ATTACHMENT A
PEER REVIEW LETTER (DR COLIN DRISCOLL)

Clean TeQ Holdings Limited
12/21 Howleys Rd,
Notting Hill, Vic 3168

21 December 2017

Attn: John Hanrahan

Dear John

Clean TeQ Sunrise Project Accommodation Camp Modification – BDAR Review

Clean TeQ has asked me to review the Biodiversity Development Assessment Report (BDAR) developed for the Sunrise Project Accommodation Camp Modification by Resource Strategies Pty Ltd. This letter briefly outlines the outcomes of my review.

I am an Accredited Biodiversity Assessor (BAAS17004) and have a detailed understanding of the requirements of the NSW *Biodiversity Conservation Act, 2016* (BC Act) and the *Biodiversity Assessment Method Order, 2017* (BAM). I have also conducted floristic surveys in the Fifield area.

In reviewing the Sunrise Project Accommodation Camp Modification Project BDAR, I aimed to ensure that it met the BAM and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) guidelines requirements.

Overall I found the Sunrise Project Accommodation Camp Modification Project BDAR to be consistent with the field data collection and reporting requirements of the BAM. Specifically some corrections and clarification suggestions were made and these have been incorporated to my satisfaction. I consider that the BDAR meets the requirements of the BAM and EPBC Act guidelines.

Yours Sincerely
HUNTER ECO

Dr Colin Driscoll
Environmental Biologist

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ATTACHMENT B
CLEAN TEQ SUNRISE PROJECT ACCOMMODATION CAMP - ECOLOGICAL SURVEYS REPORT (AMBS, 2017a)

Clean TeQ Sunrise Project Accommodation Camp Modification - Ecological Surveys

Prepared by AMBS Ecology & Heritage Pty Ltd
for Clean TeQ

Final Report

December 2017

AMBS Reference: 17459

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Approved by:	Glenn Muir

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Executive Summary

AMBS Ecology & Heritage Pty Ltd (AMBS) was commissioned by Clean TeQ Holdings Limited to undertake a baseline flora and fauna survey in an area encompassing a proposed accommodation camp associated with the Clean TeQ Sunrise Project, an approved nickel cobalt scandium mining project. The area of investigation is approximately 4 kilometres (km) to the south of the mine site on the Sunrise property, located northwest of the town of Fifield, adjacent to Sunrise Lane and west of Wilmatha Road.

Flora and fauna surveys were undertaken in Spring 2017. The vegetation of the study area and its condition were surveyed using vegetation integrity (site condition) plots, additional full floristic plots, rapid assessment plots and paddock tree identification. The surveys included targeted surveys for specific threatened flora and fauna species listed under the NSW *Biodiversity Conservation Act, 2016* (BC Act) and Commonwealth *Environmental Protection and Biodiversity Conservation Act, 1999* (EPBC Act) and habitat assessments.

Although large portions of the study area have recently been cropped, AMBS surveys and analysis of data established that the species present in the ground layer were predominately native herbs, grasses and shrubs (89 of 120 plant species recorded were native). Exotic species were present, but the majority of the vegetation cover in the ground layer was provided by native species.

Two plant community types (PCT), in varying condition, were recorded in the study area:

- PCT - 217 *Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion*; and
- PCT - 82 *Western Grey Box-Poplar Box-White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion*.

PCT 217 covered most of the study area and was generally found in a derived native grassland form with scattered remnant trees and shrubs. In all locations the vegetation had been grazed and in parts of the area cropped as well.

PCT 82 was located in a low-lying area west of the Development Site Footprint and conforms to a derived grassland form of an endangered ecological community listed under the BC Act and EPBC Act. This area was likely to have formerly been dominated or co-dominated by Grey Box (*Eucalyptus microcarpa*).

One threatened plant species listed under the BC Act and EPBC Act, *Tylophora linearis*, was found at four locations in vegetation along Sunrise Lane, outside of the Development Site Footprint.

The fauna surveys recorded one species listed as 'Vulnerable' under the BC Act; the Grey-crowned Babbler (*Pomatostomus temporalis temporalis*). No evidence of Glossy Black-Cockatoo (*Calyptorhynchus lathami*), Koala (*Phascolarctus cinereus*), Little Eagle (*Hieraaetus morphnoides*) or Square-tailed Kite (*Lophoictinia isura*) was recorded. A number of trees with hollows suitable for threatened fauna were found along a creekline in the center of the study area.

1 Introduction

1.1 Background

AMBS Ecology & Heritage Pty Ltd (AMBS) undertook a baseline flora and fauna survey in an area encompassing a proposed accommodation camp associated with the Clean TeQ Sunrise Project, an approved nickel cobalt scandium mining project. The area of investigation (the "study area") is shown in Figure 1. It is approximately 191 hectares (ha) in size and located northwest of the town of Fifield, New South Wales (NSW), adjacent to Sunrise Lane, south of the Mining Lease Application Boundary and west of Wilmatha Road.

Clean TeQ Holdings Limited (Clean TeQ) are seeking a modification to the Clean TeQ Sunrise Project under section 75W of the NSW *Environmental Planning and Assessment Act, 1979* for the proposed accommodation camp (herein referred to as the Modification). The Modification would include:

- development of the accommodation camp (including supporting infrastructure);
- construction of an electricity transmission line (ETL) and water pipeline from the mine site to the modified accommodation camp site;
- minor road upgrades;
- increased accommodation camp capacity (approximately 1,300 personnel); and
- the accommodation camp (at reduced capacity) would be maintained post-construction rather than be decommissioned.

