, Needle-leaved Mistletoe (<i>Amyema cambagei</i>) and Grey Mistletoe (<i>A. quandang</i>) which grow on nitrogen-fixing hosts such as Acacias and Casuarinas (Barea, 2008). 	<ul style="list-style-type: none"> Heavy grazing of grassy woodlands (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of mistletoe species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Manage grazing on sites where Painted Honeyeater habitat occurs (OEH, 2014b). Encourage regeneration of habitat by fencing remnant stands and undertaking new plantings (OEH, 2014b). Regenerate and replant local flora species to maintain breeding and foraging habitat (OEH, 2014b).
Hooded Robin (south-eastern form)	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Prefers lightly wooded country, usually open eucalypt woodland, acacia shrub and mallee, often in or near clearings or open areas (OEH, 2014b). Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses (OEH, 2014b). Often perches on low dead stumps and fallen timber or on low-hanging branches, using a perch-and-pounce method of hunting insect prey (OEH, 2014b). 	<ul style="list-style-type: none"> Modification and destruction of ground habitat through heavy grazing and compaction by stock, removal of litter and fallen timber, introduction of exotic pasture grasses and frequent fire (OEH, 2014). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. 	<ul style="list-style-type: none"> Retain dead timber on the ground in open woodland areas (OEH, 2014b). Enhance potential habitat through regeneration by reducing the intensity and duration of grazing (OEH, 2014b). Fence habitat to protect from long-term, intense grazing (OEH, 2014b). Increase the size of existing remnants, by planting trees and establishing buffer zones of un-modified, uncultivated pasture around woodland remnants (Watson <i>et al.</i>, 2001; OEH, 2014b).
Grey-crowned Babbler (eastern subspecies)	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Inhabits open Box-Gum Woodlands on the slopes, and Box-Cypress-pine and open Box Woodlands on alluvial plains (OEH, 2014b). Open woodlands dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs (OEH, 2014b). Feed on invertebrates, either by foraging on the trunks and branches of eucalypts and other woodland trees or on the ground, digging and probing amongst litter and tussock grasses (OEH, 2014b). Nests are usually located in shrubs or sapling eucalypts, although they may be built in the outermost leaves of low branches of large eucalypts. (OEH, 2014b). 	<ul style="list-style-type: none"> Heavy grazing and removal of coarse, woody debris within woodland remnants (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain existing woodland vegetation (OEH, 2014b). Retain dead timber on the ground in open woodland areas (OEH, 2014b). Encourage regeneration of habitat by fencing remnant stands (OEH, 2014b). Increase the size of existing remnants, planting trees and establishing buffer zones of unimproved uncultivated pasture around woodland remnants (OEH, 2014b).
Varied Sittella	<ul style="list-style-type: none"> Inhabits eucalypt forests and woodlands, especially those containing rough-barked species and mature smooth-barked gums with dead branches, mallee and <i>Acacia</i> woodland (OEH, 2014b). Feeds on arthropods gleaned from crevices in rough or decorticating bark, dead branches, standing dead trees and small branches and twigs in the tree canopy (OEH, 2014b). 	<ul style="list-style-type: none"> Firewood collection (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Increase the size of existing remnants by planting trees and establishing buffer zones (OEH, 2014b). Limit firewood collection and retain dead timber in open forest and woodland areas (OEH, 2014b). Encourage regeneration of habitat by fencing remnant stands and managing the intensity and duration of grazing (OEH, 2014b). Control weeds in areas of known habitat (OEH, 2014b).

Table 3 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Diamond Firetail	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (<i>Eucalyptus pauciflora</i>) Woodlands (OEH, 2014b). Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities (OEH, 2014b). Often found in riparian areas (rivers and creeks) (OEH, 2014b). Feeds exclusively on the ground, on ripe and partly-ripe grass and herb seeds and green leaves, and on insects (especially in the breeding season) (OEH, 2014b). Roosts in dense shrubs or in smaller nests built especially for roosting (OEH, 2014b). 	<ul style="list-style-type: none"> Firewood collection (OEH, 2014b). Poor regeneration of open forest and woodland habitats. Invasion of weeds, resulting in the loss of important food plants (OEH, 2014b). Modification and destruction of ground- and shrub layers within habitat through: removal of native plants, litter and fallen timber; introduction of exotic pasture grasses; heavy grazing and compaction by stock; and frequent fire (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable riparian areas particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain dead timber on the ground in open woodland areas (OEH, 2014b). Reduce heavy grazing by domestic stock in areas of known or potential habitat, to enable flowering and subsequent seeding of grasses and forbs that this species requires (OEH, 2014b). Control weeds in areas of known habitat, especially the exotic, winter-fruited shrubs such as cotoneasters, hawthorns, firethorns and privets that support Pied Currawongs (OEH, 2014b).
Koala	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Inhabit eucalypt woodlands and forests (OEH, 2014b). Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species (OEH, 2014b). Appropriate food trees in high densities, and floristic diversity are important for this species (Department of Environment and Climate Change, 2008). Cypress pines and brush box are examples of shading trees necessary for the Koala (Department of Environment and Climate Change, 2008). 	<ul style="list-style-type: none"> Predation by feral and domestic dogs (OEH, 2014b). Intense fires that scorch or kill the tree canopy (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable browse trees particularly in post-mine landscape. 	<ul style="list-style-type: none"> Undertake feral predator control (OEH, 2014b). Apply low intensity, mosaic pattern fuel reduction burns in or adjacent to Koala habitat (OEH, 2014b). Revegetate with suitable feed tree species and develop habitat corridors between populations (OEH, 2014b).
Squirrel Glider	<ul style="list-style-type: none"> Box-Gum Woodland EEC is potential habitat for this species (NSW Scientific Committee, 2011) (i.e. the factors in Table 4 are relevant to this species' habitat). Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas (OEH, 2014b). Prefers mixed species stands with a shrub or <i>Acacia</i> midstorey (OEH, 2014b). Diet varies seasonally and consists of <i>Acacia</i> gum, eucalypt sap, nectar, honeydew and manna, with invertebrates and pollen providing protein (OEH, 2014b). Require abundant tree hollows for refuge and nest sites (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of hollow-bearing trees (OEH, 2014b). Loss of flowering understorey and midstorey shrubs in forests (OEH, 2014b). Loss of hollow availability due to takeover by feral honeybees and exotic birds (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species/vegetation resources, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain den trees and recruitment trees (future hollow-bearing trees) (OEH, 2014b). Retain food resources, particularly sap-feeding trees and understorey feed species such as <i>Acacias</i> and <i>banksias</i> (OEH, 2014b).
Yellow-bellied Sheath-tail-bat	<ul style="list-style-type: none"> Roosts singly in tree hollows and buildings. In treeless areas they are known to utilise mammal burrows (OEH, 2014b). Forages in most habitats across its very wide range, with and without trees (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of hollow-bearing trees (OEH, 2014b). Pesticides and herbicides may reduce the availability of insects, or result in the accumulation of toxic residues in individuals' fat stores (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain stands of native vegetation, especially those with hollow-bearing trees (including dead trees), and retain other structures containing bats (OEH, 2014b). Reduce the use of pesticides in the environment (OEH, 2014b). Encourage regeneration and replanting of local flora species to maintain bat foraging habitat (OEH, 2014b).

