



Construction Biodiversity Management Plan

SILVERTON WIND FARM CONNECTION WORKS



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ARONYMS AND ABBREVIATIONS

BMP	Biodiversity Management Plan
SWDPL	The proponent, Silverton Wind farm Developments Pty Ltd
CoA	Minister's Conditions of Approval
CEMP	Construction Environmental Management Plan
DPI	Department of Primary Industries (Fisheries, Conservation and Aquaculture)
EA	Environmental Assessment
EEC	Endangered Ecological Community
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ESR	Environmental Site Representative (TransGrid Environmental Officer)
EWMS	Environmental Work Method Statements
FM Act	<i>Fisheries Management Act 1994</i>
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NW Act	<i>Noxious Weeds Act 1993</i>
OEH	Office of Environment and Heritage
RRANA	Rescue and Rehabilitation of Australian Native Animals
SWF	Silverton Wind Farm
TSC Act	<i>Threatened Species and Conservation Act 1995</i>

1 INTRODUCTION

1.1 CONTEXT

This Construction Biodiversity Management Plan (BMP) forms part of the Construction Environmental Management Plan (CEMP) for the substation and transmission line component (connection works) of the works associated with the approved Silverton Wind Farm (SWF) project (the 'Project').

This BMP has been prepared to comply with the Environmental Assessment (EA), Minister's Conditions of Approval (CoA), Statements of Commitment (SoCs), Project Approval (Schedule 3) of the Silverton Wind Farm, and all applicable legislation, for the construction of the transmission line component of the SWF project (the Project). A cross reference table is provided in Appendix A showing those conditions relevant to construction of the transmission line and how they are addressed in this sub-plan.

1.2 BACKGROUND

The wind farm and transmission line was approved on 24 May 2009, under Part 3A of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). Project Approval was granted for the construction, operation and decommissioning of 282 wind turbines, and associated infrastructure (identified as Stage 1) including a transmission line from the existing substation in Broken Hill to the wind farm site. Since the approval in 2009, three modifications have been lodged and granted. The most recent (Modification 3) has reduced the total number of turbines to 172 and includes minor realignment of the transmission line and provision for the transmission line to be constructed separately to the wind farm itself.

The EA identified the key impacts of the construction and operation of the Project on biodiversity. With respect to the transmission line, it identified the potential for largely minor impacts on biodiversity during construction associated with removal of vegetation and habitat features, weed introduction and spread, and erosion and pollution risks. The EA proposed the implementation of mitigation and management measures to minimise these impacts. The submissions report provided revised SoCs based on these mitigation and management measures.

TransGrid will construct the connection works. This BMP describes the environmental management measures TransGrid will implement during the construction work. These measures are largely based on those prepared for a draft Construction Flora and Fauna Management Plan for the wind farm site, developed in consultation with the NSW Office of Environment and Heritage (OEH) and Local Land Services (LLS) in January 2014.

1.3 ENVIRONMENTAL MANAGEMENT SYSTEMS OVERVIEW

The overall Environmental Management System for the Project is described in Section 1.2 in the CEMS. This BMP is part of the environmental management framework for the Project which includes the Construction Environmental Management Plan (CEMP). Mitigation and management measures identified in this BMP will be incorporated into site or activity specific Environmental Work Method Statements (EWMS).

Used together, the CEMP and BMP, strategies, procedures and EWMS form management guides that clearly identify required environmental management actions for reference by TransGrid personnel and contractors.

The review and document control processes for this plan are described in the CEMP.

2 PURPOSE AND OBJECTIVES

2.1 PURPOSE

The purpose of this Plan is to describe how impacts on biodiversity will be minimised and managed during construction of the Project.

2.2 OBJECTIVES

The key objective of the BMP is to ensure that impacts to biodiversity are minimised and are within the scope permitted by the planning approval. To achieve this objective, the following will be undertaken:

- Ensure controls and procedures are implemented during site establishment, construction, and road work activities to avoid, minimise or manage potential adverse impacts to biodiversity within and adjacent to the project area
- Ensure appropriate measures are implemented to address the mitigation measures detailed in the EA, SoCs and Conditions of Approval (CoA)
- Ensure measures are implemented to comply with all relevant legislation and other requirements as described in Section 3.1 of this Plan

2.3 TARGETS

The following targets have been established for the management of biodiversity impacts during the Project:

- Ensure full compliance with the relevant legislative requirements
- Ensure full compliance with relevant requirements of the EA, SoCs and CoA
- No disturbance to biodiversity outside the construction footprint and associated access tracks and site compounds
- Minimise disturbance to biodiversity within the project area
- No increase in distribution of noxious weeds currently existing within the project area
- No new noxious weeds introduced to the project area
- No fauna mortality during clearing and construction
- No pollution or siltation of aquatic ecosystems, wetlands, endangered ecological communities or threatened species habitat

3 ENVIRONMENTAL REQUIREMENTS

3.1 RELEVANT LEGISLATION AND GUIDELINES

3.1.1 Legislation

Legislation relevant to biodiversity management includes:

- *Environmental Planning and Assessment Act 1979* (EP&A Act)
- *National Parks and Wildlife Act 1974* (NPW Act)
- *Threatened Species Conservation Act 1995* (TSC Act)
- *Fisheries Management Act 1994* (FM Act)
- *Noxious Weeds Act 1993* (NW Act)
- *Pesticides Act 1999*
- *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act)

Relevant provisions of the above legislation are explained in the register of legal and other requirements included in Appendix A1 of the CEMS.

3.1.2 Guidelines

The main guidelines, specifications and policy documents relevant to this Plan include:

- NSW National Parks & Wildlife Service. 2001. *Policy for the Translocation of Threatened Fauna in NSW: Policy and Procedure Statement No. 9* Threatened Species Unit, Hurstville NSW
- Relevant recovery plans, priority action statements and best practice guidelines.

4 ENVIRONMENTAL ASPECTS AND IMPACTS

4.1 EXISTING ENVIRONMENT

4.1.1 Vegetation communities

A total of seven vegetation communities¹ were recorded during the 2016 and 2017 validation surveys of the transmission line route (refer to mapping in Appendix B):

- WE8 - Black Bluebush low open shrubland of the alluvial plains and sandplains of the arid and semi-arid zones (Benson 153)
- WE9 - Low Bluebush - Bladder Saltbush open shrubland of the arid zone (Benson 222)
- WE48 - Mulga - Dead Finish on stony hills mainly of the Channel Country and Broken Hill Complex Bioregions (Benson 123)
- WE11 - Pearl Bluebush low open shrubland of the arid and semi-arid plains (Benson 154)
- WE15 - Prickly Wattle open shrubland of drainage lines on stony rises and plains of the arid climate zone (Benson 136)
- WE79 - River Red Gum open woodland of intermittent watercourses mainly of the arid climate zone (Benson 41)
- An atypical occurrence of WE83 - Chenopod sandplain mallee woodland/shrubland of the arid and semi-arid (warm) zones (Benson 170) – possibly a new undescribed vegetation type

In addition, a small area of exotic dominated vegetation was identified along Acacia Creek in the northern section of the route. In this area Pepper Tree (*Schinus areira*) dominated the banks of the creek and Mexican Poppy (*Argemone ochroleuca*) was common within the creek bed.

Vegetation condition was classified according to the following definitions:

Good	Vegetation dominated by native species with no or few exotics. A high diversity of native species present. Little disturbance or bare ground.
Moderate	Vegetation dominated by natives but with some exotic species present. Some diversity in native species but not high. Evidence of disturbance and/or bare ground present in patches.
Poor	Vegetation either dominated by exotics or if native dominated, native species diversity is low with a number of exotics present. Disturbance and bare ground generally extensive.

Except for the small area of exotic dominated vegetation along Acacia Creek, all of the vegetation along the transmission line route would be in moderate to good condition according to the OEH Biometric condition classes.

¹ Classified according to the OEH Biometric Vegetation Types Database (2012) for the Western Catchment Management Area

The small localised area of chenopod/mallee woodland occurs just to the north of Lakes Grave Creek. The woodland is dominated by an overstorey of Red Mallee (*Eucalyptus socialis*) with understorey of largely chenopod shrubs including Black Bluebush (*Maireana pyramidata*), Cannonball Burr (*Dissocarpus paradoxus*), Mallee Saltbush (*Atriplex stipitata*), *Atriplex lindleyi*, *Chenopodium curvispicatum*, Grey Copperburr (*Sclerolaena diacantha*) and Goathead Burr (*S. bicornis*). It has been mapped as Chenopod sandplain mallee woodland/shrubland (WE83), as the species composition is somewhat consistent with variants of this vegetation type. However, Chenopod sandplain mallee woodland/shrubland (WE83) occurs on aeolian sandplains and dune fields, whereas the community along the transmission line route occurs on a sandy-loam/fine gravel floodplain of an ephemeral creek (Lakes Grave Creek). Chenopod sandplain mallee woodland/shrubland (WE38) is also mapped as occurring well to the south and south-east of the site, with the nearest mapped occurrence approximately 100km away. An undescribed community Chenopod – Red Mallee woodland shrubland on gravelly lower slopes was identified in the Stage 1 Biodiversity Addendum (NGH Environmental 2008) for the wind farm. However, with the exception of Red Mallee, the species listed in the Biodiversity Addendum are not consistent with the community along the transmission line route. Further, the undescribed community occurred on gravelly lower slopes which, is also inconsistent. It is possible that the community along the transmission line route is another, separate, undescribed community. It was observed to be very localised in its extent during the surveys and has not been recorded at any other locations during the many previous surveys across the wind farm site. Further investigation would be required to determine its status, extent and conservation value. Given the very localised occurrence and that its status, extent and conservation value are unknown, it has been included in this BMP as a constraint requiring specific mitigation as detailed in Section 5.

The Low Bluebush – Bladder Saltbush community was characterised by the dominance of Bladder Saltbush (*Atriplex vesicaria*) and Low Bluebush (*Maireana astrotricha*) was absent. Black Bluebush (*Maireana pyramidata*) was generally the next most dominant species but occurred in low densities. It is possible that this community is just a variant of the Black Bluebush low open shrubland however, given the high levels of disturbance and low species diversity many of the other diagnostic species from both communities were absent or not able to be identified. Areas dominated by Bladder saltbush were different in terms of structure and landscape position and have been assigned to the Low Bluebush - Bladder Saltbush open shrubland as a best match to distinguish these areas from the surrounding Bluebush dominated communities.

In general, the vegetation within the southern portion of the route has been subject to moderate to high levels of disturbance largely from prolonged sheep and cattle grazing. As a result, most of the vegetation is in poor or moderate condition. Vegetation in the northern portion was generally, in better condition although there was extensive evidence of browsing by goats in certain areas.

The following sections summarise existing threatened communities and flora and fauna species within and adjacent to the project area.

4.1.2 Disturbance and weeds

The study areas site shows varying levels of disturbance to flora and fauna habitat. Primary causes of this degradation include grazing (domestic and feral animals) and harvesting of timber (particularly Mulga).

Despite the degradation and structural changes to vegetation communities occurring as a result of past land use practices, the study area is dominated by native flora species and weed species are relatively few.

Two noxious weed species have been identified along the transmission line route:

- Mexican Poppy – within the bed of Acacia Creek
- African Boxthorn (*Lycium ferocissimum*) – occurring as scattered individuals along the transmission line route but more commonly in lower lying areas.

The general locations of noxious weeds recorded along the transmission line route are mapped in Appendix B. Although not recorded during surveys, there is also a moderate to high likelihood that an additional noxious weed species, Mesquite (*Prosopis* sp.), could occur within drainage lines.

4.1.3 Endangered Ecological Communities (EEC)

No Endangered Ecological Communities occur along the transmission line route.

4.1.4 Threatened Flora

No threatened plant species or endangered populations were recorded within the project area or within 20 kilometres of the project area. Given the generally highly disturbed environment within the project area, it is unlikely that any threatened species would occur.

4.1.5 Fauna habitats

The dominant fauna habitat types that occur along the transmission line route are summarised below.

Mulga shrublands

Mulga shrublands occurred mostly in the north-west portion of the route. Generally, the tall and low shrub layers are sparse and provides little value in terms of shelter and nesting opportunities. These areas were generally highly disturbed and evidence of browsing by goats is extensive.