The Development Site Footprint encompasses (Figure 1):

- accommodation camp, including:
  - accommodation facilities;
  - administration offices and first aid facility;
  - recreational and mess areas;
  - fire-fighting infrastructure (e.g. fire water tank and reticulation system);
  - water supply infrastructure (e.g. water treatment plant, storage tanks, distribution system);
  - internal access roads;
  - car parking areas;
  - communications infrastructure; and
  - other ancillary infrastructure.
- accommodation camp electricity transmission line (between the mine site and the accommodation camp);
- accommodation camp water pipeline (between the mine site and the accommodation camp);
- sewage pump station and related infrastructure;
- site access road from Sunrise Lane; and
- construction (laydown) areas.

Figure 1: Study area.

The Modification also includes an irrigation area and irrigation water pipeline (Figure 1). Clean TeQ have indicated that use of the irrigation area will not require native vegetation clearance and that the pipeline would be laid on the ground beside an existing track.

The minor road upgrades would be within the extent of the existing road footprint of Sunrise Lane. Clean TeQ propose no native vegetation clearance for the minor road upgrades.

The Sunrise Property is owned by Clean TeQ and leased for agricultural activities, such as grazing and dryland cropping. Agricultural activities would continue to occur on the Sunrise Property outside the accommodation camp area.

1.2 Scope

The scope of work involved collection of ecological survey data in accordance with the *Biodiversity Assessment Method Order, 2017* (BAM) (NSW Office of Environment and Heritage [OEH] 2017a), specifically:

1. provision of a vegetation map identifying Plant Community Types (PCTs) and condition;
2. collection of vegetation integrity (site condition) data according to the BAM (2017a); and
3. targeted surveys for relevant species credit species, including those listed under the NSW *Biodiversity Conservation Act, 2016* (BC Act) and *Commonwealth Environmental Protection and Biodiversity Conservation Act, 1999* (EPBC Act).

Mark Semeniuk (AMBS co-author) is an accredited assessor under the BC Act (assessor accreditation number BAAS17072).

2 Methods

2.1 Survey Details

An initial vegetation survey was undertaken between 31 October 2017 and 1 November 2017 (inclusive) by James Schlunke, Daniel Clark and Ruby Stephens which included preliminary vegetation mapping, vegetation integrity (site condition) plots, additional full floristic plots, rapid assessment plots, paddock tree identification and threatened plant species searches.

A second field survey was undertaken between 27 November 2017 and 29 November 2017 (inclusive) by ecologists James Schlunke and Tom O'Sullivan. The second field survey included additional vegetation integrity (site condition) plots, threatened plant species searches and targeted fauna and fauna habitat surveys.

2.2 Plant community type and condition identification and mapping

The PCTs in the study area were identified and their distribution mapped. PCT naming was consistent with the NSW PCT classifications as described in the *BioNet Vegetation Classification* (OEH 2017b).

2.2.1 Review of existing information on native vegetation

The following information sources were reviewed:

- species records held in the *BioNet Atlas* (OEH 2017c);
- existing vegetation maps (OEH 2016a);
- previous native vegetation surveys for the Clean TeQ Sunrise Project (AMBS 2017); and
- aerial imagery (Department of Finance, Services & Innovation 2017).

2.2.2 Systematic field-based floristic vegetation survey

The vegetation of the study area and its condition were surveyed using vegetation integrity (site condition) plots, additional full floristic plots, rapid assessment plots and paddock tree identification. These methods are described below.

Vegetation integrity (site condition) plots

Data were collected from nine vegetation integrity (site condition) plots (SB 01 to SB 09) in a manner consistent with the field survey requirements specified by the BAM (2017a) (Figure 2). A proforma was used to record data at each vegetation integrity (site condition) plot.

Vegetation zones were based on PCT and condition. Data were collected on ground layer characteristics, weed species richness and disturbance, to gauge the condition of the vegetation within the study area.

Plots were randomly located in each vegetation zone. The zones and number of plots in each are shown in Table 1.

The Development Site Footprint covers approximately 27 ha of previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217) (Figure 2). Accordingly, four vegetation integrity (site condition) plots (SB 01, 02, 05 and 09) were undertaken in this vegetation zone to meet the minimum number of plots required in the BAM (2017a) (Table 1).