Table 3 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Eastern Bentwing-bat	<ul style="list-style-type: none"> Forages in rainforest, wet and dry sclerophyll forest, monsoon forest, open woodland, <i>Melaleuca</i> forests and open grasslands (Churchill, 2008). 	<ul style="list-style-type: none"> Disturbance by recreational cave climbers and general public accessing the cave and adjacent areas particularly during winter or breeding (OEH, 2014b). Loss of foraging habitat (OEH, 2014b). Loss of food resources and indirect poisoning of individuals from nearby use of herbicides / insecticides (OEH, 2014b). Predation by feral cats and foxes (OEH, 2014b). Introduction of exotic pathogens, specifically known White-nosed fungus (OEH, 2014b). Potential for large scale wildfire to impact on resource availability in surrounding habitat. Direct threats at caves from fire (OEH, 2014b). Weeds (blackberry) encroaching over cave entrances restrict access; need to ensure sympathetic control techniques for blackberry (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Control foxes and feral cats around roosting sites, particularly maternity caves (OEH, 2014b). Protect roosting sites from damage or disturbance (OEH, 2014b).
Corben's Long-eared Bat (Listed as South-eastern Long-eared Bat under EPBC)	<ul style="list-style-type: none"> Occurs in a range of inland woodland vegetation types, including box, ironbark and cypress pine woodlands (DotE, 2014b). The species also occurs in Buloke woodland; Brigalow woodland; Belah woodland; Smooth-barked Apple (<i>Angophora leiocarpa</i>) woodland; River Red Gum (<i>Eucalyptus camaldulensis</i>) forests lining watercourses and lakes; Black Box (<i>E. largiflorens</i>) woodland; and dry sclerophyll forest (DotE, 2014b). In the Hunter Valley, NSW, the species has primarily been recorded in moister woodland of various eucalypt species with a distinct shrub layer frequently adjacent to watercourses. There are a small number of records from closed forest adjacent to dry sclerophyll woodlands (DotE, 2014b). Roosts in tree hollows, crevices, and under loose bark (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of remnant semi-arid woodland and mallee habitat (OEH, 2014b). Loss of hollow-bearing trees (OEH, 2014b). Application of pesticides in or adjacent to foraging areas (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain remnant woodland and mallee vegetation (OEH, 2014b). Retain hollow-bearing trees and provide for hollow tree recruitment (OEH, 2014b). Minimise the use of pesticides in and adjacent to foraging areas (OEH, 2014b).
Large-eared Pied Bat	<ul style="list-style-type: none"> This species requires a combination of sandstone cliff/escarpment to provide roosting habitat that is adjacent to higher fertility sites, particularly box gum woodlands or river/rainforest corridors which are used for foraging (DotE, 2014b). Roosting has also been observed in disused mine shafts, caves, overhangs and it also possibly roosts in the hollows of trees (DotE, 2014b). 	<ul style="list-style-type: none"> Loss of foraging habitat close to cliffs, caves and old mine workings from forestry activities and too-frequent burning, usually associated with grazing (OEH, 2014b). Damage to roosting and maternity sites from mining operations, and recreational caving activities (OEH, 2014b). Use of pesticides. Disturbance to roosting areas by goats (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Protect known and potential habitat from burning at too-frequent intervals (OEH, 2014b). Avoid damage to known roosting and maternity sites from mining activities, and from recreational caving by contacting the OEH prior to activities (OEH, 2014b). Reduce the use of pesticides and consider alternatives where available (OEH, 2014b). Control goats to reduce disturbance to roosting sites (OEH, 2014b).

Table 3 (Continued)
Habitat Requirements of Threatened Fauna

Common Name	Habitat Requirements Relevant to the Rehabilitation Strategy and Offset Strategy	Threats Relevant to the Proposed Activities as Defined in the Government Guidelines	Relevant Recovery Actions Defined in the Government Guidelines
Little Pied Bat	<ul style="list-style-type: none"> Occurs in dry open forest, open woodland, mulga woodlands, chenopod shrublands, cypress pine forest and mallee and Bimbil Box (<i>Eucalyptus populnea</i>) woodlands (OEH, 2014b). In the more arid parts of its range in Queensland, NSW and South Australia it has been recorded from Mulga (<i>Acacia aneura</i>) woodlands, from patches of Black Box (<i>Eucalyptus largiflorens</i>) woodlands (NSW) and riverine River Red Gum (<i>E. camaldulensis</i>) dominated communities (Environment Australia, 1999). Roosts in caves, rocky outcrops, mine shafts, tunnels, tree hollows and buildings (OEH, 2014b). 	<ul style="list-style-type: none"> Predation by cats (OEH, 2014b). Application of pesticides in or adjacent to foraging areas (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Control feral cats (OEH, 2014b). Minimise the use of pesticides within or adjacent to areas where insectivorous bats occur (OEH, 2014b).
Eastern False Pipistrelle	<ul style="list-style-type: none"> Prefers moist habitats, with trees taller than 20 m (OEH, 2014b). Generally roosts in eucalypt hollows, but has also been found under loose bark on trees or in buildings (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of trees for foraging and hollow-bearing trees for roosting (OEH, 2014b). Application of pesticides in or adjacent to foraging areas (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Retain native vegetation that is floristically and structurally diverse (OEH, 2014b). Minimise the use of pesticides within or adjacent to areas where insectivorous bats occur (OEH, 2014b).
Eastern Cave Bat	<ul style="list-style-type: none"> A cave-roosting species that is usually found in dry open forest and woodland, near cliffs or rocky overhangs (OEH, 2014b). Occasionally found along cliff-lines in wet eucalypt forest and rainforest (OEH, 2014b). 	<ul style="list-style-type: none"> Loss of suitable feeding habitat near roosting and maternity sites as a result of modifications from timber harvesting and inappropriate fire regimes usually associated with grazing (OEH, 2014b). Pesticides and herbicides may reduce the availability of invertebrates, or result in the accumulation of toxic residues in individuals' fat stores (OEH, 2014b). Probable predation by cats and foxes (OEH, 2014b). Absence/lack of suitable foraging areas, particularly in post-mine landscape. Time lapse required to reach appropriate successional stage in restoration and/or rehabilitation. Absence of suitable prey species, particularly in post-mine landscape. 	<ul style="list-style-type: none"> Undertake fox and feral cat control programs. Protect known and potential habitat from burning at too-frequent intervals. Avoid damage or disturbance to known roosting and maternity sites from mining activities, and from recreational caving activities (OEH, 2014b). Reduce the use of pesticides in habitat areas (OEH, 2014b).