Chenopod shrublands

Chenopod shrubland is widespread along the transmission line route and is the dominant habitat type, particularly in the south-east. It is characterised by a varying assemblage of chenopod shrubs comprising Bluebushes, Saltbushes and Copperburrs generally less than 1.5m high. These shrublands provide a unique type of habitat as overstorey vegetation is absent. A number of mammal, bird and reptile groups are associated with different forms of chenopod shrubland including ground feeding specialists such as the Orange Chat, Rufous Field Wren and White-winged fairy Wren

Riparian woodland

Riparian Woodlands in semi-arid and arid areas are resource-rich environments, with slightly higher moisture levels likely to support increased vegetation cover and invertebrate abundance providing sheltering and foraging resources to a range of species. The addition of ephemeral water also adds to the value of this habitat.

Hollow-bearing and mature trees

Hollow-bearing and mature trees were very sparsely distributed along the transmission line route. River Red Gums occurred along some of the ephemeral drainage lines but none of the within a 75m buffer of the line were observed to be hollow-bearing. A single patch of disturbed River Red Gum woodland occurs just to the north of Silverton Road. Within this area there are a few mature River Red Gums and

numerous younger recruits. The successful recruitment from the mature trees suggests that the community is recovering in this area.

Mature mulga that would also support small hollows for birds and bats was generally absent within a 75m buffer of the route. There are occasional trees that may support small hollows.

Rocky outcrops and scattered surface rock

Rocky outcrops and scattered surface rock can provide sheltering and refuge opportunities for a number of reptile species. Rocky outcrops are uncommon across the majority of the transmission line route, particularly in the south. Generally, the landscapes consisted of flat sandy or clay plains and low sandy rises with little surface or outcropping rock.

As the transmission line route neared the Barrier Ranges, small rocky outcrops became more common. Substantial rock outcrops were identified to the west of the substation site. Previous mapping had identified a significant rock outcrop in this area. Vegetation validation surveys in February 2017 determined that this rocky outcrop extended further to the east, coming within 100m of the substation site (refer to site maps in Appendix B).

4.1.6 Threatened fauna

Threatened fauna species identified during surveys for the EA and vegetation validation (known) and those which have been previously recorded in the area and with suitable habitat in the study area (possible) are listed in Table 4-1.

Table 4-1 Threatened fauna

Common name	Scientific name	EPBC Act	TSC Act	Occurrence
Redthroat	<i>Pyrrholaemus brunneus</i>	-	Vulnerable	Likely
Pied Honeyeater	<i>Certhionyx variegatus</i>	-	Vulnerable	Likely
Rufous Fieldwren	<i>Calamanthus campestris</i>	-	Vulnerable	Likely
Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	-	Vulnerable	Possible
Varied Sittella	<i>Daphoenositta chrysoptera</i>	-	Vulnerable	Possible
Black-breasted Buzzard	<i>Hamirostra melanosternon</i>	-	Vulnerable	Possible
Australian Bustard	<i>Ardeotis australis</i>	-	Endangered	Possible
Square-tailed Kite	<i>Lophoictinia isura</i>	-	Vulnerable	Possible
Grey Falcon	<i>Falco hypoleucos</i>	-	Endangered	Possible
Ringed Brown Snake	<i>Pseudonaja modesta</i>	-	Vulnerable	Possible
Scarlet-chested Parrot	<i>Neophema splendida</i>	-	Vulnerable	Possible
Little Eagle	<i>Hieraaetus morphnoides</i>	-	Vulnerable	Possible
Pink Cockatoo	<i>Lophochroa leadbeateri</i>	-	Vulnerable	Possible
Spotted Harrier	<i>Circus assimilis</i>	-	Vulnerable	Possible
Barrier Range Dragon	<i>Ctenophorus mirrityana</i>	-	Endangered	Possible

An area of Prickly Wattle Shrubland immediately west of Acacia Creek in the north of the study area was considered to provide likely habitat for the threatened Redthroat. The Pied Honeyeater has been

recorded frequently within the vicinity of the Barrier Ranges and this species is considered likely to occur in the north-western part of the route to the west of Day Dream Mine Road. The Rufous Fieldwren is known from the Broken Hill area and is likely to occur within the Chenopod shrublands along the route. There is potential for the Barrier Range Dragon to occur within the substantial rocky outcrops to the west of the substation site.

Other species may occur within the habitats along the route from time to time.

4.2 CONSTRUCTION ACTIVITIES

Key aspects of the Project that could result in impacts to biodiversity include:

- Clearing of native vegetation and habitats
- Disturbance of soils, consequential erosion, mobilisation of sediment and habitat degradation (particularly works within and near ephemeral streams)
- Use of chemicals / fuels (potential for spills and contamination of habitats)
- Noise impacts

4.3 DESIGN OF TRANSMISSION LINE ROUTE

Site maps as shown in Appendix B and a constraints mapping exercise were used to reduce the level of potential disturbance to flora and fauna along the transmission line route. Examples are given below:

- Adjustment to structure locations in relation to creek crossings to avoid impacting on potential habitat trees.
- Avoidance of areas with known noxious weeds.
- Avoidance of areas with known flora and fauna sensitivities.

4.4 FURTHER CONTROLS AND DETAILS ARE SHOWN IN PROTOCOL 1: DESIGN MEASURE.ECOLOGICAL IMPACTS

Likely and/or potential impacts on flora and fauna associated with the Project (as discussed in Chapter 7 of the EA) include:

- Removal of native vegetation and fauna habitat, mostly in discreet areas for the installation of poles, establishment of conductor clearances and construction of a substation
- Indirect impacts such as, erosion and pollution risks
- Spread of weeds

Condition of Approval requires that no more than 0.81 hectares of Porcupine Grass Sparse Woodland CEEC; and 0.54 hectares of the Mulga/Red Mallee Shrubland and Chenopod – Red Mallee Woodland/ Shrubland be cleared for the project, unless the Secretary agrees otherwise. **These vegetation communities would not be impacted.**

Mitigation and management measures provided in the EA aim to minimise the above likely and potential impacts on flora and fauna.

Almost all of the route is occupied by low growing native vegetation. There is limited opportunity to design the route to minimise the clearing of this vegetation for the establishment of transmission line

infrastructure such as poles and access tracks. Fine scale micro-siting could occur during construction to favour more open areas and/or those that are disturbed and comprise bare ground.

There are opportunities to minimise impacts to taller growing vegetation and hollow-bearing trees that occur within the proposed easement within the mapped areas of River Red Gum and Mulga woodland. A patch of disturbed River Red Gum woodland occurs just to the north of Silverton Road. Within this area there are a few mature River Red Gums and numerous younger recruits. The successful recruitment from the mature trees suggests that the community is recovering in this area. With the currently proposed route, the line traverses directly overhead the largest tree within the easement. To establish the necessary conductor clearances, it is likely that this tree would require removal or at the least substantial modification. Ongoing modification of this tree and the younger trees would also be required. Currently there are no River Red Gum trees (either mature or recruiting) to the west of the current line position. Moving the line slightly west would avoid the clearing of overstorey vegetation in this area.

Hollow-bearing trees are common within the other areas of River Red Gum woodland along the route. There is potential to minimise the impacts to hollow-bearing trees by favouring areas where hollow bearing trees are either absent or in lower densities.

Within the Mulga – Dead Finish community, Mulga (*Acacia aneura*) generally occurs as scattered individuals or in low densities, likely as a result of past selective harvesting of this species. The low numbers of this species make retention of those remaining important for the sustainability of the community and habitat values it provides. The trees are generally low growing (up to five to six metres maximum height) and as such, clearing of these trees may not be required for conductor clearance. There would be opportunities to avoid these trees however, for construction of other infrastructure such as poles and access tracks. Fine scale micrositing could occur during construction to avoid impacts to individual trees.

The transmission line as currently designed is in close proximity (approximately 35m west) to the Chenopod Mallee woodland community to the north of Lakes Grave Creek. There are good opportunities for avoiding this community by keeping the conductor clearance requirements of the line to the west of this community.

5 ENVIRONMENTAL MITIGATION AND MANAGEMENT MEASURES

5.1 ENVIRONMENTAL ACTIVITIES, IMPACTS AND RISKS

The environmental activities referred to in this plan are those activities associated with the project that have the potential to cause adverse environmental impacts on flora and fauna. The risks that these activities create for flora and fauna can be determined by considering the likelihood of potential impacts and their consequences as shown below in Table 4-1. Construction activities that may have an adverse impact on flora and fauna and their associated risk ratings are summarised in Table 4-2 below.

Table 5-1: Risk matrix

		Consequence		
		1 Major	2 Moderate	3 Low
Likelihood				
	1 Certain	High	High	Moderate

2 Possible	High	Moderate	Moderate
	3 Remote	Moderate	Low

Consequence

Low	Negligible or minor ecological impacts, as defined by relevant guidelines.
Moderate	Possible ecological impacts (or moderate level, as defined by relevant guidelines) resulting in legal action and/or community/stakeholder concern. Small scale but generally reversible damage to ecological aspects.
Major	Major ecological impact, as defined by relevant guidelines. May be reversed with significant effort and/or financial outlay, or feature permanent or long-term damage or destruction of species, populations, communities or ecological features or processes, that could not be practicably reversed (definition of long term in accordance with relevant guidelines). Potential for significant fines or legal action.

Likelihood

Remote	Not expected to occur under usual circumstances <33% chance of occurring
Possible	Could occur under usual circumstances 33-66% chance of occurring
Almost certain or inevitable	High likelihood of occurring or expected to occur >66% chance of occurring

Table 5-2: Risk Assessment

Activity	Potential impact	Likelihood	Consequence	Risk, in absence of controls	Residual Risk with controls
Clearing, pruning and grubbing (including conductor clearances)	Habitat removal (native vegetation and mature/hollow-bearing trees)	Certain	Moderate	High	Low
	Habitat modification	Certain	Low	Moderate	Low
	Degradation of adjacent areas of habitat	Remote	Moderate	Moderate	Low
	Noxious weed introduction and spread	Possible	Major	High	Low
Excavation (for access tracks and pole footings)	Habitat removal	Certain	Low	Moderate	Low
	Habitat modification	Certain	Low	Moderate	Low
	Erosion of disturbed areas and stockpiles	Possible	Moderate	Moderate	Low
	Dust generation	Possible	Low	Moderate	Low
	Noxious weed introduction and spread	Possible	Major	High	Low
Pole and overhead transmission line installation	Erosion of disturbed areas	Possible	Low	Moderate	Low
	Erosion of stockpiles	Possible	Low	Moderate	Low
	Dust generation	Possible	Low	Moderate	Low
	Sedimentation of local waterways	Possible	Moderate	Moderate	Low
Installation and use of crossings over drainage lines	Sedimentation of waterways	Possible	Moderate	Moderate	Low
	Sedimentation of local waterways	Possible	Moderate	Moderate	Low
Operation of machinery and plant	Noise	Certain	Low	Moderate	Low
	Collisions with wildlife	Possible	Moderate	Moderate	Low
Vegetation maintenance for conductor clearances	Habitat modification	Certain	Low	Moderate	Low

Activities with the highest risks can be seen to be associated with habitat removal and noxious weed introduction and spread. Generally, given the small scale of the works and discreet nature of the impacts, the environmental risks are considered to be moderate.

Delineation of constraints areas and effective rehabilitation are the primary issues for this site and are treated in more detail below.

Specific protocols have been developed as follows:

1. Design measures
2. Constraints areas
3. Vegetation clearing and damage
4. Hollow bearing tree removal
5. Habitat restoration
6. Excavation (including trenching and stockpile management)
7. Weed control
8. Rehabilitation and site restoration
9. Clearing/pruning vegetation for transmission line maintenance
10. Monitor and adapt actions

5.2 ENVIRONMENTAL PROTOCOLS

The following protocols detail the required management actions in accordance with the project’s conditions of approval and a draft Environmental Management Plan prepared for the Wind Farm and Transmission Line in consultation with OEH. A series of biodiversity site maps illustrating where these protocols apply, are provided as Appendix B. Project conditions from the Project Approval and Statement of Commitments relevant to the management of flora and fauna impacts during construction are cross referenced in Appendix A.

The following protocols apply to all construction work and environmental management actions. A checklist for site workers to complete prior to, during and after undertaking actions that may impact on biodiversity values is included as Appendix C. This will assist in ensuring compliance with the protocols below and the project’s conditions of approval and would be incorporated into fortnightly inspections as part of the CEMP.