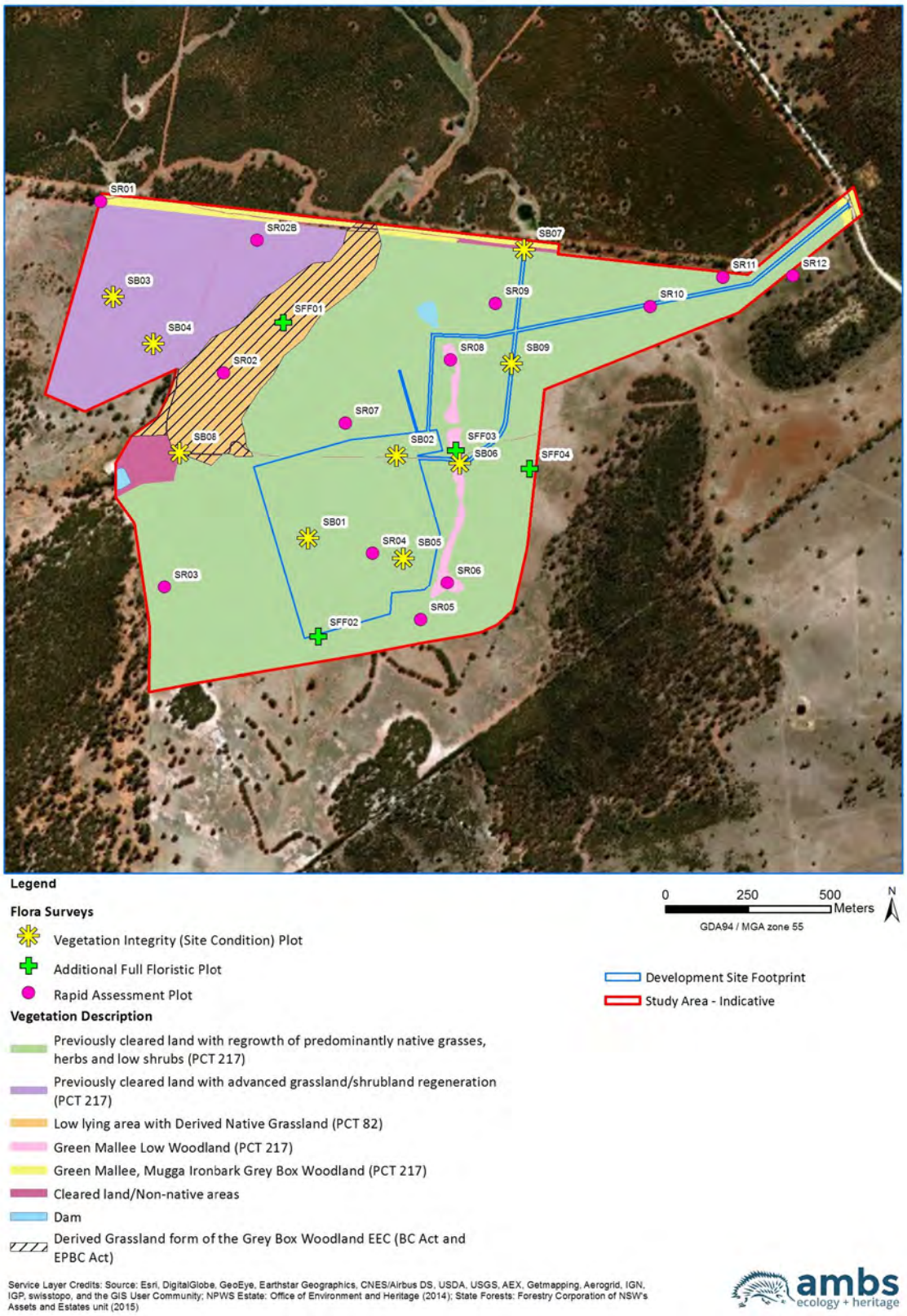

Figure 2: Flora plot locations.

An additional five vegetation integrity (site condition) plots were undertaken in other vegetation zones (Table 1; Figure 2).

Table 1: Number of vegetation integrity (site condition) plots required for each vegetation zone within the Development Site Footprint.

Vegetation Zone	Development Site Footprint Area (ha)	Plots required	Number of Plots
Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217)	27	4	4
Previously cleared land with advanced grassland/shrubland regeneration (PCT 217)	0	0	2
Green Mallee, Mugga Ironbark, Grey Box Woodland (PCT 217)	0	0	1
Low lying area with Derived Native Grassland (PCT 82)	0	0	1
Green Mallee Low Woodland (PCT 217)	0	0	1
Total	**27**	**4**	**9**

Additional floristic plots

The survey included collection of data from four 20 metres (m) x 20 m "full floristic" plots to inform vegetation mapping (SFF 01 to SFF 02) (Figure 2). Data were collected on ground layer characteristics, weed species richness and disturbance, to gauge the condition of the vegetation within the study area.

Rapid assessment plots

The survey included collection of data from thirteen "rapid assessment" plots (SR 01, SR 02, SR 02B and SR 03 to SR 12) (Figure 2).

Scattered tree identification

The location of scattered trees within the study area was identified using aerial imagery. Each location was visited, the species of tree recorded, and observations made on the composition of the ground layer beneath each tree. The survey included collection of data from a total of 165 scattered trees to inform vegetation mapping.

2.2.3 Survey effort

The survey effort described above is considered sufficient to sample the area commensurate with the expected environmental variation. The study area was stratified into preliminary environmental map units after reviewing existing information including vegetation maps, topographic maps and aerial imagery. The preliminary environmental units were refined after a preliminary survey of the study area. Plot-based sampling was undertaken in all relevant map units. The survey effort revised and updated existing mapping and site information as necessary.

2.3 Threatened ecological community identification and mapping

Interpretation of EPBC Act listing criteria and BC Act final determination criteria were used to determine if vegetation within the study area conformed to a Threatened Ecological Community (TEC). Determination of patches of vegetation that conformed to these criteria was based on interpretation of information from desktop assessment and field surveys, including soils, topography, patch size (ha), characteristic species, proximity to identified stands of the relevant TEC, degree of past disturbance, indications of past canopy using isolated canopy trees, and dead identifiable canopy trees or regenerating canopy species.

2.4 Threatened Plant Species Searches

A list of potential threatened plant species was determined (Appendix C) which included *Austrostipa wakoolica* and *Commersonia procumbens* as required by the BAM Credit Calculator (OEH, 2017g) assessment (Resource Strategies, 2017).