Table 4
Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
<p>1. Adequate availability of prey species</p> <p>The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform, together with the salvage and re-use of logs, hollows and surface litter, will over time provide a range of suitable habitats for invertebrates and vertebrates that provide a potential source of food for various threatened fauna species.</p> <p>The additional material provided in the columns to the right , provide specific examples of relevant threatened fauna species and how such goals can be achieved.</p>	1a. Lack of invertebrates as a food source (Spotted Harrier, Little Eagle, Barking Owl, Brown Treecreeper, Painted Honeyeater, Grey-crowned Babbler, Varied Sittella, Squirrel Glider) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs and surface litter from the mine vegetation clearance activities to encourage invertebrates that provide a potential food source (Condition 39[b] Schedule 3 of Project Approval 10_0138). Mulching to encourage invertebrates that provide a potential food source.
	1b. Lack of reptiles as a food source (Pale-headed Snake, Spotted Harrier, Little Eagle) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of bush rocks from the mine vegetation clearance activities to encourage reptiles that provide a potential food source (Condition 39[b] Schedule 3 of Project Approval 10_0138). Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities to encourage reptiles that provide a potential food source (Condition 39[b] Schedule 3 of Project Approval 10_0138) (Bartona <i>et al.</i>, 2009).
	1c. Lack of birds as a food source (Square-tailed Kite, Spotted Harrier, Little Eagle, Barking Owl) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Plant scattered low shrubs, mid-sized shrubs and tall trees to encourage birds that provide a potential food source. Provisions of large areas of suitable woodland within the offset area to encourage birds that provide a potential food source (Prober <i>et al.</i>, 2002).
	1d. Lack of small mammals as a food source (Pale-headed Snake, Spotted Harrier, Little Eagle, Masked Owl, Barking Owl) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities to encourage small mammals that provide a potential food source (Condition 39[b] Schedule 3 of Project Approval 10_0138) (Manning <i>et al.</i>, 2011). Place hollow limbs/nest boxes (in young trees without hollows) from the mine vegetation clearance activities to encourage small mammals that would provide a potential food source for predators.
<p>2. Nesting (mainly birds)</p> <p>The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform will over time provide suitable vegetation in which some threatened fauna species may nest. Additionally, salvage and re-use of logs, hollows and surface litter could facilitate other threatened fauna species to nest in the short-term.</p> <p>The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.</p>	2a. Lack of suitable vegetation (Spotted Harrier, Little Eagle, Speckled Warbler) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> As part of a diverse seed mix/tube stock planting list, plant tall tree species. As part of a diverse seed mix/tube stock planting list, plant low, dense species (Speckled Warbler). As part of a diverse seed mix/tube stock planting list, plant eucalypts (Masked Owl, Regent Honeyeater, Painted Honeyeater, Grey-crowned Babbler). As part of a diverse seed mix/tube stock planting list, plant native, tussocky grasses (Speckled Warbler). As part of a diverse seed mix/tube stock planting list, plant <i>Allocasuarina/Casuarina</i> species (Regent Honeyeater, Painted Honeyeater). As part of a diverse seed mix/tube stock planting list, plant <i>Acacia</i> species (Painted Honeyeater).
	2b. Lack of hollows (Little Lorikeet, Turquoise Parrot, Superb Parrot, Masked Owl, Squirrel Glider) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; and restoration of existing habitat in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities (Condition 39[b] Schedule 3 of Project Approval 10_0138), including placement of hollow limbs in trees without hollows or as components of stag trees.
	2c. Lack of fallen timber (Speckled Warbler) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Maximise salvage and reuse of fallen timber/hollow logs from the mine vegetation clearance activities (Condition 39[b] Schedule 3 of Project Approval 10_0138).
	2d. Lack of suitable vegetation along/near watercourses (Square-tailed Kite, Barking Owl) (OEH, 2014b)	<p>Predominantly relevant to watercourses in the offset areas.</p>	<ul style="list-style-type: none"> As part of a diverse seed mix/tube stock planting list, plant trees (particularly eucalypts) along water courses (Square-tailed Kite, Barking Owl).

Table 4 (Continued)
Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
<p>3. Flora (mainly for foraging and roosting habitat)</p> <p>The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform will over time provide suitable vegetation in which some threatened fauna species may forage and roost.</p> <p>The additional material provided in the columns to the right , provide specific examples of relevant threatened fauna species and how such goals can be achieved.</p>	<p>3a. Lack of suitable tree species (Square-tailed Kite, Spotted Harrier, Little Eagle, Little Lorikeet, Turquoise Parrot, Superb Parrot, Rainbow Bee-eater, Satin Flycatcher, Masked Owl, Barking Owl, Brown Treecreeper, Speckled Warbler, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Hooded Robin, Grey-Crowned Babbler, Varied Sittella, Diamond Firetail, Koala, Squirrel Glider, Eastern Bentwing-bat, Corben's Long-eared Bat, Large-eared Pied Bat, Little Pied Bat, Eastern False Pipistrelle, Eastern Cave Bat) (Marchant & Higgins, 1993; Environment Australia, 1999; Higgins, 1999; Barea, 2008; Churchill, 2008; Department of Environment and Climate Change, 2008; DotE, 2014b; OEH, 2014b)</p>	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Plant eucalypts (Pale-headed Snake, Little Eagle, Turquoise Parrot, Superb Parrot, Rainbow Bee-eater, Satin Flycatcher, Masked Owl, Brown Treecreeper, Speckled Warbler, Painted Honeyeater, Hooded Robin, Grey-crowned Babbler, Varied Sittella, Koala, Squirrel Glider, Corben's Long-eared Bat, Eastern Cave Bat), in particular: <ul style="list-style-type: none"> box, ironbark and gum species (Square-tailed Kite, Black-chinned Honeyeater, Painted Honeyeater, Squirrel Glider); White Box (<i>Eucalyptus albens</i>) (Little Lorikeet, Swift Parrot, Superb Parrot, Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Grey-Crowned Babbler, Diamond Firetail, Large-eared Pied Bat); Yellow Box (<i>E. melliodora</i>) (Little Lorikeet, Superb Parrot, Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Grey-Crowned Babbler, Diamond Firetail, Large-eared Pied Bat); <i>Angophora</i> species (Little Lorikeet); Swamp Mahogany (<i>E. robusta</i>)² (Swift Parrot); Mugga Ironbark (<i>E. sideroxylon</i>)² (Swift Parrot, Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater); Apple Box (<i>E. bridgesiana</i>) (Superb Parrot); Spotted Gum (<i>Corymbia maculata</i>)² and Red Bloodwood (<i>C. gummifera</i>)² (Swift Parrot); Blakely's Red Gum (<i>E. blakelyi</i>) (Superb Parrot, Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Grey-Crowned Babbler, Diamond Firetail, Large-eared Pied Bat); Manna Gum (<i>E. viminalis</i>)² (Satin Flycatcher); Red Stringybark (<i>E. macrorhyncha</i>) and Broad-leaved Stringybark (<i>E. caliginosa</i>) (Satin Flycatcher); stringybark species (Satin Flycatcher, Brown Treecreeper, Black-chinned Honeyeater); rough-barked species (Brown Treecreeper, Varied Sittella); River Red Gum (<i>E. camaldulensis</i>) (Superb Parrot, Brown Treecreeper, Squirrel Glider, Corben's Long-eared Bat, Little Pied Bat); Inland Grey Box (<i>E. microcarpa</i>) (Superb Parrot, Black-chinned Honeyeater); Forest Red Gum (<i>E. tereticornis</i>)² (Black-chinned Honeyeater). smooth-barked gum species (Black-chinned Honeyeater, Varied Sittella); Snow Gum (<i>E. pauciflora</i>)² (Diamond Firetail); and Black Box (<i>E. largiflorens</i>)² (Corben's Long-eared Bat, Little Pied Bat). Plant <i>Acacia</i> tree species (Spotted Harrier, Little Eagle, Barking Owl, Brown Treecreeper, Painted Honeyeater, Squirrel Glider and Little Pied Bat). Plant <i>Allocasurina</i> species (Little Eagle). Plant <i>Casuarina</i> species (Little Eagle, Barking Owl, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater), in particular River Oak (<i>Casuarina cunninghamiana</i>) (Regent Honeyeater). Plant <i>Melaleuca</i> species (Little Lorikeet, Eastern Bentwing-bat). Plant tall tree species (Eastern False Pipistrelle).