PROTOCOL 1: DESIGN MEASURES

PROTOCOL 1: Design measures	OBJECTIVE: Minimise harm to flora and fauna in the detailed design phase	Responsibility	Timing
Placement of on-site facilities (construction compounds, materials laydown etc.) and access	<ul style="list-style-type: none"> • Use of already cleared areas will be maximised for placement of on-site facilities and access routes. 	TransGrid	Pre-construction
Transmission line	<ul style="list-style-type: none"> • Use of already cleared areas such as existing transmission easements, will be maximised for placement of the transmission line. • Power poles and overhead lines will be designed to reduce impacts to birds such as raptors (for example by using flags or marker balls, large wire size, wire insulation, wire and conductor spacing) in areas of elevated risk of bird strike. These areas include: <ul style="list-style-type: none"> ○ Buffer areas around large stick nests (refer to Protocol 2 below) ○ The tops of ridgelines ○ Riparian River Red Gum Woodland • Avoids constraints areas (as identified in protocol 2) as much as possible 	TransGrid	Pre-construction
Final infrastructure layout (Tracks, transmission and ancillary infrastructure)	In order to demonstrate impacts have been minimised, and with input from the validation of site features, clearly document the decision process and demonstrate the final transmission pole and substation layout:	TransGrid	Pre-construction

PROTOCOL 1: Design measures	OBJECTIVE: Minimise harm to flora and fauna in the detailed design phase	Responsibility	Timing
	<ul style="list-style-type: none"> • Maximises, where viable, the use of existing tracks and easements • Prioritises, where viable, the use of other cleared or disturbed areas • Avoids constraints areas (as identified in protocol 2) as much as possible 		

PROTOCOL 2: CONSTRAINTS AREAS

PROTOCOL 2: Constraints areas	OBJECTIVE: Avoid/ minimise impacts in sensitive areas	Responsibility	Timing
Define constraints areas	<p>The following areas will be clearly shown on the Site Maps (Appendix B) and marked or delineated in a manner that minimises soil disturbance (i.e. spray paint, pegs with flagging) on the ground, where these areas occur within proximity of works areas:</p> <ul style="list-style-type: none"> • Chenopod mallee woodland • Significant clusters of rock • Hollow bearing and mature trees (including 20m buffer). • Large stick nests (200m buffer) <p>Site Environmental Plans will ensure ground disturbance will not impact on sensitive features and the disturbance will not occur outside the boundary/approved easement. An example of a Site Environmental Plan is located in Appendix E.</p>	TransGrid (ESR) Contractor	Pre-construction
Communicate about constraints areas	<p>The locations and significance of all constraints within the site will be made known to all contractors and staff (SoC 24):</p> <ul style="list-style-type: none"> • Annotated site plans to be displayed in lunch room / site offices • Specific management required near constraints areas will be discussed in tool box talks and environmental inductions. 	TransGrid (ESR) Contractor	Pre-construction Construction
Chenopod mallee woodland	<ul style="list-style-type: none"> • Works will avoid any impact to this area (clearing, laydown areas, access, parking etc.) 	Contractor	Construction

PROTOCOL 2: Constraints areas	OBJECTIVE: Avoid/ minimise impacts in sensitive areas	Responsibility	Timing
Significant clusters of rock	<ul style="list-style-type: none"> Where possible, works will avoid any impact to these areas (clearing, laydown areas, access, parking etc.), Where unavoidable, works will minimise impacts that are necessary in these areas as follows: <ul style="list-style-type: none"> Pre-clearance surveys would be undertaken for the Barrier Range Dragon. Excavated soils would not be placed on top of these areas No spoil (or other materials) stored upslope Sediment and erosion controls checked more frequently (minimum once per week and once immediately after rain events - >15mm in 24hr period. Habitat Restoration protocol 5 implemented to replace rocks that are moved to adjacent areas (SOC 27, 31) 	TransGrid (ESR) Contractor	Pre-construction Construction
Hollow bearing and mature trees (including 20m buffer)	<ul style="list-style-type: none"> Works will avoid where possible, any impact to these areas (clearing, laydown areas, access, parking etc.) (SoC 52) Indirect impacts, noise and dust, will be minimised near these areas Most hollow bearing trees occur within the mapped River Red Gum woodland vegetation community (as mapped in Appendix B). Contractors must be made aware that this mapping is not exhaustive and additional hollow bearing trees may occur on site. Where a hollow bearing tree must be cleared or pruned, follow the measures set out in Protocol 4: Hollow bearing tree/section removal. 	TransGrid (ESR) Contractor	Pre-construction Construction

PROTOCOL 3: VEGETATION CLEARING AND DAMAGE

PROTOCOL 3: Vegetation Clearing Protocol	OBJECTIVE: Minimise clearing extent	Responsibility	Timing
Avoidance areas	<ul style="list-style-type: none"> Avoid clearing in constraints areas, as set out in Protocol 2 Avoid clearing of areas of standing dead trees and woody debris wherever possible. 	Contractor	Construction
Minimise clearing	<ul style="list-style-type: none"> Where clearing is required, limit it to the minimum extent practicable required for the construction of the project. 	Contractor	Construction

PROTOCOL 3: Vegetation Clearing Protocol	OBJECTIVE: Minimise clearing extent	Responsibility	Timing
	<ul style="list-style-type: none"> • Areas to be cleared will first be clearly demarcated on the ground, in a manner that minimises soil disturbance (i.e. spray paint, pegs with flagging). • All areas not marked for clearing will be treated as constraints- no direct impacts including clearing allowed. • Minimise works where practical during and immediately following heavy rainfall events. • A suitably experienced fauna spotter would conduct preclearance surveys of all hollow bearing vegetation immediately prior to clearing. If fauna occurs within the impact area it would be relocated immediately outside of the impact area and records kept. 		
Tree clearing	<ul style="list-style-type: none"> • Clearing would be undertaken between late summer and mid-winter if possible to reduce the impact on potentially breeding fauna (such as the Pied Honeyeater, Redthroat and Rufous Fieldwren). Where this is not possible pre-clearing inspections by an ecologist to identify if the species is present and develop mitigation measures to avoid impact to these species would be required • Tree pruning in accordance with Appendix D would be undertaken in favour of tree removal, where possible. • If the removal of trees cannot be avoided: <ul style="list-style-type: none"> ○ Fell the trees into the most disturbed area possible, to avoid damaging adjacent vegetation. ○ Do not push felled trees into areas to be retained. • Where a hollow bearing tree must be cleared or pruned, follow the measures set out in Protocol 4: Hollow bearing tree/section removal. 	Contractor	Construction
Placement of cleared vegetation	<ul style="list-style-type: none"> • Any vegetation (including dead trees and woody debris) removed must be placed adjacent to the impacted areas to retain refuge areas, stabilise soils and aid in vegetation rehabilitation. Refer to Protocol 5: Habitat Restoration 	Contractor	Construction
Construction access	<ul style="list-style-type: none"> • Use of already cleared areas will be maximised for access. • Where it is necessary to cross vegetated areas for access: <ul style="list-style-type: none"> ○ Trees and shrubs will be avoided were possible ○ Fallen timber and rock outcrops would be avoided where possible ○ If disturbance is such that landforms are destabilised and an erosion risk created, these areas will be rehabilitated as set out in Protocol 8: Rehabilitation 	Contractor	Construction

PROTOCOL 4: HOLLOW BEARING TREE/LIMB REMOVAL

PROTOCOL 4: Hollow bearing tree removal	OBJECTIVE: Minimise impacts of clearing, where hollows must be felled	Responsibility	Timing
Prior to clearing	<ul style="list-style-type: none"> With input from an ecologist, clearly mark all trees containing hollows which are to be removed/pruned. Most hollows will occur in the River Red Gum woodland vegetation communities. Features that are useful for identifying hollow bearing trees include: <ul style="list-style-type: none"> Dead trees Snapped off branches Trunk spouts Damage to trunk such as disease, areas of rot, etc. that have potential to develop into trunk or branch hollows Depressions or cavities where hollows may form such as at trunk/branch joints or at the fork of the trunk above the bole 	TransGrid (ESR)	Pre-construction
Clearing hollow bearing trees	<ul style="list-style-type: none"> Hollow-bearing trees and limbs must be cleared/removed according to the methods detailed in Appendix D. 	Contractor	Construction
Handling wildlife	<ul style="list-style-type: none"> Direct contact with any wildlife should be avoided wherever possible. Any uninjured wildlife must be encouraged to leave the site. If wildlife is injured, RRANA (Rescue and Rehabilitation of Australian Native Animals) 0429 204 416 (24 hours) or similarly experienced personnel should be contacted to collect and treat any injured individuals. <p><i>The RRANA 24-hour contact number should be retained onsite by the Site Construction Manager</i></p>	Contractor	Construction
Placement of cleared hollows and timber	<ul style="list-style-type: none"> Refer to Protocol 5: Habitat restoration. 	Contractor	Construction

PROTOCOL 5: HABITAT RESTORATION

PROTOCOL 5: Habitat restoration	OBJECTIVE: Restore habitat features	Responsibility	Timing
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PROTOCOL 5: Habitat restoration	OBJECTIVE: Restore habitat features	Responsibility	Timing
Dead trees and woody debris	<ul style="list-style-type: none"> • Dead trees and woody debris that have been removed must be placed adjacent to the impact area to retain refuges in the immediate areas, stabilise soils and aid in vegetation rehabilitation. 	Contractor	Construction
Rocky habitats	<ul style="list-style-type: none"> • Create rocky habitats from excess rock waste: <ul style="list-style-type: none"> ○ Excess rocks created during excavation of pole footings, vehicular tracks and the substation will be used to create areas of rocky habitat. ○ Suitably sized excess rock waste will be placed into rock piles in the immediate vicinity of the excavations. ○ Any rock piles created should be between 0.5 – 1 metre in height and cover an area as large as 4 x 4 metres in area. ○ Multiple rock piles may be created if there are sufficient quantities of rock waste generated. ○ Soil should not be mixed in with the rocks or placed onto the rock piles. 	Contractor	Construction
Tree hollows	<ul style="list-style-type: none"> • Tree limbs containing hollows should be relocated and restored for use by fauna (i.e. fixed to another tree, or to a post). • Where hollows cannot be relocated: <ul style="list-style-type: none"> ○ Mount a nest box of similar size to the hollow being removed (1 nest box per hollow to be removed) in nearby trees. ○ Trees should be selected with input from an ecologist. ○ Trees should not contain hollows and be of sufficient size to accommodate the nest box. ○ Nest boxes would be monitored during construction to ensure they are properly secured². 	TransGrid (ESR) Contractor	Construction

² The aim of installing nest boxes is not to provide a long-term offset for habitat, but to provide immediate alternate denning/roosting/nesting opportunities to compensate for the loss of the habitat. It is anticipated that over time, fauna would become accustomed to the loss of habitat and preferentially utilise alternate naturally occurring hollows. As such, no long-term maintenance of nest boxes is proposed.