Targeted searches for threatened plant species were undertaken in accordance with the NSW *Guide to Surveying Threatened Plants* (OEH 2016b) in areas of potential habitat. Potential habitat was defined using data collected from plots, aerial imagery, any existing plant community mapping (OEH 2016a) and topographic features. Opportunistic searches for threatened plants were also undertaken during all plot-based surveys and while traversing the site. If a threatened plant species was found, the location and number (or estimate of number) was recorded.

The surveys included searches of suitable habitat for *Tylophora linearis*, *Lepidium monoplocoides* (Winged Peppercress) and *Austrostipa wakoolica,* listed species known to be located in the wider area (AMBS 2017). Surveys for threatened plants were undertaken in October over a period of two days and in November over a period of three days.

2.5 Threatened Fauna Surveys

Targeted surveys for identified threatened fauna and habitat assessments were undertaken on 28 and 29 November 2017 by James Schlunke and Tom O'Sullivan. Details of survey techniques are provided below; survey locations of threatened fauna survey techniques are presented in Figure 3.

The survey methods were tailored to the threatened species required to be targeted according to the BAM Credit Calculator (OEH, 2017g) assessment (Resource Strategies, 2017).

Outside of the dedicated fauna surveys, observations of threatened fauna were recorded incidentally whenever on site. Appendix D provides a list of potential threatened fauna species.

2.5.1 Weather during survey period

An overnight storm on the first day of surveys caused run-off throughout the survey area. The conditions during the surveys days were dry with clear conditions on 28 November and overcast skies on 29 November. Minimum daily temperatures lay around 20 ℃ and temperatures during the day reached around 32 ℃. Weather conditions during the survey period as reported from Condobolin Research Station (Bureau of Meteorology [BOM] 2017) are displayed in Table 2.

Table 2: Weather conditions during survey period (Condobolin Research Station) (BOM 2017).

Date	Temp Min [℃]	Temp Max [℃]	Rain [mm]
28/11/2017	16.0	32.4	47.8
29/11/2017	20.4	31.8	-

mm = millimetres.

2.5.2 Survey of Threatened Fauna Habitat Constraints

Habitat constraints are identified in the *Threatened Biodiversity Data Collection* (OEH 2017b) for some potentially occurring threatened fauna (Table 3). A survey of the habitat constraints was undertaken as outlined in Table 3 and described further below.

Table 3: Survey of Threatened Fauna Habitat Constraints and Survey Method.

Scientific Name	Common Name	Habitat Constraints identified in the Threatened Biodiversity Data Collection (OEH 2017a)	Field Assessment of Habitat Constraints/Survey Method
Lophoictinia isura	Square-tailed Kite	*Nest trees*	Tree census and searches for stick nests
Hieraaetus morphnoides	Little Eagle	*Nest trees - live (occasionally dead) large old trees within vegetation.*	Tree census and searches for stick nests
Calyptorhynchus lathami	Glossy Black-Cockatoo	*Living or dead tree with hollows greater than 15cm diameter and greater than 5m above ground.*	Tree hollow assessment
Lophochroa leadbeateri	Major Mitchell's Cockatoo	*Living or dead tree with hollows greater than 10cm diameter*	Tree hollow assessment
Burhinus grallarius	Bush Stone-curlew	*Fallen/standing dead timber including logs*	Search for suitable fallen/standing dead timber
Polytelis swainsonii	Superb Parrot	*Living or dead E. blakelyi, E. melliodora, E. albens, E. camaldulensis, E. microcarpa and E. polyanthemos with hollows greater than 5cm diameter; greater than 4m above ground or trees with a DBH of greater than 30cm.*	Tree hollow assessment
Ninox connivens	Barking Owl	*Living or dead trees with hollows greater than 20 cm diameter and greater than 4m above the ground.*	Tree hollow assessment
Tyto novaehollandiae	Masked Owl	*Living or dead trees with hollows greater than 20cm diameter.*	Tree hollow assessment
Phascogale tapoatafa	Brush-tailed Phascogale	*Hollow bearing trees*	Tree hollow assessment

Tree census

Scattered trees within the study area were assessed for features such as presence of hollows. A total of 165 trees were checked (Section 2.2.1).

Tree hollow assessment

Hollow-bearing trees located within the Development Site Footprint were assessed in more detail and data were collected on tree hollow sizes, numbers, heights; tree species, height, Diameter at breast Height (DBH) and whether it was living or a stag. These tree hollow assessments were also undertaken in some areas adjacent to the Development Site Footprint, including where the track crosses the creekline and where the track meets Sunrise Lane. The tree hollow assessment considered the occurrence of:

- living or dead tree with hollows greater than 15 centimetre (cm) diameter and greater than 5 m above ground for the Glossy Black-Cockatoo;
- living or dead tree with hollows greater than 10 cm diameter for the Major Mitchell's Cockatoo;

- living or dead *E. blakelyi, E. melliodora, E. albens, E. camaldulensis, E. microcarpa* and *E. polyanthemos* with hollows greater than 5 cm diameter; greater than 4 m above ground or trees with a DBH of greater than 30 cm for the Superb Parrot;
- living or dead trees with hollows greater than 20 cm diameter and greater than 4 m above the ground for the Barking Owl;
- living or dead trees with hollows greater than 20 cm diameter for the Masked Owl; and
- hollow bearing trees for the Brush-tailed Phascogale (tree hollows with entrances 2.5 – 4 cm wide).