Table 4 (Continued)
Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
<p>3. Flora (mainly for foraging and roosting habitat) (Cont.)</p> <p>The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform will over time provide suitable vegetation in which some threatened fauna species may forage and roost.</p> <p>The additional material provided in the columns to the right , provide specific examples of relevant threatened fauna species and how such goals can be achieved.</p>	3b. Lack of suitable shrubs (Square-tailed Kite, Spotted Harrier, Brown Treecreeper) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Plant <i>Acacia</i> shrub species (Square-tailed Kite, Spotted Harrier, Hooded Robin). Plant native shrubs (Brown Treecreeper). Plant tall shrub species (Grey-crowned Babbler). Plant dense shrub species (Diamond Firetail).
	3c. Lack of suitable ground cover (Square-tailed Kite, Spotted Harrier, Turquoise Parrot, Rainbow Bee-eater, Satin Flycatcher, Brown Treecreeper, Speckled Warbler, Hooded Robin, Grey-crowned Babbler, Diamond Firetail) (DotE, 2014b; OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Plant native grasses. Plant native herbs (Turquoise Parrot, Diamond Firetail). Plant native forbs (Grey-crowned Babbler).
	3d. Dense shrub layer (Brown Treecreeper, Speckled Warbler) (OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Correct spacing for species when planting seedlings.
	3e. Poor floristic diversity (Koala) (Department of Environment and Climate Change, 2008; OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> establishment of habitat on the post-mine landform; re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Control for floristic diversity be means of planting a high number of both eucalypt and non-eucalypt species (Koala).
<p>4. Remnant Area</p> <p>The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform will over time increase the size of the existing vegetation patches.</p> <p>The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.</p>	4a. Small patch area are size (Barking Owl, Speckled Warbler, Black-chinned Honeyeater, Grey-crowned Babbler) (Radford <i>et al.</i> , 2005; OEH, 2014b)	<p>Predominantly relevant to:</p> <ul style="list-style-type: none"> re-establishment of habitat from derived grasslands in the offset areas; and re-establishment of habitat on cleared (former agricultural) land in the offset areas. 	<ul style="list-style-type: none"> Increase woodland patch area within the offset area (Prober <i>et al.</i>, 2002).
<p>5. Structural Diversity</p> <p>The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform, together with the salvage and re-use of logs, hollows and surface litter, will over time provide a range of suitable habitats for threatened fauna species.</p> <p>The additional material provided in the columns to the right provide specific examples of relevant threatened fauna species and how such goals can be achieved.</p>	5a. Lack of dead stumps or fallen timber (Turquoise Parrot, Barking Owl, Brown Treecreeper, Speckled Warbler, Regent Honeyeater, Hooded Robin, Varied Sittella, Diamond Firetail, Eastern Cave Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities (Condition 39[b] Schedule 3 of Project Approval 10_0138). Restriction on firewood collection (OEH, 2014b). Maximise salvage and reuse of timber/hollow logs from the mine vegetation clearance activities (Condition 39[b] Schedule 3 of Project Approval 10_0138). Place hollow limbs in young trees without hollows, in particular in eucalypts (Pale-headed Snake, Eastern False Pipistrelle).
	5b. Lack of tree hollows (Pale-headed Snake, Superb Parrot, Brown Treecreeper, Yellow-bellied Sheath-tail-bat, Corben's Long-eared Bat, Little Pied Bat, Eastern False Pipistrelle) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	

Table 4 (Continued)
Factors Likely to Impede or Enhance the Provision of Habitat for Threatened Fauna

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
6. Feral Animals The RMP and BMP will describe procedures to monitor, prevent and control feral animals in the ongoing restoration, replanting and remediation phase of the Project. The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.	6a. Loss of food sources or indirect poisoning as a results of use of pesticides, insecticides or herbicides (Spotted Harrier, Little Eagle, Masked Owl, Yellow-bellied Sheathtail-bat, Eastern Bentwing-bat, Corben's Long-eared Bat, Large-eared Pied Bat, Little Pied Bat, Eastern False Pipistrelle, Eastern Cave Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Limit use of pesticides used in suitable native habitat (OEH, 2014b). Use herbicide sparingly (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods) (DSE, 2005; Rawlings <i>et al.</i>, 2010; DECCW, 2011).
	6b. Competition with introduced Honeybees/ exotic birds for nectar, pollen and tree hollows (Little Lorieet, Superb Parrot, Squirrel Glider) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Management of Honeybees¹. Management of exotic bird species.
	6c. Predation by feral animals (including foxes, cats, exotic birds and dogs) (Turquoise Parrot, Fork-tailed Swift, Rainbow Bee-eater, Speckled Warbler, Koala, Eastern Bentwing-bat, Little Pied Bat, Eastern Cave Bat) (DotE, 2014b; OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Undertake feral predator control.
	6d. Disturbance to roosting sites by goats (Large-eared Pied Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Monitoring and control feral pigs and goats (Eddy, 2002; Rawlings <i>et al.</i>, 2010).
7. Weeds The RMP will describe procedures to prevent, monitor and control weeds. The RMP will also describe relevant targets and performance indicators for weed management. The additional material provided in the columns to the right , provide specific examples of relevant threatened fauna species and how such goals can be achieved.	7a. Invasion of weeds (e.g. Coolatai Grass), resulting in loss of important food plants (Varied Sittella, Diamond Firetail, Eastern Bentwing-bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Weed control (Condition 27[a] of the Approval Decision EPBC 2010/5566).
8. Regeneration The restoration of native vegetation communities in the offset areas and revegetation of the post mine landform, together with the salvage and re-use of logs, hollows and surface litter, will over time provide a range of suitable habitats for threatened fauna species. The additional material provided in the columns to the right, provide specific examples of relevant threatened fauna species and how such goals can be achieved.	8a. Poor regeneration of habitat (Superb Parrot, Speckled Warbler, Black-chinned Honeyeater, Diamond Firetail) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Encourage regeneration by fencing (OEH, 2014b). Undertake new plantings (OEH, 2014b), Reduce intensity of grazing (OEH, 2014b).
9. Management See additional description provide in column one above.	9a. Too frequent grazing management (Pale-headed Snake, Square-tailed Kite, Turquoise Parrot, Masked Owl, Barking Owl, Brown Treecreeper, Speckled Warbler, Black-chinned Honeyeater, Regent Honeyeater, Painted Honeyeater, Hooded Robin, Grey-crowned Babbler, Varied Sittella, Diamond Firetail, Large-eared Pied Bat, Eastern Cave Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> Fencing of areas undergoing revegetation to exclude grazing livestock and prevent grazing of seedlings (Eddy, 2002). Maintenance of fencing used to exclude livestock. Restriction of livestock access to maintain ground cover. Low stocking rates.
	9b. Too frequent burning management (Pale-headed Snake, Square-tailed Kite, Masked Owl, Barking Owl, Speckled Warbler, Koala, Large-eared Pied Bat, Eastern Cave Bat) (OEH, 2014b)	Relevant to the post-mine landforms and the offset areas.	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Assess fuel loads. DECCW (2011) suggests fire frequency should be a minimum interval of 5 years and a maximum interval of 40 years. Rawlings <i>et al.</i> (2010) recommends fire frequency in patches should be every 4 to 8 years. Controlled burns should be undertaken in a mosaic (i.e. retain some unburned areas (DECCW, 2011).