PROTOCOL 6: EXCAVATION (INCLUDING STOCKPILE MANAGEMENT)

PROTOCOL 6: Excavation (including trenching and stockpile management)	OBJECTIVE: Minimise impacts of soil excavation and stockpiling	Responsibility	Timing
General excavation	<ul style="list-style-type: none"> • Minimise works where practical during and immediately following heavy rainfall events. 	Contractor	Construction
Pole footings	<ul style="list-style-type: none"> • Holes for pole footings will have infrastructure installed and be backfilled as soon as possible. Where possible, excavations would not be left open overnight. They would be backfilled or covered in some other manner to minimise the chance of fauna becoming trapped. • Where footing excavations are left open overnight: <ul style="list-style-type: none"> ○ Ramps or ladders would be installed to allow for trapped fauna to escape ○ They would be inspected at first light by an experienced fauna handler and any trapped fauna removed and relocated in areas of adjacent habitat outside the works area. Where required, handle trapped animals safely, minimising stress and injury. ○ All captures would be recorded and records provided to the NSW Wildlife Atlas. ○ For any injured / dead fauna: <ul style="list-style-type: none"> ▪ Injured /death of fauna would be recorded on a register. ▪ Injury / death of threatened species would be reported to OEH. ▪ The injured animal taken to a vet (WIRES or RRANA) for treatment or to be euthanized. Fauna would not be euthanized on site. 	Contractor	Construction

PROTOCOL 6: Excavation (including trenching and stockpile management)	OBJECTIVE: Minimise impacts of soil excavation and stockpiling	Responsibility	Timing
Stockpiles	<ul style="list-style-type: none"> • Stockpiles (such as gravel and topsoil) will be stored in areas that are of less than 10% slope. • Where topsoils are excavated these would be stockpiled separately and replaced in their location within the soil profile during backfilling of trenches etc. or used in rehabilitation works, to assist recolonisation of plants. • Stockpiles will be placed in areas which are free of mature trees and large shrubs. • Stockpiles (including spoil materials) will be placed in existing clearings wherever practical. Stockpiles locations will preferentially be in areas of disturbance or poor quality vegetation. • Stockpiles will be stabilised. • Stockpiles will not be placed in areas where they may be blown or washed into drainage lines. • Erosion and sediment controls will be implemented where there is a risk of runoff occurring • Stockpiles or excavated material will not be placed on top of any existing 'rocky outcrops'. 	Contractor	Construction
Erosion and Sediment Control	<ul style="list-style-type: none"> • Erosion and Sediment controls are discussed at length in the Soils and Water Management Plan Section 7. 		
Rehabilitation	<ul style="list-style-type: none"> • All disturbed areas that do not have infrastructure directly installed will be rehabilitated progressively as set out in Protocol 8: Rehabilitation. 	Contractor	Construction

PROTOCOL 7: WEED CONTROL

PROTOCOL 7: Weed control	OBJECTIVE: Treat existing weeds/minimise new infestations/monitor for new infestations	Responsibility	Timing
Treat existing infestations	<ul style="list-style-type: none"> • Prior to the works, the known locations of significant weeds (including those identified in Section 4.1.2 and mapped in Appendix B) will be demarcated and DPI notified as required in accordance with the <i>Noxious Weeds Act 1993</i>. Note: Mesquite (<i>Prosopis species</i>) may also occur in drainage lines but generally require seasonal surveys during the flowering period, October to January. They will be managed in accordance with appropriate DPI guidelines if detected during works. This will be addressed by including a briefing on the identification of Mesquite in inductions. • Treat existing African Boxthorn infestations to reduce its numbers, spread and continuously inhibit its reproduction using the following techniques: <ul style="list-style-type: none"> ○ Mechanical removal: Removing the top growth and as many of the roots as possible. The removed plant material should then be burnt. ○ Chemical control: Only a registered herbicide used according to the directions on the label should be used to control this weed. Refer to the Department of NSW DPI publication Noxious and Environmental Weed Control Handbook for the chemicals recommended for the control of African Boxthorn. ○ Cut stump treatment: This technique is appropriate for small infestations in environmentally sensitive locations. It is most suitable for large plants with a stem diameter greater than 5cm. Cut each stem off 15cm above the soil surface. Liberally apply a herbicide registered for this activity to the cut surface within 30 seconds. • Consult with the local control authority for the Unincorporated Area (Department of Lands) regarding appropriate treatment of existing Mexican Poppy infestations and implement their recommendations. • Vegetation containing noxious weed material, would be treated onsite in preference to transporting it away for disposal. Transporting weedy material carries risk of spreading infections. 	TransGrid (ESR) Contractor	Pre- construction Construction
Minimise new infestations	<ul style="list-style-type: none"> • A weed hygiene process will be implemented throughout the works, as follows: <ul style="list-style-type: none"> ○ Vehicles and machinery will be clean (of soils, vegetation and seeds brushed off or washed down) prior to entering the site and cleaned at exit points where noxious weeds have been identified. A 'Weed and Seed' clean down register would be maintained at each clean down location. 	Contractor	Construction

PROTOCOL 7: Weed control	OBJECTIVE: Treat existing weeds/minimise new infestations/monitor for new infestations	Responsibility	Timing
	<ul style="list-style-type: none"> ○ Laydown sites for excavated spoil, equipment and construction materials will be free of noxious weeds or treated for noxious weeds if required, prior to their use. ○ Imported materials such as sand and gravel will be sourced from weed free sources and areas free of noxious weeds. ○ Post works, rehabilitate all disturbed areas according to Protocol 8: Rehabilitation 		
Monitor weed infestations	<ul style="list-style-type: none"> ● Post construction weed monitoring will be undertaken after the first significant rainfall event and at 1, 3 and 6 month intervals to ensure any new infestations are treated. 	TransGrid (ESR)	Post-construction

PROTOCOL 8: REHABILITATION AND SITE RESTORATION

5.2.1 Objective of rehabilitation

The objective of rehabilitation is to progressively re-establish stable ground surfaces, resistant to erosion and weed ingress, and maximise the potential for colonisation by native ground cover where appropriate. This section applies to the construction phase (CEMP) however monitoring and maintenance will be required throughout the life of the project (OEMP).

5.2.2 Rehabilitation methods

The key to effective rehabilitation will be using strategies appropriate to the location and condition of the area disturbed. Ideally, rehabilitation will be achieved with vegetative cover where possible. However, it is accepted that in some areas this will not be achievable such as where there is insufficient topsoil to support vegetative growth. Below are the proposed methods of achieving rehabilitation and an overview of where they will apply. It is noted that strategy 1 and 2 will be implemented concurrently with soil and water management protocols.

Strategy 1 - Land form stabilisation (long term measure)

This will apply to all areas disturbed by works. It will ensure that slope lengths and inclines are as stable as possible. Rocks and logs disturbed during works will be replaced to assist with soil retention. Bunds and swales may be formed to reduce water flow velocity and the potential for concentrated flows in high rainfall events. Accepting that top soil may be limited, the soil profile will be restored as much as possible, to maximise the potential for seeds in the soil bank to germinate naturally.

Strategy 2 - Application of erosion and sediment controls to assist with rehabilitation (short term measure)

This will apply to sites at high risk of erosion. Some of the excavation works may be unable to avoid retaining steep slopes. In these areas, temporary sediment and erosion controls would be required to provide additional protection for soils and nearby features (water ways, adjacent constraints areas and vegetation). The controls will be maintained until sites are declared stable, at which point they would be removed.

Strategy 3 - Revegetating disturbed areas using indigenous native plants and seed (long term measure)

This will apply to areas where there is sufficient soil and surrounding vegetation cover to support groundcover vegetation. The aim will be to maximise the potential to create an ongoing source of recruitment. For example, rather than spreading limited topsoil over an entire bare area, the most stable areas will be selected to maximise topsoil retention and germination success. Selection of areas for revegetation would also consider existing seed sources adjacent to disturbed areas (retained native vegetation) and the potential to maximise recruitment from these areas. Sowing of native seed or planting of tubestock will be considered where native vegetation was present prior to disturbance and natural recruitment is considered unlikely. The time of year and seasonal conditions would also be considered to determine if and when sowing/planting is appropriate. Follow up watering, reseeding/replanting will be undertaken as required.

Additional tools (short term measure)

These may be required to supplement the strategies above, to enhance the potential for successful rehabilitation and may include:

- Application of mulch layers (short term measure) e.g. hydromulch, rubble mulch
- Application of geotextiles to steep areas which are particularly sensitive to erosion (short term measure)
- Additional watering
- Supplementary seeding / planting

The ESR will assist in identifying the strategy to be implemented in each area, with consideration of the location and nature of the area disturbed.

5.2.3 Areas to be rehabilitated

All areas disturbed by the construction process, that do not have infrastructure directly installed, will be rehabilitated. This will include:

- Access track batters
- Areas disturbed for pole footings
- Materials laydown sites, stockpile sites
- Constructed drainage areas

5.2.4 Rehabilitation benchmarks and indicators:

Before and after records are required for areas requiring treatment, including site notes and photographs. Rehabilitation objectives (i.e. stabilisation versus revegetation) will differ depending on site characteristics. The ESR or delegate (e.g. an ecologist) will assist to identify and map the objective for all areas that will be targeted for restoration. Generally, the objective will be to restore existing conditions:

- In steep rocky areas with limited top soil and vegetation cover, stabilisation will be the objective
- In flatter terrain or where vegetation cover currently occurs, restoring vegetation cover (either natural or assisted) will be the objective.

In areas where revegetation (Strategy 3) is applied, the following indicators should be monitored to determine success of rehabilitation and maintenance requirements and whether additional action is required (the following are based on NSW OEH Biometric benchmarks database for Mulga – Dead Finish shrubland/Black Bluebush low shrubland):

- Percentage bare ground (<97% / <87%)
- Percentage ground layer vegetation cover (3-15% / 12-55%)
- Other evidence of vegetation recruitment (seedlings, re-sprouting present)
- Active soil erosion/ ground surface stability (no active soil erosion)
- Numbers of exotic species (Nil)

Monitoring will be an important action to ensure rehabilitation success. Rehabilitated areas will be monitored on a monthly basis during construction, and biannually following construction until benchmarks are met by the ESR or delegate. Rehabilitation progress will be reported following monthly site inspections, and will include details of the benchmarks and indicators listed in this protocol below. The success of the rehabilitation will require any rehabilitation works to designed and implemented in association with a site specific Soils and Water Management Sub Plan.

PROTOCOL 8: Rehabilitation	OBJECTIVE: Rehabilitate disturbed areas progressively throughout the works	Responsibility	Timing
Strategy 1: Landform stabilisation	<ul style="list-style-type: none"> • All disturbed areas will be rehabilitated by stabilising the landform: <ul style="list-style-type: none"> ○ Slopes exceeding 4:1 (horizontal:vertical), (i.e. are steeper than 4:1) will be considered for rehabilitation as a minimum control (additionally refer to the Soils and Water Management Plan). Rehabilitation requirement will depend on the material present. Rock faces can withstand much steeper slopes, whilst silt loams and clays may require engineering treatment even at 4:1. ○ Where appropriate erosion control features (e.g. roll over banks) will be installed on low slopes at 80m intervals. Slopes of 3:1 will require these at 	Contractor	Construction

PROTOCOL 8: Rehabilitation	OBJECTIVE: Rehabilitate disturbed areas progressively throughout the works	Responsibility	Timing
	20-30m intervals, 4:1 at 50-60m depending on the terrain and soil material. <ul style="list-style-type: none"> ○ Swales, tail out drains etc. will be installed as appropriate. ○ A rocky layer may be re-spread over the ground surface, similar in composition to that which existed prior to disturbance. 		
Strategy 2: Apply erosion and sediment controls where required	<ul style="list-style-type: none"> • Erosion and sediment controls may need to be installed as temporary measures to avoid further disturbance and degradation of sites such as: <ul style="list-style-type: none"> ○ Weed free hay bales ○ Sediment fences ○ Catch drains or raised berms to minimise erosion and redirect water away from exposed and unstable earth surfaces. ○ Geotextiles should be applied in the following areas: <ul style="list-style-type: none"> ▪ Steep, unstable areas which are particularly susceptible to erosion ▪ Where the use of mulch is not considered sufficient to stabilise ground surfaces. • Controls will be implemented in accordance with Landcom 2004. • Controls should remain in place until a long term rehabilitation solution is achieved (i.e. Land stabilisation or revegetation). • All materials associated with controls would be removed from areas where successful stabilisation is achieved. 	Contractor	Construction
Strategy 3: Revegetation	<ul style="list-style-type: none"> • Revegetation is to be undertaken in areas where: <ul style="list-style-type: none"> ○ Groundcover vegetation existed prior to disturbance ○ Groundcover vegetation is supported in adjacent areas ○ Topsoil is available ○ As determined by ESR. • Disturbed sites will be prepared for revegetation by ensuring that: <ul style="list-style-type: none"> ○ The area has been stabilised, reshaped and aligns with the surrounding land contours. ○ Topsoil has been respread over selected areas where available. The most stable areas will be selected to maximise topsoil retention and germination success. Selection of areas for revegetation would also consider existing seed sources adjacent to disturbed areas (remnant native vegetation) and the 	Contractor	Construction

PROTOCOL 8: Rehabilitation	OBJECTIVE: Rehabilitate disturbed areas progressively throughout the works	Responsibility	Timing
	<p style="text-align: center;">potential to maximise recruitment from these areas.</p> <ul style="list-style-type: none"> ○ Excavated areas are filled such that topsoil is placed above subsoil. ● All revegetation works will be carried out using indigenous native plants and seed. This will be sourced locally where practicable. ● Species selected and the density of plantings will be representative of adjacent vegetation communities. ● Follow-up measures as directed by the ESR will include: <ul style="list-style-type: none"> ○ Watering ○ Reseeding ○ Mulching - mulching may be utilised to assist in stabilising ground surfaces and assisting in water retention while vegetation becomes established using: <ul style="list-style-type: none"> ▪ Rubble small rocks ▪ Wood chips ▪ Other cleared non-weedy vegetation may be placed within the disturbed area to stabilise soils. 		
Monitoring, reporting and maintenance of rehabilitated areas	<ul style="list-style-type: none"> ● Rehabilitated areas will be monitored on a monthly basis by the ESR. ● Rehabilitation progress will be reported following monthly site inspections, and will include details of the benchmarks and indicators listed in this protocol above. ● Where the rehabilitation methods presented in this protocol are found to be ineffective, the Rehabilitation Protocol must be reviewed by the ESR and amended accordingly. 	TransGrid (ESR) Contractor	Construction Post-construction – bi-annually until benchmarks reached

5.2.5 *Timing of rehabilitation*

Rehabilitation will be undertaken progressively as the works are completed. Disturbed areas will be rehabilitated as soon as practicable following completion of works in each disturbance area.