Search for suitable fallen/standing dead timber

Potential habitat with suitable fallen/standing dead timber for the Bush Stone-curlew was searched for in the study area. No potential habitat with suitable fallen/standing dead timber for the Bush Stone-curlew occurs in the Development Site Footprint so no further surveys for the Bush Stone-curlew were required.

2.5.3 Survey of Threatened Fauna/Evidence of Threatened Fauna

Avifauna Census

The avifauna census was undertaken in accordance with DEC (2004). Two, 20-minute area searches for diurnal birds were undertaken on two consecutive mornings (Figure 3), targeting Square-tailed Kite, Little Eagle, Glossy Black-Cockatoo, Superb Parrot and Major Mitchell's Cockatoo. All birds observed were recorded.

Searches for Stick Nests

A search for stick-nests, as evidence of potential breeding of Square-tailed Kite and Little Eagle was undertaken within the Development Site Footprint (and elsewhere on an opportunistic basis). The approximate size of the stick nest was recorded.

Evidence of Glossy Black-Cockatoo Foraging

Targeted surveys for evidence of Glossy Black-Cockatoo foraging within the Development Site Footprint was undertaken in areas where food species of the genera *Allocasuarina* and *Casuarina* occur (Figure 3). If cones were found under the sample species, they were investigated for evidence of chewing.

Evidence of Koala

Surveys for the Koala included both direct observation and indirect observation methods consistent with the *EPBC Act referral guidelines for the vulnerable koala* (Department of the Environment 2014). Direct observation involved diurnal searches for individuals of the species in trees within and nearby the Development Site Footprint. Every tree within the Development Site Footprint was checked. Indirect survey techniques involved searches for scratches on tree trunks and also searches for scats. A determination of the tree species present within the study area was undertaken to assess whether suitable habitat for the Koala was present.

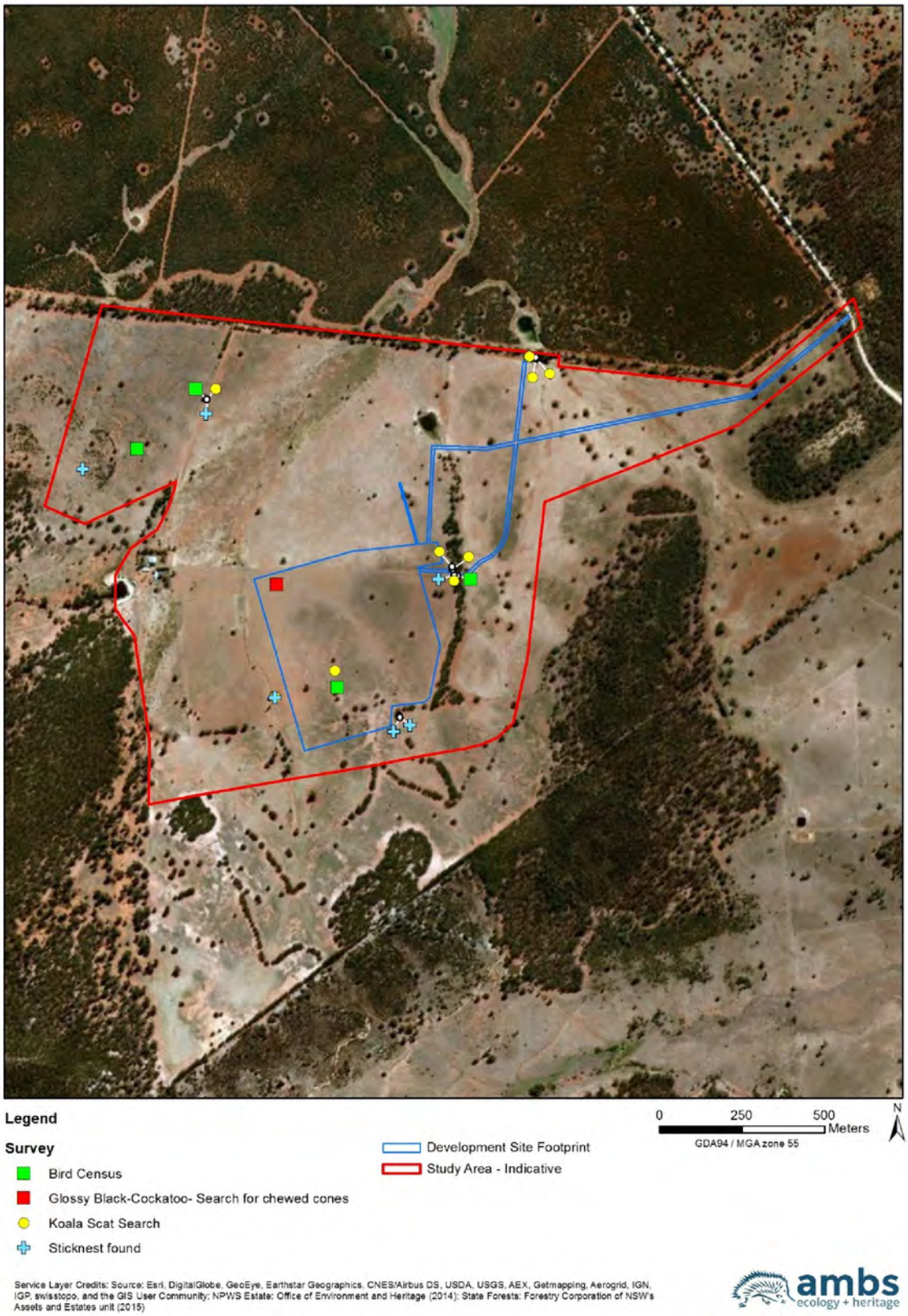

Figure 3: Fauna survey locations.