¹ Not proposed.

² This species has not been recorded in the surrounds of the area to be rehabilitated and is therefore not proposed to be planted.

Table 5
Factors Likely to Impede or Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
1. Substrate	1a. Poor soil chemistry – depleted soil nutrients (Eddy, 2002)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Avoidance of soils with high or low pH, high salinity, low fertility or sodic soils. Rehabilitation trials focused on soil substrate. Nutrient management options: <ul style="list-style-type: none"> Amelioration of soils with agricultural gypsum, compost (i.e. mulch saved during clearing activities) or fertilisers depending on the nutrient deficiency. Addition of woody debris to increase carbon levels (Harmon <i>et al.</i>, 1986; Debeljak, 2006; Manning <i>et al.</i>, 2013; Goldin and Brookhouse, 2014). Use of Biochar to increase soil carbon³.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Limited and selective use of specific fertilisers to facilitate growth of tube stock (Eddy, 2002). Placement of woody debris to increase carbon and moisture levels (Goldin and Brookhouse, 2014).
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	
	1b. Poor soil chemistry - elevated soil nutrients, salinity and acid soils (Rawlings <i>et al.</i> , 2010; Department of the Environment, Climate Change and Water [DECCW], 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Avoidance of soils with high or low pH, high salinity, low fertility or sodic soils. Application of minimum topsoil and subsoil depths (Condition 26[b] of the Approval Decision EPBC 2010/5566). Soil surveys and inventories prior to soil stripping (Condition 27[c] of the Approval Decision EPBC 2010/5566 and Condition 39 Schedule 3 of Project Approval 10_0138). Soil handling processes for removal, storage and re-layering of topsoil and subsoil (Condition 27[d] of the Approval Decision EPBC 2010/5566). Annual soil balances to manage soil handling (Condition 39 Schedule 3 of Project Approval 10_0138). Rehabilitation trials focused on soil substrate.
	1c. Poor soil chemistry - elevated soil nutrients, (Prober <i>et al.</i> , 2002; Rawlings <i>et al.</i> , 2010; DECCW, 2011)	Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No application of fertilizers on soils with elevated concentrations of the same nutrients (Rawlings <i>et al.</i>, 2010). Nutrient management options to lower soil nitrogen and phosphorus levels: <ul style="list-style-type: none"> Crash grazing periodically to remove nutrients locked in weeds (Rawlings <i>et al.</i>, 2010). Restriction of livestock access to limit further nutrient enrichment (Rawlings <i>et al.</i>, 2010). Hay cutting (Rawlings <i>et al.</i>, 2010)⁴. Controlled burns (Rawlings <i>et al.</i>, 2010). Carbohydrate addition (Rawlings <i>et al.</i>, 2010)⁵. Topsoil removal (scalping) (cleared land only) (Gibson-Roy <i>et al.</i>, 2010; Rawlings <i>et al.</i>, 2010)⁶. No kill and pasture cropping (Rawlings <i>et al.</i>, 2010)⁷.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	
	1d. Poor soil chemistry – acid rock drainage	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Selective identification and placement (burial) of potentially acid forming inter-burden materials (Condition 39[c] Schedule 3 of Project Approval 10_0138). Application of minimum topsoil and subsoil depths (Condition 26[b] of the Approval Decision EPBC 2010/5566).
	1e. Erosion and sedimentation (Rawlings <i>et al.</i> , 2010; DECCW, 2011; Tongway and Ludwig, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Establishing vegetation cover as soon as practicable following disturbance. Application of a temporary sterile cover crop, or native grass cover-crop established from native hays. Adjust seed and planting densities to maximise ground cover. Treatment of dispersive soils and spoils. Design of the batter slopes to be stable. Use of structural erosion controls (e.g. channel banks, slope drains and energy dissipaters). Exclusion of livestock (Rawlings <i>et al.</i>, 2010). Use of rock to stabilise batter surfaces. Ecological function analysis to identify constraints and requirements for specific management measures (Tongway and Ludwig, 2011).

³ Not proposed to be used due to preferential use of mulch and woody debris from clearing activities.

⁴ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

⁵ This method is only applicable over small areas (Rawlings *et al.*, 2010) and is therefore not proposed to be undertaken due to the extensive areas required to be revegetated.

⁶ This method is only applicable to the cleared lands but is not proposed to be undertaken due to the extensive areas required to be revegetated and high disturbance of the technique.

⁷ This method is only applicable to the derived grasslands but is not proposed to be undertaken in preference of other methods.

Table 5 (Continued)
Factors Likely to Impede or Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
1. Substrate (Cont.)	1e. Erosion and sedimentation (Rawlings <i>et al.</i> , 2010; DECCW, 2011) (Cont.)	Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Targeting revegetation along drainage lines. Remediation of scalded areas. Restriction of livestock access (particularly along drainage lines) (Rawlings <i>et al.</i>, 2010). Installation of new infrastructure in stable locations (e.g. access roads) (McIvor, 2002). Maximised re-use of existing infrastructure (e.g. access roads) instead of creating new infrastructure. Ecological function analysis to identify constraints and requirements for specific management measures (Tongway and Ludwig, 2011).
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	
	1f. Soil compaction - inhibits germination of seeds or growth of seedlings (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i> , 2010; DECCW, 2011) Also adds to water logging issues.	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Restriction of vehicle access to avoid compacting soil (Eddy, 2002; DSE, 2005). Pre-planting site preparation (e.g. ripping) (Rawlings <i>et al.</i>, 2010). Exclusion of livestock (Rawlings <i>et al.</i>, 2010). Mulching (Rawlings <i>et al.</i>, 2010). Use of spiked rollers/ air jetting to aerate soils to depth of 30 cm.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction of vehicle access to avoid compacting soil (Eddy, 2002; DSE, 2005). Restriction of livestock access (Rawlings <i>et al.</i>, 2010). Options for reducing compaction: <ul style="list-style-type: none"> Mulching (Rawlings <i>et al.</i>, 2010)⁸. Hand aeration (Rawlings <i>et al.</i>, 2010)⁹. Deep air-jetting and mulching (Rawlings <i>et al.</i>, 2010)¹⁰. Cultivation followed by mulching (Rawlings <i>et al.</i>, 2010).
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction of vehicle access to avoid compacting soil (Eddy, 2002; DSE, 2005). Restriction of livestock access (Rawlings <i>et al.</i>, 2010).
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	
	1g. Ground disturbance (Eddy, 2002; Rawlings <i>et al.</i> , 2010)	Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction of vehicle access to avoid unnecessary ground disturbance (Eddy, 2002; DSE, 2005). Fencing and signage.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Avoidance of revegetation techniques that involve high level of physical disturbance (i.e. cultivation, ripping and excavation) (Eddy, 2002; DECCW, 2011).
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction of vehicle access to avoid unnecessary ground disturbance (DSE, 2005; Eddy, 2002). Fencing and signage.
	1h. Depleted soil seed bank (DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Management of topsoil seed resource. Soil seed bank germination testing (rehabilitation trials). Supplementary seeding/tube stock planting (Gibson-Roy <i>et al.</i>, 2010).
		Offset Areas	<ul style="list-style-type: none"> Supplementary seeding/tube stock planting.