PROTOCOL 9: CLEARING/PRUNING VEGETATION FOR TRANSMISSION LINE MAINTENANCE

PROTOCOL 9: Vegetation Clearing Protocol	OBJECTIVE: Minimise clearing extent	Responsibility	Timing
Avoidance areas	<ul style="list-style-type: none"> Avoid clearing/pruning in constraints areas, as set out in Protocol 2 	Contractor	Construction
Minimise clearing/pruning	<ul style="list-style-type: none"> Where clearing is required, limit it to the minimum extent practicable required to achieve conductor clearances. 	Contractor	Construction
Hollow-bearing tree clearing/pruning	<ul style="list-style-type: none"> Where a hollow bearing tree must be cleared or pruned, follow the measures set out in Protocol 4: Hollow bearing tree/section removal. 	Contractor	Construction
Placement of cleared vegetation	<ul style="list-style-type: none"> Any vegetation (including dead trees and woody debris) removed must be placed adjacent to the impacted areas to retain refuge areas, stabilise soils and aid in vegetation rehabilitation. Refer to Protocol 5: Habitat Restoration 	Contractor	Construction
Maintenance access	<ul style="list-style-type: none"> Use of already cleared areas will be maximised for access. Where it is necessary to cross vegetated areas for access: <ul style="list-style-type: none"> Trees and shrubs will be avoided were possible Fallen timber and rock outcrops would be avoided where possible If disturbance is such that landforms are destabilised and an erosion risk created, these areas will be rehabilitated as set out in Protocol 8: Rehabilitation 	Contractor	Construction

PROTOCOL 10: MONITOR AND ADAPT ACTIONS

PROTOCOL 9: Monitor and adapt actions	OBJECTIVE: Improve management of flora and fauna / respond to on ground results	Responsibility	Timing
Monitoring would be undertaken monthly as a minimum. Indicators to be monitored will include: <ul style="list-style-type: none"> Design measures implemented to minimise impacts No direct or indirect impacts on constraint areas 		Contractor	Construction

PROTOCOL 9: Monitor and adapt actions	OBJECTIVE: Improve management of flora and fauna / respond to on ground results	Responsibility	Timing
<ul style="list-style-type: none"> • Clearing restricted to only that required, indirect impacts of clearing managed • Appropriate location and management of stockpiles • Habitat elements (rocks and logs) replaced • Successful revegetation/rehabilitation • Specific plans implemented where required • Injured fauna – all injuries or mortalities to be recorded on a register • Any fauna trapped, removed at first light • RRANA called immediately, if required • Disturbed areas stabilised to prevent weed ingress or soil erosion • Onsite weed control • Regular tool box talks addressing the above issues <p>Based on the results of monitoring, the protocols above will be adapted as required to ensure the objectives are achieved.</p>			

6 COMPLIANCE MANAGEMENT

6.1 CONSULTATION

Consultation requirements relevant to the BMP are summarised below.

Table 6-1: Consultation requirements: BMP

Stage of project	Consultation requirements	Status
Biodiversity Management Plan	To be developed in consultation with OEH, DI Lands and local leaseholders prior to construction.	The draft has been forwarded to OEH and DI lands for input prior to finalisation.

6.2 ROLES AND RESPONSIBILITIES

The Project Team's organisational structure and overall roles and responsibilities are outlined in Section 4.2 of the CEMP. The persons responsible for each of the actions included in this BMP are detailed in the protocols in Section 5. Primarily this is the ESR and contractors completing the work. The roles of these parties are included below.

Role	Responsibility	Authority
ESR (TransGrid Environmental Site Representative)	<ul style="list-style-type: none"> Preparing the environmental aspects of the site induction presentation. Ensuring that all staff are appropriately trained in the project's environmental requirements and responsibilities as set out in this BMP. Reviewing and actioning environmental inspection and audit findings. Monitoring the environmental aspects of the work, particularly in relation to waste management, construction and access works, and soil management. The timely and proper response to requests for information and environmental issues raised by regulatory bodies. 	<ul style="list-style-type: none"> Order Stop-work for an activity that may cause environmental harm.

Role	Responsibility	Authority
All TransGrid staff and contractors	<ul style="list-style-type: none"> • Work in accordance with the BMP. • Report and raise any issues that arise that may have an impact on biodiversity. 	<ul style="list-style-type: none"> • Report any issues that may have the potential to cause environmental harm. • Report any incidents or near-misses that may impact on the environment or breach conditions set-out in this BMP.

6.3 TRAINING

All employees, contractors and utility staff working on site will undergo site induction training relating to biodiversity management issues. Further details regarding staff induction and training are outlined in the CEMP.

6.4 INSPECTIONS

Inspections of constraint areas and activities with the potential to impact biodiversity will occur for the duration of the Project.

Requirements and responsibilities in relation to inspections are documented in Section 8 of the CEMP. Specific requirements of this BMP are detailed in Table 6-2 below.

Table 6-2 Summary of specific BMP inspection and monitoring requirements

Requirement	Frequency	Responsibility
Pre-clearance threatened species inspections Protocol 3	<ul style="list-style-type: none"> • Prior to construction 	TransGrid (ESR)
Open trench inspections for trapped fauna	<ul style="list-style-type: none"> • Daily at first light while trenches are open 	TransGrid (ESR)
Nest box condition monitoring - Protocol 5	<ul style="list-style-type: none"> • Following installation • At completion of construction 	TransGrid (ESR)
Weed monitoring – Protocol 7	<ul style="list-style-type: none"> • Post construction at: <ul style="list-style-type: none"> ○ First significant rainfall event ○ One, three and six month intervals 	TransGrid (ESR)
Rehabilitation monitoring – Protocol 8	<ul style="list-style-type: none"> • Monthly during construction, and biannually following construction until benchmarks are met. 	TransGrid (ESR)
General monitoring of construction activities	<ul style="list-style-type: none"> • Monthly 	TransGrid (ESR)

Requirement	Frequency	Responsibility
– Protocol 10		

6.5 RECORD KEEPING AND MANAGEMENT

Records required by the protocols in Section 5, in particularly the results of inspections and monitoring detailed in Table 6-2 above, will be stored safely and be readily accessible for auditing. The ESR is responsible for maintaining all environmental management documents as current at the point of use. Types of records relevant to this BMP include:

- All monitoring, inspection and compliance reports/records
- Correspondence with public authorities
- Induction and training records
- Reports on environmental incidents, other environmental incidents non-conformances, complaints and follow-up action.

6.6 AUDITING

Audits (both internal and external) will be undertaken to assess the effectiveness of environmental controls, compliance with this sub-plan, and compliance with other relevant approvals, licenses and guidelines. Audit and monitoring requirements are detailed in Section 8.3 of the CEMP.

6.7 REPORTING

Reporting requirements and responsibilities are documented in Section 8 of the CEMP. Specific items to be reported on for this BMP include:

- Rehabilitation indicators in Protocol 8
- Indicators listed in Protocol 10
- Results of inspection and monitoring requirements detailed in Table 6-2 above

7 REVIEW AND IMPROVEMENT

7.1 CONTINUOUS IMPROVEMENT

Continuous improvement of this BMP will be achieved by the ongoing evaluation of environmental management performance against environmental policies, objectives and targets for the purpose of identifying opportunities for improvement.

7.2 BMP UPDATE AND AMENDMENT

This BMP will need to be revised whenever the construction program, scope of work, or work methods change, whenever the work methods and control structures are found to be ineffective, or if so directed by the Principal. This will occur as needed and in accordance with the process outlined in Section 9.2 of the CEMP.

APPENDIX A CONDITION COMPLIANCE

Project conditions of relevance to the management of flora and fauna impacts during construction of the connection works are detailed below.

ID	Full text	Timing	Addressed in:
Project Approval (Schedule 3)			
17	Operating conditions The Proponent must:		
(a)	ensure that no more than <ul style="list-style-type: none"> 0.81 hectares of Porcupine Grass Sparse Woodland CEEC; and 0.54 hectares of the Mulga/Red Mallee Shrubland and Chenopod – Red Mallee Woodland/Shrubland; is cleared for the project, unless the Secretary agrees otherwise	Not applicable to the transmission line route	
(b)	ensure wind turbines are located as far as possible, but at least 200 metres, from raptor nests unless the Secretary agrees otherwise;		
(c)	ensure no development occurs in mapped Barrier Range Dragon habitat hotspots (see figure in Appendix 5)		
(d)	locate wind turbines as far as practicable away from treed vegetation, rocky outcrops, caves or disused mine shafts/sites;		
(e)	minimise: <ul style="list-style-type: none"> impacts on the Barrier Range Dragon; impacts on threatened bird and bat populations (not applicable to connection works) the clearing of native woodland vegetation and fauna habitat, in particular spinifex habitat, standing dead trees and woody habitat and high biodiversity value vegetation communities; and 	Pre-construction Construction	Protocols 1, 2, 3 and 4
(f)	enhance the Porcupine Grass Sparse Woodland CEEC on site (see figure in Appendix 5) to ensure there is a net gain in the conservation value of this community.	Not applicable to the transmission line route	
18	Biodiversity Management Plan Prior to the commencement of construction, the Proponent must prepare a Biodiversity Management Plan for the project in consultation with OEH, DI Lands and local leaseholders on site, and to the satisfaction of the Secretary. This plan must:	Pre-construction	This BMP
(a)	include updated baseline mapping of the vegetation communities and key fauna habitat onsite;	Pre-construction	Appendix B
(b)	clearly identify the areas on site that would be disturbed	Pre-construction	Appendix B