3 Results

3.1 Plant community types and condition

Although large portions of the study area have previously been cropped the species present in the ground layer were predominately native herbs, grasses and shrubs. Exotic species were present but the majority of the vegetation cover in the ground layer was provided by native species. Two PCTs, in varying condition, were recorded in the study area. An outline of the plant communities is provided below.

PCT - 217 Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion

Keith Formation: KF_CH5 Dry Sclerophyll Forest (Shrubby sub-formation)
Keith Class: Western Slopes Dry Sclerophyll Forests

Map Units/Vegetation Zones:

- **Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217)** - representing areas that have been cleared, grazed and in some locations cultivated. Occasional remnant trees and large shrubs occur.
- **Previously cleared land with advanced grassland/shrubland regeneration (PCT 217)** - representing areas that have been cleared, grazed and in some locations cultivated. Remnant trees, regenerating shrubs and a more diverse ground layer occur.
- **Green Mallee, Mugga Ironbark, Grey Box Woodland (PCT 217)** - representing areas in the road corridor with a mix of mature remnant trees including *Eucalyptus viridis, Eucalyptus sideroxylon* and *Eucalyptus microcarpa.*
- **Green Mallee Low Woodland (PCT 217)** - representing an area of mature remnant trees dominated by *Eucalyptus viridis* and, a grazed understorey.

PCT 217 covered most of the study area. Generally, it was found in a derived native grassland form with scattered remnant trees and shrubs (Figure 2). In all locations the vegetation had been grazed and in many cropped as well. Plates 1- 4 depict the variability across this PCT in locations where it has been cleared. Plates 5 and 6 show this PCT in its semi-cleared form. The location of each image can be matched to its site number shown on Figure 2.

Remnant tree and shrub species distributed across the area included *Eucalyptus viridis, Brachychiton populneus subsp. populneus, Eucalyptus sideroxylon, Eucalyptus microcarpa, Acacia doratoxylon, Alectryon oleifolius* and *Geijera parviflora.* Typical species in the ground layer were *Maireana microphylla*, *Rytidosperma setaceum, Calotis cuneifolius, Cheilanthes sieberi* subsp*. sieberi, Einadia nutans* subsp*. nutans, Tragus australis, Chloris truncata, Goodenia pinnatifida, Vittadinia gracilis, Digitaria diffusa, Atriplex spinibractea* and *Juncus filicaulis*.

Although cleared, vegetation in the study area was considered to most closely match PCT 217 based on: the presence of remnant tree and shrub species, listed above; composition of the ground layer; location in the landscape; and soil characteristics. The results of other recent surveys by AMBS (2017) and small remnants of less disturbed vegetation in the surrounding locality were also used to indicate that the PCT was present in the study area.

Plate 1: Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217), site SB01.

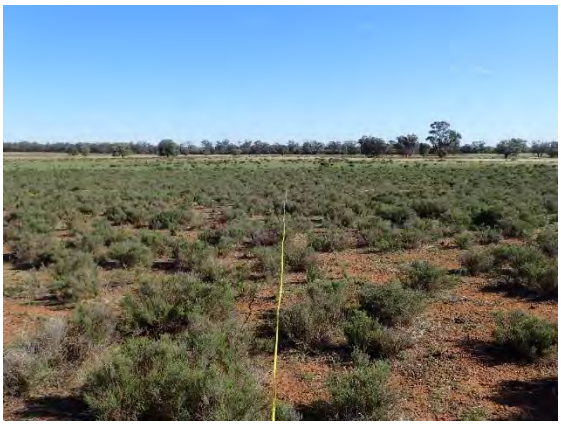

Plate 2: Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217), site SB02.

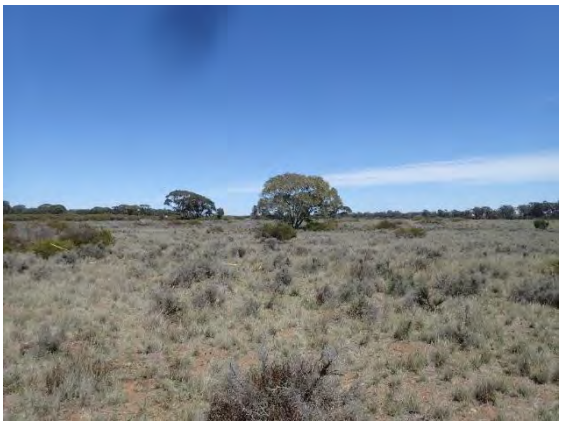

Plate 3: Previously cleared land with advanced grassland/shrubland regeneration (PCT 217), site SB03.

Plate 4: Previously cleared land with advanced grassland/shrubland regeneration (PCT 217), site SB04.

Plate 5: Green Mallee, Mugga Ironbark, Grey Box Woodland (PCT 217), site SR01.

Plate 6: Green Mallee Low Woodland (PCT 217), sites SFF03 and SR06.

PCT - 82 Western Grey Box-Poplar Box-White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion

Keith Formation: KF_CH3 Grassy Woodland
Keith Class: Floodplain Transition Woodlands

Map Unit:
Low lying area with Derived Native Grassland (PCT 82) – representing an area likely to have supported vegetation consistent with this PCT.