⁸ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

⁹ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

¹⁰ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

Table 5 (Continued)
Factors Likely to Impede or Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
1. Substrate (Cont.)	1i. Insufficient topsoil and/or topsoil depth (DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Application of minimum topsoil and subsoil depths (Condition 26[b] of the Approval Decision EPBC 2010/5566). Soil surveys and inventories prior to soil stripping (Condition 27[c] of the Approval Decision EPBC 2010/5566 and Condition 39 Schedule 3 of Project Approval 10_0138). Soil handling processes for removal, storage and re-layering of topsoil and subsoil (Condition 27[d] of the Approval Decision EPBC 2010/5566). Annual soil balances to manage soil handling (Condition 39 Schedule 3 of Project Approval 10_0138).
	1j. Poor soil water holding capacity (Eddy, 2002)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Amelioration of soils with compost/woody debris. Selective placement of soils. Addition of woody debris (Harmon <i>et al.</i>, 1986; Debeljak, 2006; Manning <i>et al.</i>, 2013, Goldin and Brookhouse, 2014)
	1k. Instability of the final landform	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Design of the batter slopes to be stable. Selective placement of soils. Use of rock to stabilise batter surfaces.
	1l. Poor drainage of the final landform (Eddy, 2002)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Design of the batter slopes to be stable. Amelioration of soils with compost.
	1m. Lack of soil mycorrhizae	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Application of minimum topsoil and subsoil depths (Condition 26[b] of the Approval Decision EPBC 2010/5566). Soil surveys and inventories prior to soil stripping (Condition 27[c] of the Approval Decision EPBC 2010/5566 and Condition 39 Schedule 3 of Project Approval 10_0138). Soil handling processes for removal, storage and re-layering of topsoil and subsoil (Condition 27[d] of the Approval Decision EPBC 2010/5566). Use of rhizobial bacteria inoculants for acacia (CSIRO, 2005).
2. Clearing	2a. Incidental clearing, fragmentation and fire wood collection	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Restriction on clearing.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction on clearing. Restriction on fire wood collection. Fencing and signage. Maximised re-use of existing infrastructure (e.g. access roads) instead of creating new infrastructure. Installation of new infrastructure in cleared land (e.g. access roads).
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction on clearing. Restriction on fire wood collection. Use of low disturbance methods for site preparation in derived grasslands and existing Box-Gum Woodland.
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	
3. Livestock	3a. Grazing by cattle – ground disturbance, remove or destroy seeds, seedlings or plantings (DSE, 2005; Rawlings <i>et al.</i> , 2010)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Fencing of areas undergoing revegetation to exclude grazing livestock and prevent grazing of seedlings (Eddy, 2002). Maintenance of fencing used to exclude livestock.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Fencing of areas undergoing revegetation to exclude grazing livestock and prevent grazing of seedlings (Eddy, 2002). Maintenance of fencing used to exclude livestock.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Restriction of livestock access (particularly along drainage lines) (Rawlings <i>et al.</i>, 2010). Restriction of livestock access to protect plants that are known to be sensitive to grazing (Rawlings <i>et al.</i>, 2010). Restriction of livestock access to maintain ground cover. Maintenance of fencing used to exclude livestock. Controlled grazing management options: <ul style="list-style-type: none"> Crash grazing periodically to remove nutrients locked in weeds (Rawlings <i>et al.</i>, 2010). High intensity short duration rotational grazing (Rawlings <i>et al.</i>, 2010). Removal of grazing livestock. Low stocking rates.
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Exclusion of livestock grazing along watercourses (McIvor and McIntyre, 2002). Exclusion of livestock grazing in areas not already subject to grazing (DECCW, 2011). Maintenance of fencing used to exclude livestock. Controlled grazing management (low stocking rates).