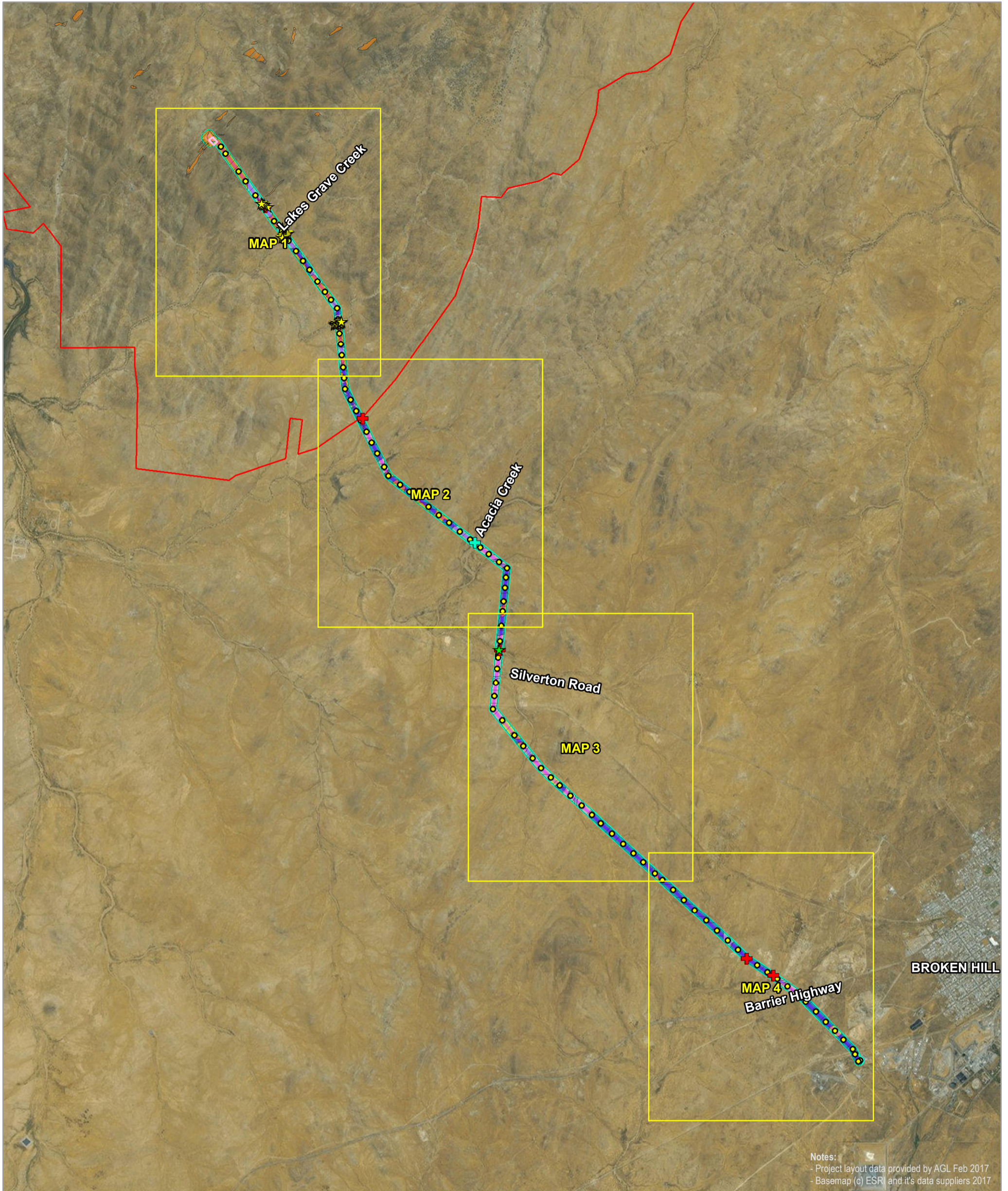
ID	Full text	Timing	Addressed in:
(c)	include a: <ul style="list-style-type: none"> • description of the measures that would be implemented for: <ul style="list-style-type: none"> - minimising the amount of clearing within the approved project footprint; - minimising the loss of key fauna habitat; - minimising the impacts on fauna on site, including undertaking pre-clearance surveys; - rehabilitating and revegetating temporary disturbance areas; - protecting vegetation and fauna habitat outside the approved disturbance area; - maximising the salvage of resources within the approved disturbance area - including rocks, vegetation and soil resources - for beneficial reuse (including revegetation and fauna habitat enhancement) on site; - collecting and propagating seed (where relevant); - controlling weeds and feral pests; - controlling erosion; - bushfire management; - Controlling access 	Pre-construction	Protocols 1 – 9 (note bushfire management subject of separate plan).
	<ul style="list-style-type: none"> • Recovery Plan for enhancing the conservation value of the Porcupine Grass Sparse Woodland CEEC on site, that includes: <ul style="list-style-type: none"> - baseline data on the vegetation and fauna habitat within the community; and - detailed performance and completion criteria for evaluating the performance of the enhancement activities; 	Not applicable to the transmission line route	
	<ul style="list-style-type: none"> • Barrier Range Dragon Management Plan for minimising any impacts on the species on site and enhancing the potential habitat for this species; 	Not applicable to the transmission line route	
	<ul style="list-style-type: none"> • Goat Management Plan for the site; 	Not applicable to the transmission line route	
	<ul style="list-style-type: none"> • Vegetation Management Plan for restoring vegetation and habitat in the temporary disturbance areas and clearing vegetation for transmission line maintenance; and 	Pre-construction	Protocols 5, 8 and 9
	<ul style="list-style-type: none"> • include a detailed program to monitor and report on the performance of these measures 	Pre-construction	Protocol 10
Statement of Commitments			
SOC 18	Use existing clearings wherever practical for materials lay down, stockpiling and the deposition and retrieval of spoil. Stockpiles would be located appropriately, to minimise impacts on native vegetation, soils and land forms and drainage lines. They would preferentially to be placed in existing areas of disturbance or poor quality vegetation and would be stabilised.	Construction	Protocols 1, 3, 6, 10

ID	Full text	Timing	Addressed in:
SOC 19	Implement weed and sediment erosion controls to minimise onsite habitat degradation resulting from the proposed works. This would include a weed hygiene process.	Construction	Protocols 2, 3, 6, 7, 8, 10
SOC 20	Site stabilisation and rehabilitation would be undertaken as work progresses, as detailed in a site restoration plan developed in conjunction with Department of Planning and Department of Environment and Climate Change. This plan to include protocols for restoration works such as: - <ul style="list-style-type: none"> • Site preparation • Site stabilisation • Measures to encourage native vegetation recruitment • Monitoring • Identification of areas to be rehabilitated • Overall goal of the rehabilitation • Methodology for implementing rehabilitation • Monitoring to determine success • If necessary, alternative plans if rehabilitation is not successful. 	Construction	Section 3.4 Protocols 8, 10
SOC 21	Laydown sites for excavated spoil, equipment and construction materials would be selected as being weed free sites or treated for weed if required, prior to their use.	Construction	Protocols 7, 10
SOC 22	Infrastructure placement would avoid areas of high biodiversity value as identified in Map set 6 of the Biodiversity Addendum, where possible and would be minimised as detailed in Map 4-6 if the Biodiversity assessment.	Construction	Section 3.3 Protocols 1, 2, 3, 10
SOC 23	Beyond use required for the construction of transmission line and road widening of an existing track, the undescribed vegetation communities identified (Mulga/Red Mallee shrubland on rocky slopes of the Barrier Range, and Chenopod- Red Mallee woodland/shrubland on gravelly lower slopes) would be protected from other impacts including use for materials/equipment laydown.	Not applicable to the transmission line route	
SOC 24	Contractors and staff would be inducted on the significance and sensitivity of the two significant vegetation communities present in the Stage 1b and 1c study areas (Mulga/Red Mallee shrubland on rocky slopes of the Barrier Range, and Chenopod-Red Mallee woodland/shrubland on gravelly lower slopes)	Not applicable to the transmission line route	
SOC 25	All construction works and associated infrastructure must avoid identified Tawny Rock Dragon hotspots. People, equipment, infrastructure or materials should not impact directly or indirectly on any mapped hotspots (map 3-4 and 3- 5) of the Tawny Rock Dragon Report. For example, where track construction flanks hotspots, no spoil or sedimentation from these activities are permitted to enter the hotspot	Not applicable to the transmission line route	

ID	Full text	Timing	Addressed in:
SOC 26	Road management zones (RMZ) would be included in the final design and enforced during construction and maintenance activities between 1 October and 30 March inclusive when Tawny Rock Dragons are most active. Recommended maximum speed limits would also be applied	Not applicable to the transmission line route	
SOC 27	Habitat creation would be undertaken when excavating turbine footings and vehicular tracks by utilising any excess rock (rock not utilised during construction). In order of priority, suitably sized excess rock waste should be placed into rock piles in the vicinity of: <ul style="list-style-type: none"> • Turbines • Hotspots (not within the hotspot, but adjacent to) • Vehicular tracks As a general guide, rock piles should be between 0.5 – 1 meters in height and cover an area as large as 4 x 4 meters in area. Multiple rock piles can be provided if excess rock waste allows. Soil should not be mixed in with or placed onto these rock piles	Construction	Protocol 5
SOC 28	Excavated soil would not be placed on top of any existing 'rocky outcrops'	Construction	Protocol 2, 6, 10
SOC 29	All pre, during and post construction staff should be made aware of the significance of the Tawny Rock Dragon in the study area, through education and awareness and their obligations in regard to hotspots and road management zones	Construction	Protocols 1, 2, 3, 10
SOC 30	Minimise works where practical during and immediately following heavy rainfall events to protect soils and vegetation	Construction	Protocol 2, 3, 6
SOC 31	Store excavated topsoil, subsoil and weathered rock on site and replace in a manner that approximates the original ground profile	Construction	Protocol 8, 10
SOC 32	Replace at least 20 centimetres of cement-free fill as the top layer where cement is included in cable trench backfill	Not applicable to the transmission line route	
SOC 33	Source imported materials such as sand and gravel from certified sources, free from noxious weeds and Phytophthora infection	Construction	Protocol 7, 10
SOC 34	Undertake post-construction weed monitoring after the first significant rainfall event to ensure that no weed infestations have resulted from the works	Construction	Protocol 7, 10
SOC 35	Procure an appropriately qualified ecologist to assist in locating tracks, cabling routes and other infrastructure so as to minimise the impact on threatened species and the Porcupine Grass – Red Mallee – Gum Coolibah hummock grassland identified on site	Not applicable to the transmission line route	
SOC 36	Make contractors and staff aware of type and location of threatened species that occur within the site	Construction	Section 3.4.4 Protocol 2, 10

ID	Full text	Timing	Addressed in:
SOC 37	Minimise track width through Porcupine Grass -Red Mallee - Gum Coolibah hummock grassland where practical. Strategies would include avoiding routes that require extensive cut and fill, and maximising the use of single lane access tracks. Establish clear demarcation (including signage) of the Porcupine Grass - Red Mallee - Gum Coolibah hummock grassland to minimise work and access within this community	Not applicable to the transmission line route	
SOC 42	Peg or otherwise delineate the boundaries of EECs in good condition and flora species listed as threatened which are in the vicinity of proposed works to minimise direct and indirect impacts in these areas	Not applicable to the transmission line route	
SOC 43	Design transmission lines to minimise EEC impact. Strategies may include ensuring that the height of the transmission structure over EECs is sufficient to allow minimal impact on these communities, and making use of the existing cleared transmission easement to reduce the clearing required for the new line	Not applicable to the transmission line route	
SOC 47	Design site substations to ensure that the transformers are adequately banded against any spill	Construction	Protocol 1, 10
SOC 49	Avoid significant clusters of rocks and boulders where these provide shelter to threatened fauna. Where rocks and boulders cannot be avoided, they should be placed directly adjacent to the works area to preserve the availability of refuge	Construction	Protocols 2, 5, 6, 10
SOC 50	Avoid standing dead trees and woody debris where practical. Where they require removal to allow for the tracks and hardstand areas, they should be placed adjacent to the impact areas, to retain these refuges in the immediate area	Construction	Protocols 1, 3, 10
SOC 51	Open trenches required for the installation of cabling for the minimal period practical. Check trenches at first light and remove any trapped fauna	Not applicable to the transmission line route	
SOC 52	Apply a buffer to mature hollow-bearing trees where practical to minimise indirect impacts (such as noise and dust)	Construction	Protocols 2, 10
SOC 53	Apply an appropriate buffer (50 meters) to identified Tawny Rock Dragon habitat to ensure that it is not adversely affected	Not applicable to the transmission line route	
SOC 54	Design power poles to minimise perching and roosting opportunities where practical. Design power poles and overhead powerlines to reduce impacts to birds (for example by using flags or marker balls, large wire size, wire insulation, wire and conductor spacing) in areas of elevated risk of bird strike	Construction	Protocol 1, 10