A derived native grassland form of PCT 82 has been mapped as occurring in a low-lying area within the study area (Figure 2). Soils in this location retain moisture for longer and are likely to have supported a different assemblage of species than that associated with PCT217. Clearing has removed most of the trees however species remaining suggest that PCT 82 or similar occurred in this location. The derived grassland form of this PCT is dominated by native species and meets the requirements for a community in moderate condition (OEH 2016). Plate 7 depicts the form of this PCT in the study area.

Scattered trees present include *Brachychiton populneus subsp. populneus, Eucalyptus microcarpa, Casuarina cristata, Callitris glaucophylla, Myoporum platycarpum* and *Alectryon oleifolius*. Species present in the ground layer *Cheilanthes sieberi* subsp*. sieberi Enteropogon acicularis, Sida corrugata, Oxalis perennans, Wahlenbergia communis, Walwhalleya subxerophila.*

Species composition, soil type and position in the landscape suggest that the area designated as PCT82 was different to that designated as PCT217. Remnant trees were sparse, but the round layer was relatively high in native species, many of which are consistent with the description of PCT 82. Examples of less disturbed vegetation in the surrounding locality that occur in similar topographic locations (and surveyed by AMBS 2017) are a good match for this PCT and although cleared, it is most likely that the area was likely to have formerly been dominated or co-dominated by Grey Box (*Eucalyptus microcarpa*).

Based on the above, the low-lying area with Derived Native Grassland (PCT 82) is a degraded example of the BC Act listed community *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions* and the EPBC Act listed community *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia.*

Plate 7: PCT 82 cleared and grazed with predominantly native grasses and herbs, site SFF 01.

3.2 Paddock Trees

Examples of paddock trees and large shrubs are provided in Plates 8 - 11.

Plate 8: *Brachychiton populneus* subsp. *populneus* (Kurrajong).

Plate 9: *Eucalyptus viridis* (Green Mallee).

Plate 10: *Alectryon oleifolius* subsp. *elongatus* (Western Rosewood).

Plate 11: *Eucalyptus microcarpa* (Grey Box). Green cover of the ground layer is predominately native herbs and grasses.

3.3 Plant Species

In total 120 plant species were recorded during the surveys, of which 89 were native species (Appendix A).

One threatened plant species was located in the study area. *Tylophora linearis* was found at four locations within the Sunrise Lane easement (Table 4; Figure 4). The population was found under *Eucalyptus microcarpa* (Grey Box) trees as was also the case when a number of individuals were located in remnant woodland on the opposite side of the Lane in 2016 (AMBS 2017). *Tylophora linearis* is listed as vulnerable under the BC Act and Endangered under the EPBC Act.

Potential habitat for this species occurs in the easement of Sunrise Lane in the remnant PCT 217.

Table 4: Coordinates and number of individuals in the *Tylophora linearis* populations.

Population Number	Easting	Northing	Number of Plants
1	536863	6372250	14
2	536876	6372241	6
3	536877	6372251	7
4	536883	6372244	11

3.4 Vegetation Integrity (Site Condition) Data

Vegetation Integrity (Site Condition) data are provided in Appendix F.

3.5 Broad Habitat Types

Two broad habitat types based on vegetation formations as defined by Keith (2006) were identified in the study area during field surveys.

Grasslands

PCT: Derived grassland form of PCT 217 and PCT 82.
Grasslands occur across the majority of the study area. These grasslands are dominated by native herbs, grasses and in some locations shrubs. They occur in areas that previously may have been woodland but have been modified through historical and current management. Scattered trees occur throughout these habitats, particularly *Eucalyptus viridis* and *Eucalyptus microcarpa*.

Dry Sclerophyll Forest (shrubby sub-formation)

PCT: Uncleared and semi-cleared forms of PCT 217.
Dry Sclerophyll Forest (shrubby sub-formation) occurs in two areas. One area, along Sunrise Lane along the northern boundary, is dominated by *Eucalyptus sideroxylon, Eucalyptus viridis* and *Eucalyptus microcarpa*. The second area, in a drainage channel on the eastern side of the study area, consists of a narrow strip of mature *Eucalyptus viridis* trees.

The mid-storey and understorey in its current state is sparse and has limited habitat value aside from limited nectar and foraging resources.

Figure 4: Location of threatened plants found during the survey.

3.6 Fauna Surveys

3.6.1 Survey of Threatened Fauna Habitat Constraints

The results of the habitat searches are summarised in Table 5.

Table 5: Threatened Fauna Habitat Constraints.