Table 5 (Continued)
Factors Likely to Impede or Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
4. Introduced flora species (weeds)	4a. Weed invasion – perennial and annual grasses, perennial herbs, annual and biennial herbs and woody weeds (DSE, 2005; Rawlings <i>et al.</i> , 2010; Gibson-Roy <i>et al.</i> , 2010; DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> • Weed control (Condition 27[a] of the Approval Decision EPBC 2010/5566). • Establishing vegetation cover as soon as practicable following disturbance (Condition 27[b] of the Approval Decision EPBC 2010/5566). • Application of a temporary sterile cover crop, or native grass cover-crop established from native hays. • Minimal unnecessary ground disturbance that may create opportunities for weeds (Rawlings <i>et al.</i>, 2010; DECCW, 2011). • Nutrient management (e.g. exclusion of grazing livestock which add nutrients) (Prober <i>et al.</i>, 2002; Rawlings <i>et al.</i>, 2010). • General weed hygiene (e.g. avoiding driving through weed infestations) (DECCW, 2011). • Correct spacing for species when planting seedlings to avoid excessive shading (Rawlings <i>et al.</i>, 2010). • Provisions to identify new invasive plant species (e.g. weed monitoring). • Weed management options: <ul style="list-style-type: none"> - Physical Removal (e.g. removing weeds by felling or pulling) (Gibson-Roy <i>et al.</i>, 2010; Rawlings <i>et al.</i>, 2010). - Herbicide (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods) (DSE, 2005; Rawlings <i>et al.</i>, 2010; DECCW, 2011). • Sowing of Kangaroo Grass to outcompete annual grass weeds (Prober <i>et al.</i>, 2002; Rawlings <i>et al.</i>, 2010).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> • Minimal unnecessary ground disturbance that may create opportunities for weeds (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i>, 2010). • Correct spacing for species when planting seedlings to avoid excessive shading (DECCW, 2011). • Weed management options: <ul style="list-style-type: none"> - Crash grazing periodically to reduce annual and perennial grass weeds (Rawlings <i>et al.</i>, 2010). - Nutrient management (e.g. exclusion of grazing livestock which add nutrients) (Rawlings <i>et al.</i>, 2010). - Controlled burns during spring to reduce annual and perennial grass weeds (not broadleaf exotics) (Rawlings <i>et al.</i>, 2010). - Physical Removal (e.g. removing weeds by felling or pulling) (Gibson-Roy <i>et al.</i>, 2010; Rawlings <i>et al.</i>, 2010). - Herbicide (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods) (DSE, 2005; Rawlings <i>et al.</i>, 2010; DECCW, 2011). - Sowing of Kangaroo Grass to outcompete annual grass weeds (Prober <i>et al.</i>, 2002; Rawlings <i>et al.</i>, 2010). - Scalping to remove weed seed bank (Gibson-Roy <i>et al.</i>, 2010)¹¹.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> • Minimal unnecessary ground disturbance that may create opportunities for weeds (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i>, 2010). • Light grazing in autumn and/or winter to reduce vigour of annual grass weeds (Rawlings <i>et al.</i>, 2010).
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> • Minimal unnecessary ground disturbance that may create opportunities for weeds (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i>, 2010).
5. Herbicide	5a. Excessive herbicides – may have a negative effects on native species (Eddy, 2002)	All areas	<ul style="list-style-type: none"> • Use herbicide sparingly (minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods) (DSE, 2005; Rawlings <i>et al.</i>, 2010; DECCW, 2011).
6. Impacts from Animals (exotics and grazing native animals)	6a. Grazing by feral pigs and goats – remove or destroy seeds, seedlings or plantings (Eddy, 2002; Rawlings <i>et al.</i> , 2010; DECCW, 2011)	All areas	<ul style="list-style-type: none"> • Monitoring and control feral pigs and goats (Eddy, 2002; Rawlings <i>et al.</i>, 2010). • Use of tree guards to protect young seedlings from browsing or grazing (Rawlings <i>et al.</i>, 2010).
	6b. Rabbits and hares (Eddy, 2002; DSE, 2005; DECCW, 2011)	All areas	<ul style="list-style-type: none"> • Monitoring and control of rabbits and hares (Eddy, 2002; DSE, 2005; Rawlings <i>et al.</i>, 2010).
	6c. Grazing native fauna species (e.g. kangaroos) (DECCW, 2011)	All areas	<ul style="list-style-type: none"> • Use of tree guards to protect young seedlings from browsing or grazing (Rawlings <i>et al.</i>, 2010). • Fencing farm dams.
	6d. Feral foxes (Eddy, 2002; DECCW, 2011)	All areas	<ul style="list-style-type: none"> • Monitoring and control of feral foxes (Eddy, 2002; Rawlings <i>et al.</i>, 2010).
	6e. Honeybees (DECCW, 2011)	All areas	<ul style="list-style-type: none"> • Management of honeybees¹².
	6f. Deer (DECCW, 2011)	All areas	<ul style="list-style-type: none"> • Management of Deer.

¹¹ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

¹² Not proposed.

Table 5 (Continued)
Factors Likely to Impede or Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
6. Impacts from Animals (exotics and grazing native animals) (Cont.)	6g. Feral Cat (Eddy, 2002; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Management of the Feral Cat.
	6h. Other Invasive Fauna	All areas	<ul style="list-style-type: none"> Provisions to identify new invasive fauna species (e.g. fauna monitoring).
7. Fire	7a. Uncontrolled bushfire (DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Maintain fire breaks and access. Assess fuel loads.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Maintain fire breaks and access. Assess fuel loads.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Controlled grazing to reduce biomass (Rawlings <i>et al.</i>, 2010). Assess fuel loads.
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> DECCW (2011) suggests fire frequency should be a minimum interval of 5 years and a maximum interval of 40 years. Rawlings <i>et al.</i>, (2010) recommends fire frequency in patches should be every 4 to 8 years. Spring or autumn burns depending on a range of factors (Gibson-Roy <i>et al.</i>, 2010; Rawlings <i>et al.</i>, 2010). Maintain fire breaks and access. Assess fuel loads.
	7b. Controlled burns – too infrequent - may result in overexposure of soil, erosive processes and weed invasion, or too frequent - may result in loss of species diversity (Gibson-Roy <i>et al.</i> , 2010; DECCW, 2011)	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Assess fuel loads.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Assess fuel loads.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> No controlled burns whilst vegetation is establishing. Assess fuel loads.
		Offset Areas - Restoration of Existing Box-Gum Woodland (Condition State 1 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> DECCW (2011) suggests fire frequency should be a minimum interval of 5 years and a maximum interval of 40 years. Rawlings <i>et al.</i>, (2010) recommends fire frequency in patches should be every 4 to 8 years. Assess fuel loads. Spring or autumn burns depending on a range of factors (Rawlings <i>et al.</i>, 2010). Controlled burns should be undertaken in a mosaic (i.e. retain some unburned areas (DECCW, 2011)). Maintain fire breaks and access.
8. Floristics	8a. Poor diversity in the seed mix or tube stock	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Monitoring of plant growth and survival (Rawlings <i>et al.</i>, 2010). Strategic and long term seed collection, management and storage. Site preparation and depth of sowing seed. Supplementary planting or reseeded of absent species.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Strategic and long term seed collection, management and storage. Site preparation and depth of sowing seed. Supplementary planting or reseeded of absent species.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Favour natural regeneration over seeding or planting in the first instance followed by seeding or planting if required (McIntyre, 2002).
	8b. Unsuitable species in the seed mix or tube stock	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011).
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011).
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Favour natural regeneration over seeding or planting in the first instance followed by seeding or planting if required (McIntyre, 2002).
	8c. Shortage of sufficient seed or tube stock	All areas	<ul style="list-style-type: none"> Review commercial seed and tube stock availability.

Table 5 (Continued)
Factors Likely to Impede or Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
8. Floristics (Cont.)	8d. Poor understorey diversity	All areas	<ul style="list-style-type: none"> Planting of trees and shrubs at appropriate densities (DECCW, 2011). Use local endemic (adapted) species (Eddy, 2002; Rawlings <i>et al.</i>, 2010). Restore linkages to existing woodland patches. Assess whether ecological thinning is necessary (Rawlings <i>et al.</i>, 2010). Consider causing disturbance (e.g. through fire or grazing) (Eddy, 2002). Include a wide diversity of species in the seed mix (Gibson-Roy <i>et al.</i>, 2010).
	8e. Over-collection of seed for revegetation purposes (Eddy, 2002; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Review commercial seed and tube stock availability. Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011).
	8f. Lack of pollinators	All areas	<ul style="list-style-type: none"> Promotion of bees through provision of habitat (e.g. general revegetation and regeneration).
9. Native plant growth	9a. Poor native plant growth	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Site preparation and depth of sowing seed. Fencing of areas undergoing revegetation to exclude grazing animals (e.g. livestock)¹³. Management of pressure from feral grazing animals and native grazing animals. Correct spacing for species when planting seedlings to avoid excessive shading (Rawlings <i>et al.</i>, 2010). Supplementary seeding or planting. Revegetation trials (Condition 15 of the Approval Decision EPBC 2010/5566). Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). Selective use of specific fertilisers only.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Site preparation and depth of sowing seed. Fencing of areas undergoing revegetation to exclude grazing livestock. Management of pressure from feral grazing animals and native grazing animals. Correct spacing for species when planting seedlings to avoid excessive shading (Rawlings <i>et al.</i>, 2010). Supplementary seeding or planting. Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011).
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	
	9b. Poor seed germination	All areas	<ul style="list-style-type: none"> Supplementary seeding or planting. Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011). Smoke water¹⁴. Seed scarification for acacia or heat treatment.
	9c. Dense overstorey and midstorey revegetation (e.g. White Cypress Pine) – sometimes regeneration is too successful and trees may compete with each other for light, water and nutrients (Rawlings <i>et al.</i> , 2010; DECCW, 2011)	All areas	<ul style="list-style-type: none"> Assess whether ecological thinning is necessary (Rawlings <i>et al.</i>, 2010). Thinning with fire or manually (Rawlings <i>et al.</i>, 2010).
	9d. Dense grass cover	All areas	<ul style="list-style-type: none"> Consider causing disturbance (e.g. through fire or grazing) (Rawlings <i>et al.</i>, 2010).
	9e. Disease (e.g. <i>Phytophthora cinnamomi</i>) (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Hygiene protocols to minimise the risk of plant diseases (Rawlings <i>et al.</i>, 2010).
	9f. Fungi or pathogens – may cause germination failure (seeds) (Rawlings <i>et al.</i> , 2010).	All areas	<ul style="list-style-type: none"> Preferential use of local endemic (adapted) species (Rawlings <i>et al.</i>, 2010), however use of a high quality seed source over a low quality more local seed source (Broadhurst <i>et al.</i>, 2008 in DECCW, 2011).