APPENDIX B SITE MAPS



BIODIVERSITY SITE MAPS INDEX

Silverton Wind Farm Transmission Line

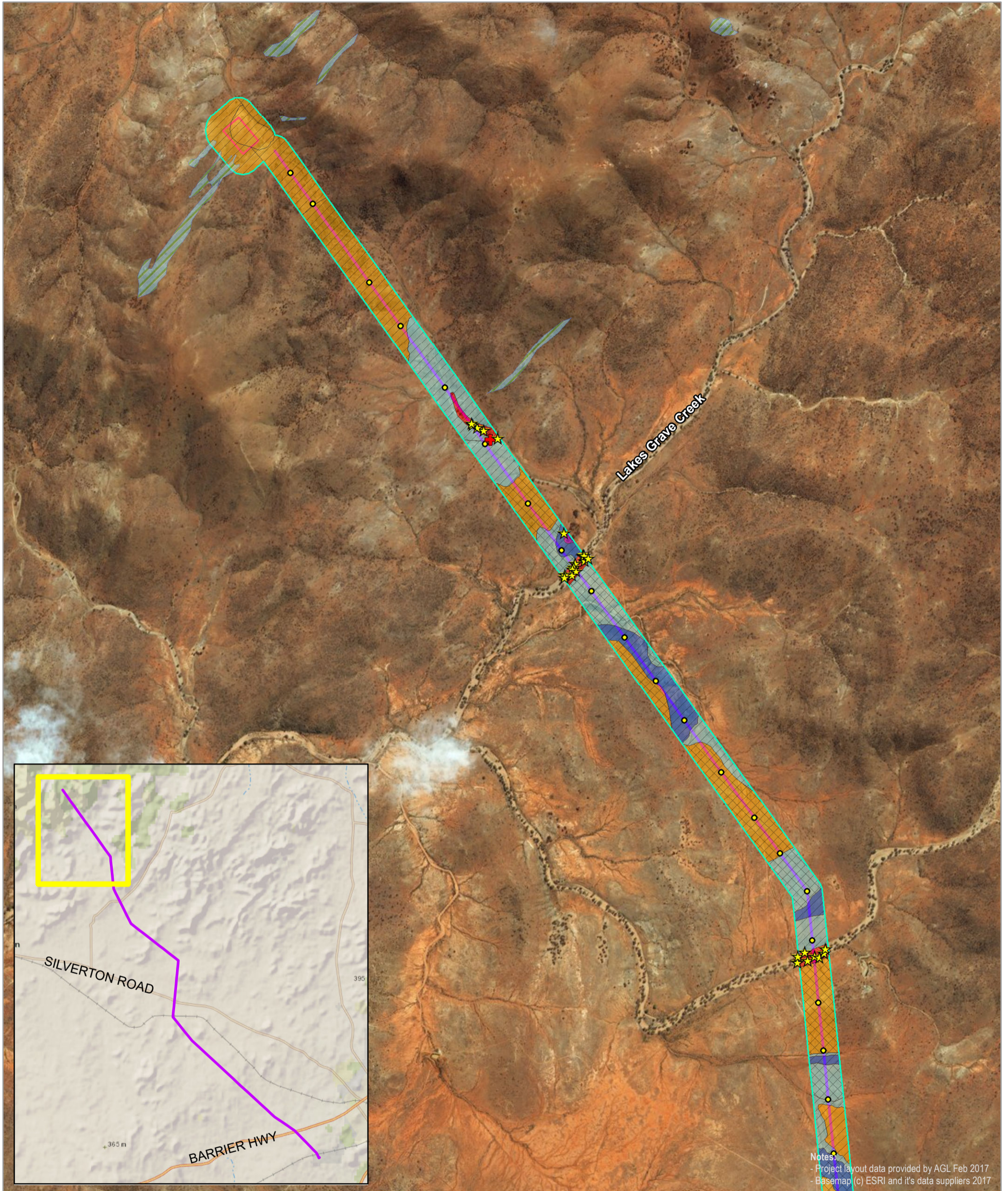
- | | | | | | |
|---|--|---|---|--|--|
| <ul style="list-style-type: none"> — Transmission line route ● Pole locations □ Tx line substation □ Wind farm site perimeter □ Validated area 2016 - 2017 | <p>Vegetation types</p> <ul style="list-style-type: none"> ■ Black Bluebush Low Open Shrubland ■ Chenopod mallee woodland ■ Low Bluebush Bladder Saltbush Open Shrubland ■ Mulga Dead Finish | <ul style="list-style-type: none"> ■ Pearl Bluebush Low Open Shrubland ■ Prickly Wattle Open Shrubland ■ River Red Gum Open Woodland ■ Exotic Dominated | <p>Condition</p> <ul style="list-style-type: none"> ⊠ Good ⊠ Moderate ⊠ Poor | <p>Constraints</p> <ul style="list-style-type: none"> ■ Significant rock outcrops ■ Chenopod mallee woodland <p>Habitat trees</p> <ul style="list-style-type: none"> ★ Hollow-bearing tree (HBT) ★ Mature tree (not HBT) | <p>Noxious weeds</p> <ul style="list-style-type: none"> ✚ African Boxthorn ✚ Mexican Poppy |
|---|--|---|---|--|--|

0 1 2 Kilometers

A3 @ 1:80000
 Ref: 17-020 BMP site maps
 Author: DM

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Notes:
 - Project layout data provided by AGL Feb 2017
 - Basemap (c) ESRI and its data suppliers 2017

BIODIVERSITY SITE MAP 1

Silverton Wind Farm Transmission Line

- | | | | | |
|---|---|---|--|--|
| <ul style="list-style-type: none"> — Transmission line route ● Pole locations □ Tx line substation □ Wind farm site perimeter □ Validated area 2016 - 2017 | <p>Vegetation types</p> <ul style="list-style-type: none"> ■ Black Bluebush Low Open Shrubland ■ Chenopod mallee woodland ■ Low Bluebush Bladder Saltbush Open Shrubland ■ Mulga Dead Finish ■ Pearl Bluebush Low Open Shrubland ■ Prickly Wattle Open Shrubland ■ River Red Gum Open Woodland ■ Exotic Dominated | <p>Condition</p> <ul style="list-style-type: none"> ⊠ Good ⊠ Moderate ⊠ Poor | <p>Constraints</p> <ul style="list-style-type: none"> ■ Significant rock outcrops ■ Chenopod mallee woodland <p>Habitat trees</p> <ul style="list-style-type: none"> ★ Hollow-bearing tree (HBT) ★ Mature tree (not HBT) | <p>Noxious weeds</p> <ul style="list-style-type: none"> ✚ African Boxthorn ✚ Mexican Poppy |
|---|---|---|--|--|

0 0.25 0.5 Kilometers

A3 @ 1:18000
 Ref: 17-020 BMP site maps
 Author: DM

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BIODIVERSITY SITE MAP 2

Silverton Wind Farm Transmission Line

- | | | | | |
|---|--|--|--|---|
| <ul style="list-style-type: none"> — Transmission line route ● Pole locations □ Tx line substation □ Wind farm site perimeter □ Validated area 2016 - 2017 | <p>Vegetation types</p> <ul style="list-style-type: none"> ■ Black Bluebush Low Open Shrubland ■ Chenopod mallee woodland ■ Low Bluebush Bladder Saltbush Open Shrubland ■ Mulga Dead Finish ■ Pearl Bluebush Low Open Shrubland ■ Prickly Wattle Open Shrubland ■ River Red Gum Open Woodland ■ Exotic Dominated | <p>Condition</p> <ul style="list-style-type: none"> ▣ Good ▣ Moderate ▣ Poor | <p>Constraints</p> <ul style="list-style-type: none"> ▣ Significant rock outcrops ▣ Chenopod mallee woodland <p>Habitat trees</p> <ul style="list-style-type: none"> ★ Hollow-bearing tree (HBT) ★ Mature tree (not HBT) | <p>Noxious weeds</p> <ul style="list-style-type: none"> ✚ African Boxthorn ✚ Mexican Poppy |
|---|--|--|--|---|

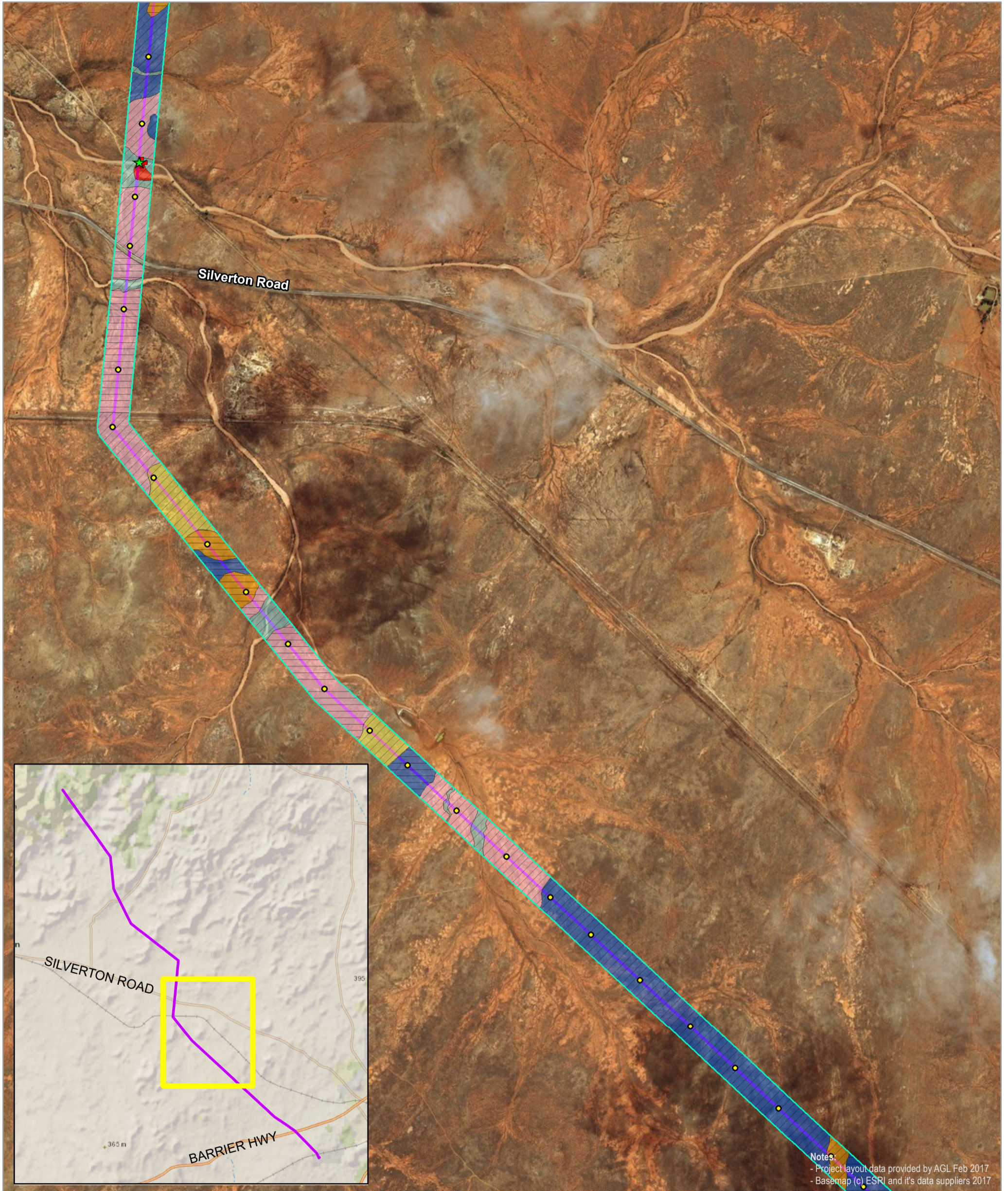
Notes:
 - Project layout data provided by AGL Feb 2017
 - Basemap (c) ESRI and it's data suppliers 2017

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A3 @ 1:18000
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BIODIVERSITY SITE MAP 3

Silverton Wind Farm Transmission Line

- | | | | | | |
|----------------------------|--|-----------------------------------|-----------|---------------------------|------------------|
| Transmission line route | Vegetation types | Pearl Bluebush Low Open Shrubland | Condition | Constraints | Noxious weeds |
| Pole locations | Black Bluebush Low Open Shrubland | Prickly Wattle Open Shrubland | Good | Significant rock outcrops | African Boxthorn |
| Tx line substation | Chenopod mallee woodland | River Red Gum Open Woodland | Moderate | Chenopod mallee woodland | Mexican Poppy |
| Wind farm site perimeter | Low Bluebush Bladder Saltbush Open Shrubland | Exotic Dominated | Poor | Habitat trees | |
| Validated area 2016 - 2017 | Mulga Dead Finish | | | Hollow-bearing tree (HBT) | |
| | | | | Mature tree (not HBT) | |

0 0.25 0.5 Kilometers

A3 @ 1:18000
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Notes:
 - Project layout data provided by AGL Feb 2017
 - Basemap (c) ESRI and it's data suppliers 2017

BIODIVERSITY SITE MAP 4

Silverton Wind Farm Transmission Line

- | | | | | | |
|---|--|---|---|--|--|
| <ul style="list-style-type: none"> — Transmission line route ● Pole locations □ Tx line substation □ Wind farm site perimeter □ Validated area 2016 - 2017 | <p>Vegetation types</p> <ul style="list-style-type: none"> ■ Black Bluebush Low Open Shrubland ■ Chenopod mallee woodland ■ Low Bluebush Bladder Saltbush Open Shrubland ■ Mulga Dead Finish | <ul style="list-style-type: none"> ■ Pearl Bluebush Low Open Shrubland ■ Prickly Wattle Open Shrubland ■ River Red Gum Open Woodland ■ Exotic Dominated | <p>Condition</p> <ul style="list-style-type: none"> □ Good □ Moderate □ Poor | <p>Constraints</p> <ul style="list-style-type: none"> ■ Significant rock outcrops ■ Chenopod mallee woodland <p>Habitat trees</p> <ul style="list-style-type: none"> ★ Hollow-bearing tree (HBT) ★ Mature tree (not HBT) | <p>Noxious weeds</p> <ul style="list-style-type: none"> ✚ African Boxthorn ✚ Mexican Poppy |
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0 0.25 0.5 Kilometers

A3 @ 1:18000
 Ref: 17-020 BMP site maps
 Author: DM

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APPENDIX C SITE WORKS CHECKLIST

A checklist for site workers to complete prior to, during and after undertaking actions that may impact on biodiversity values is provided below. Completion of this checklist prior to and during works will assist in ensuring compliance with the protocols detailed in this BMP and the project's conditions of approval.

SILVERTON WINDFARM TX LINE BIODIVERSITY MANAGEMENT PLAN SITE WORKS CHECKLIST

Note: Items highlighted in grey are only required if other requirements cannot be met.

Requirement	Completed			If not, why	Follow-up action required?
	Yes	No	NA		
PRIOR TO UNDERTAKING WORKS					
Works to be undertaken between late summer and mid-winter?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Where this is not possible pre-clearing inspections by an ecologist are required to identify if breeding threatened fauna are present and develop mitigation measures to avoid impact to these species if necessary
Have constraints areas been avoided? Constraints areas include: <ul style="list-style-type: none"> Chenopod mallee woodland Significant clusters of rock Hollow bearing and mature trees (including 20m buffer) Large stick nests (200m buffer) 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		During works requirements below are applicable if works are to occur within significant rock clusters or impact on hollow-bearing and mature trees (including 20m buffer)
Has the works area been checked for hollow-bearing trees that may occur on site that haven't been mapped?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Weed control measures implemented including: <ul style="list-style-type: none"> Locations of known significant weeds demarcated and DPI notified? Existing infestation treated? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Requirement	Completed			If not, why	Follow-up action required?
	Yes	No	NA		
<ul style="list-style-type: none"> Weed hygiene measures in place in preparation for the commencement of works? 					
Areas to be cleared have been clearly demarcated on the ground, in a manner that minimises soil disturbance (i.e. spray paint, pegs with flagging), all other areas, treated as constraints?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Preclearance surveys of all vegetation undertaken by a suitably experienced fauna spotter immediately prior to clearing? Any fauna relocated outside of the impact area and records kept?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
DURING WORKS					
Clearing					
If rock outcrop and hollow-bearing/mature tree constraints areas cannot be avoided, have the following protocols been implemented in each applicable area:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Significant clusters of rock <ul style="list-style-type: none"> Pre-clearance surveys for the Barrier Range Dragon in significant clusters of rock? No placement of excavated soils? No spoil or other materials stored up slope? Sediment and erosion controls checked at least once per week and once immediately after rain events - >10mm in 24hr period? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Requirement	Completed			If not, why	Follow-up action required?
	Yes	No	NA		
<ul style="list-style-type: none"> Habitat restoration implemented to replace rocks that are moved to adjacent areas 					
Hollow-bearing and mature trees (including 20m buffer) <ul style="list-style-type: none"> Indirect impacts (noise and dust) minimised? If directly impacting hollow-bearing trees, hollow-bearing tree/section removal protocol (Protocol 4) followed? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Use of cleared areas have been maximised for access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Where necessary to cross vegetated areas for access: <ul style="list-style-type: none"> Trees and shrubs have been avoided where possible Fallen timber and rock outcrops have been avoided where possible If disturbance is such that landforms are destabilised and an erosion risk created, these areas have been identified for rehabilitation 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Rehabilitation of disturbed areas may be required as set out in the post works requirements below
Clearing of standing dead trees and woody debris have been avoided wherever possible?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Where clearing is required, has it been limited to the minimum extent practicable required for the construction of the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Tree pruning undertaken in favour of tree removal?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Requirement	Completed			If not, why	Follow-up action required?
	Yes	No	NA		
Where tree removal required: <ul style="list-style-type: none"> Trees felled into the most disturbed area possible, to avoid damaging adjacent vegetation? Trees not felled into areas to be retained? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Where hollow-bearing tree(s) must be cleared or pruned, hollow-bearing tree/section removal protocol (Appendix D) followed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Any vegetation (including dead trees and woody debris) removed has been placed adjacent to the impacted areas?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Works minimised where practical during and immediately following heavy rainfall events?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Excavation					
All excavations backfilled as soon as possible or covered so not to be left open overnight?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		If trenches are left open overnight, requirement below is applicable
Where excavations are left open overnight: <ul style="list-style-type: none"> Ramps or ladders installed? Excavations inspected at first light and any trapped fauna removed? Injured animals taken to a vet or other qualified wildlife carer (WIRES or RRANA)? All captures/injuries/deaths recorded and reported as required? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

Requirement	Completed			If not, why	Follow-up action required?
	Yes	No	NA		
Stockpiles managed appropriately including: <ul style="list-style-type: none"> • Stockpiles (such as gravel and topsoil) stored in areas that are of less than 10% slope? • Excavated topsoils stockpiled separately and replaced in their location within the soil profile during backfilling of trenches etc. or used in rehabilitation works, to assist recolonisation of plants? • Stockpiles placed in areas which are free of mature trees and large shrubs? • Stockpiles placed in existing clearings wherever practical? • Stockpiles stabilised? • Stockpiles not placed in areas where they may be blown or washed into drainage lines? • Erosion and sediment controls implemented where there is a risk of runoff occurring? • Stockpiles or excavated material not placed on top of any existing 'rocky outcrops'? 	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
POST WORKS					
Habitat restoration (Protocol 5) undertaken?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Rehabilitation and site restoration (Protocol 8) undertaken?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Ongoing monthly monitoring required

Requirement	Completed			If not, why	Follow-up action required?
	Yes	No	NA		
Weed monitoring undertaken?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		Required after the first significant rainfall event and at 1, 3 and 6 month intervals to ensure any new infestations are treated
New weed infestations treated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Ongoing monitoring requirements identified and necessary reporting completed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		

APPENDIX D TREE CLEARING/PRUNING PROTOCOL

D.1 LOPPING, PRUNING AND TRIMMING PROCEDURE

Heavy machinery should not be used for pruning or trimming. Appropriate tools to use are loppers, chain saws and vehicle mounted saws.

In the first instance, hollow bearing limbs should be retained. If this is not possible the hollow bearing limb would be removed according to hollow-bearing tree/limb removal methods detailed below.

Tree limbs are to be removed using the three cut method as shown below in Figure 1. 1.

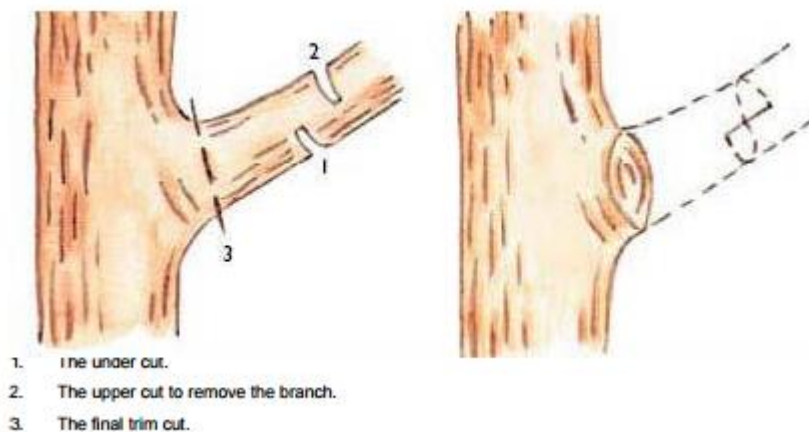


Figure 1 – Three cut method

D.2 2-STAGE CLEARING FOR HOLLOW-BEARING TREES AND LIMBS

All clearing operations shall be undertaken in a manner that minimises fauna injury and shall include procedures to reduce risks from construction impacts to fauna in newly cleared areas. Clearing will be completed using a two stage approach to clearing. The key objective of the two stage clearing approach is to allow sufficient time for resident hollow-dependant fauna time to evacuate habitat/hollow bearing trees prior to felling. This approach minimised the requirement to rescue and handle fauna.

Prior to clearing

Prior to the commencement of clearing (Stage I and Stage II), the following pre-commencement inspections will be completed by the Project Ecologist or a suitably experienced fauna spotter:

1. Identifying and marking of hollow-bearing trees prior to the commencement of clearing/pruning in a manner which clearly identifies and demarcates the trees such as flagging with red and white tape and spray painted with identification number
2. Observation for evidence of fauna activity within hollow-bearing trees

Stage I Clearing

1. Removal/pruning of non-habitat trees, shrubs and other vegetation at least 24 hours before habitat trees are removed
2. This vegetation is to be removed from within the vicinity (20m) of the hollow-bearing trees, to prevent fauna from using it as habitat.

3. The Project Ecologist shall be on site during Stage I clearing to rescue any animals disturbed by Stage I clearing.

Stage II Clearing

1. Remove remaining hollow bearing trees or limbs at least 24 hours after Stage I clearing.
2. Project ecologist to inspect each tree/limb immediately prior to its removal.
3. Habitat trees and limbs to be felled under the supervision of the Project Ecologist. Hollow-bearing trees are to be mechanically shaken or agitated prior to felling/limb removal to encourage any remaining animals to either leave the tree or at least show themselves and possibly be removed prior to felling.
4. Immediately after felling, hollow-bearing trees/limbs are to be systematically checked for any remaining fauna.
5. Felled hollow-bearing trees/limbs are to be left for a minimum of 24 hours to allow any undetected fauna further opportunity to escape.

APPENDIX E SITE ENVIRONMENTAL PLAN

SITE ENVIRONMENTAL PLAN

Document	Site Environment Plan		
Project	Silverton Wind Farm		
Site No / Structure No			
Site Details / Works (references Project Plan, Line Schedule and CEMP)			
Access track work	Minor <input type="checkbox"/> Major <input type="checkbox"/> Other <input type="checkbox"/> Comply with Track standard	Construction Bench	Modify Existing <input type="checkbox"/> New <input type="checkbox"/> Comply with pad standard
Landshaping	Excavation <input type="checkbox"/> Revegetation <input type="checkbox"/>	Str Construction (new)	Sus <input type="checkbox"/> Ten <input type="checkbox"/> Type:
Foundation / Footings	Grillage <input type="checkbox"/> Concrete <input type="checkbox"/>		
Description of Work			
Foundations			
Soil Type	Stable <input type="checkbox"/> Rock <input type="checkbox"/> Unstable <input type="checkbox"/> Wet <input type="checkbox"/>	Foundation Type	
Vegetation Type	Shrubs <input type="checkbox"/> Grass/Forbs <input type="checkbox"/>		
Comments / Details			
Access			
Property Owner Name		Property Owner Contact	
Requirements			
Environmental Factors (reference / check Biodiversity Management Plan, Heritage Management Plan and CEMP for site specific details and existing environmental constraints mapping)			
Environmental Issues		Control Measures	
Erosion Risk <input type="checkbox"/>	Water Course <input type="checkbox"/>		
Heritage <input type="checkbox"/>	Habitat Features <input type="checkbox"/>		
TS/EEC <input type="checkbox"/>	Weed issue <input type="checkbox"/>		
Under Crossings and Services			
Power <input type="checkbox"/> Road <input type="checkbox"/> Rail	Details		
Telstra <input type="checkbox"/> Water <input type="checkbox"/> Other <input type="checkbox"/>	Details		
Stabilisation/ Rehabilitation Requirements			

Site Works Plan (Note: existing Environmental plans or ESCP Site Plans can be attached and marked up where available)



Control Measures

LEGEND					
Footing excavations	X	New Equipment	Pole (P) / Guy (G)	Drainage	—DRAINAGE →
Stockpile		Sediment Fence		Catch Drain	→ CD →
Concrete Washout		Revegetation		Rock Check Dam	→ RCD →
Site Access	--- ACCESS ->	NO GO ZONE	NGZ	Other:	

Compiled By	Name		Date	
	Signature			
Endorsed By	Name		Date	
	Signature			