¹³ Native animals would not be excluded. Feral animals would be controlled via other methods.

¹⁴ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

Table 5 (Continued)
Factors Likely to Impede or Enhance the Re-establishment and Restoration of Box-Gum Woodland

Broad Factor	Factors Likely to Impede	Relevant Objective	Factors Likely to Enhance
10. Fauna habitat	10a. Lack of bush rocks (Michael <i>et al.</i> , 2011)	All areas	<ul style="list-style-type: none"> Maximise salvage and reuse of bush rocks (Condition 39[b] Schedule 3 of Project Approval 10_0138).
	10b. Lack of fallen timber/hollow logs (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Maximise salvage and reuse of timber/hollow logs (Condition 39[b] Schedule 3 of Project Approval 10_0138).
	10c. Lack of structural diversity (including lack of tree hollows) (Manning <i>et al.</i> , 2011; Michael <i>et al.</i> , 2011; Freudenberger <i>et al.</i> , 2004)	All areas	<ul style="list-style-type: none"> Planting of scattered low shrubs, mid-sized shrubs and tall trees (Freudenberger <i>et al.</i>, 2004). Maximise salvage and reuse of timber/hollow logs (Condition 39[b] Schedule 3 of Project Approval 10_0138) including placement of hollow limbs in some select trees without hollows. Increase woodland patch size within the offset area (Prober <i>et al.</i> 2002).
11. Surrounding land uses	11a. Agriculture -pesticides and herbicides	Offset Areas	<ul style="list-style-type: none"> Increase woodland patch size within the offset area (Rawlings <i>et al.</i>, 2010). Communication with surrounding land users (either NPWS or private).
	11b. Agriculture -exotic species (including incursions of stock and feral animals)	Offset Areas	<ul style="list-style-type: none"> Increase woodland patch size within the offset area (Rawlings <i>et al.</i>, 2010). Communication with surrounding land users (either NPWS or private). Fencing and signage. Co-ordinated management of exotic species with surrounding land users.
	11c. Agriculture -increased runoff	Offset Areas	<ul style="list-style-type: none"> Increase woodland patch size within the offset area (Rawlings <i>et al.</i>, 2010). Communication with surrounding land users (either NPWS or private).
	11d. Agriculture -nutrient enrichment	Offset Areas	<ul style="list-style-type: none"> Increase woodland patch size within the offset area (Rawlings <i>et al.</i>, 2010). Communication with surrounding land users (either NPWS or private).
12. Weather	12a. Drought	Mine Rehabilitation - Establishment of Box-Gum Woodland on the post-mine landform	<ul style="list-style-type: none"> Monitoring for signs of water stress (dieback). Irrigation. Mulch.
		Offset Areas – Re-establishment of Box-Gum Woodland on cleared (former agricultural) land (Condition States 3 and 4 [Rawlings <i>et al.</i> , 2010])	<ul style="list-style-type: none"> Monitoring for signs of water stress (dieback). Limit grazing livestock during drought periods¹⁵ (DECCW, 2011). Management of pressure from feral grazing animals and native grazing animals. Irrigation¹⁶. Mulch¹⁷.
		Offset Areas – Re-establishment of Box-Gum Woodland from derived grasslands (Condition State 2 [Rawlings <i>et al.</i> , 2010])	
	12b. Flood/major rainfall	All areas	Refer to 1d. Erosion and sedimentation.
	12c. Wind	All areas	<ul style="list-style-type: none"> Only use healthy seedlings (Rawlings <i>et al.</i>, 2010). Use of tree guards to protect young seedlings (Rawlings <i>et al.</i>, 2010).
	12d. Climate change (DECCW, 2011)	All areas	<ul style="list-style-type: none"> Restoration of Box-Gum Woodland (DECCW, 2011). Use of genetically diverse collections of seed sourced from large and health populations. Increase woodland patch size within the offset area (to provide links for movement of plant propagules and fauna). Provide increased connectivity through revegetation of cleared land.
13. Management	13a. Unclear objectives	All areas	<ul style="list-style-type: none"> Define objectives (Eddy, 2002; Rawlings <i>et al.</i>, 2010). Management for patchiness (diversity) (Rawlings <i>et al.</i>, 2010).
	13b. Lack of maintenance	All areas	<ul style="list-style-type: none"> Adaptive management (Rawlings <i>et al.</i>, 2010; Tongway and Ludwig, 2011).
	13c. Poor monitoring design (measurement of success)	All areas	<ul style="list-style-type: none"> Monitor to determine effectiveness (Eddy, 2002; DECCW, 2011). Monitoring closely linked to objectives. Use of photo-points to monitor changes over time (Eddy, 2002).
	13d. Unqualified personnel	All areas	<ul style="list-style-type: none"> Engage suitability qualified personnel

Note: The highlighted rows relate only to the Rehabilitation Strategy.

¹⁵ Native animals would not be limited during drought periods. General feral animal control measures would continue.

¹⁶ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

¹⁷ This method is not proposed to be undertaken due to the extensive areas required to be revegetated.

4 CONCLUSION

This report documents factors likely to enhance or impede the effective long-term provision of suitable habitat for threatened species through the effective restoration of degraded habitats in offset areas or re-establishment of viable habitat on disturbed areas (both offset areas and the mine site).

A variety of different factors relevant to the provision of suitable habitat for the suite of threatened species have been identified. However of these, the following two appear to be the most important – provision of habitat resources for each species across the restored and rehabilitated landscape and managing threatening processes. The actual return of such threatened species to these future landscapes will also depend on source populations being available away from the restored remediated landscapes and the availability of potential movement pathways for such species between potential source populations and the restored and rehabilitated landscapes.

A separate Implementation Plan has been developed to maximise the prospects for provision of viable areas of suitable habitat for threatened species on the offset areas and the mine site.

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