Scientific Name	Common Name	Habitat Constraints identified in the Threatened Biodiversity Data Collection (OEH 2017d)	Survey Effort/Result
Lophoictinia isura	Square-tailed Kite	*Nest trees*	No likely breeding trees observed in the Development Site Footprint. 2x 20 minute diurnal bird surveys undertaken. Searches for potential nests (e.g. large stick nests) undertaken, none observed in the Development Site Footprint.
Hieraaetus morphnoides	Little Eagle	*Nest trees - live (occasionally dead) large old trees within vegetation.*	No likely breeding trees observed in the Development Site Footprint. 2x 20min diurnal bird surveys undertaken. Searches for potential nests (e.g. large stick nests) undertaken, none observed in the Development Site Footprint.
Calyptorhynchus lathami	Glossy Black-Cockatoo	*Living or dead tree with hollows greater than 15cm diameter and greater than 5m above ground.*	Potential breeding trees not observed in the Development Site Footprint. Surveys for foraging signs undertaken. No signs or animals observed. No potential breeding trees likely to be removed if hollow-bearing trees along creekline next to track are not removed.
Lophochroa leadbeateri	Major Mitchell's Cockatoo	*Living or dead tree with hollows greater than 10cm diameter*	2x 20 minute diurnal bird surveys and habitat surveys undertaken. No tree hollows likely to be impacted. No signs of the species recorded. No potential breeding trees likely to be removed if hollow-bearing trees along creekline next to track are not removed.
Burhinus grallarius	Bush Stone-curlew	*Fallen/standing dead timber including logs*	Habitat surveys undertaken, suitable habitat considered to be absent in the Development Site Footprint.
Polytelis swainsonii	Superb Parrot	*Living or dead E. blakelyi, E. melliodora, E. albens, E. camaldulensis, E. microcarpa and E. polyanthemos with hollows greater than 5cm diameter; greater than 4m above ground or trees with a DBH of greater than 30cm.*	2x 20 minute diurnal bird surveys and habitat surveys undertaken. No tree hollows likely to be impacted. No signs of the species recorded. No potential breeding trees likely to be removed if hollow-bearing trees along creekline next to track are not removed.
Ninox connivens	Barking Owl	*Living or dead trees with hollows greater than 20 cm diameter and greater than 4m above the ground.*	Habitat surveys undertaken. No tree hollows likely to be impacted. No signs of the species recorded. No potential breeding trees likely to be removed if hollow-bearing trees along creekline next to track are not removed.
Tyto novaehollandiae	Masked Owl	*Living or dead trees with hollows greater than 20cm diameter.*	Habitat surveys undertaken. No tree hollows likely to be impacted. No signs of the species recorded. No potential breeding trees likely to be removed if hollow-bearing trees along creekline next to track are not removed.
Phascogale tapoatafa	Brush-tailed Phascogale	*Hollow bearing trees*	Habitat surveys undertaken, suitable habitat considered to be absent in the Development Site Footprint.

Tree census

The main tree species found with the Development Site Footprint were *Eucalyptus viridis*, with some *Eucalyptus microcarpa* and one *Brachychiton populneus* subsp*. populneus*.

Tree hollow assessment

The results of the search for hollow-bearing trees within and adjacent to the proposed Development Site Footprint are shown on Figure 6 and the data are included as Appendix E.

Search for suitable fallen/standing dead timber

No potential habitat with suitable fallen/standing dead timber for the Bush Stone-curlew occurs in the Development Site Footprint.

3.6.2 Survey of Threatened Fauna/Evidence of Threatened Fauna

Avifauna Census

One threatened species was recorded; the Grey-crowned Babbler, which was detected in two locations within the study area (Figure 5). The Grey-crowned Babbler is not a "species credit" species. A list of fauna recorded during the surveys is provided in Appendix B.

Searches for Stick Nests

The results of the search for nest-bearing trees within and adjacent to the proposed Development Site Footprint are shown on Figure 6 and the data are included as Appendix E.

Evidence of Glossy Black-Cockatoo Foraging

There was only one Casuarina tree found within the proposed Development Site Footprint. No evidence of chewed cones was found.

Evidence of Koala

No primary feed trees for the Koala (Department of Environment and Climate Change NSW 2008) are located in the Development Site Footprint. A secondary feed tree, Grey Box (*E. microcarpa*), is present in the Development Site Footprint, represented by one isolated tree. No evidence of Koala use (scats or scratches) was found. It is unlikely that the Koala uses the habitat in the Development Site Footprint.

Schedule 1 of *State Environmental Planning Policy No 44—Koala Habitat Protection* (SEPP 44) lists the Local Government Areas to which the policy applies. The study area occurs within the Lachlan Shire Council, which is not on Schedule 1. As, such, SEPP 44 does not apply to the study area.

The wider study area contains some trees listed as secondary feed trees for the Koala. Further information regarding potential Koala habitat trees is provided in Appendix C.

Figure 5: Threatened fauna recorded during the surveys.

Figure 6: Location of trees assessed and hollow-bearing trees within the Development Site Footprint.

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Appendix A: Plant Species Recorded During Surveys

Native Species

Family	Scientific Name	Common Name
Fabaceae	*Acacia doratoxylon*	Currawang
Fabaceae	*Acacia lineata*	Streaked Wattle
Asteraceae	*Actinobole uliginosum*	Flannel Cudweed
Sapindaceae	*Alectryon oleifolius* subsp. *elongatus*	Western Rosewood
Amaranthaceae	*Alternanthera denticulata*	
Amaranthaceae	*Alternanthera sp. A*	
Poaceae	*Aristida behriana*	Bunch Wiregrass
Poaceae	*Aristida benthamii*	Three-awned spear grass
Poaceae	*Aristida ramosa*	Purple Wiregrass
Chenopodiaceae	*Atriplex spinibractea*	Spiny-fruit Saltbush
Poaceae	*Austrostipa scabra*	Speargrass
Poaceae	*Austrostipa setacea*	Corkscrew Grass
Nyctaginaceae	*Boerhavia dominii*	Tarvine
Poaceae	*Bothriochloa decipiens* var. *decipiens*	Pitted Bluegrass
Poaceae	*Bothriochloa macra*	Red Grass
Malvaceae	*Brachychiton populneus* subsp. *populneus*	Kurrajong
Asphodelaceae	*Bulbine semibarbata*	Wild Onion
Cupressaceae	*Callitris glaucophylla*	White Cypress Pine
Asteraceae	*Calotis cuneifolia*	Purple Burr-Daisy
Asteraceae	*Calotis hispidula*	Bogan Flea
Cyperaceae	*Carex inversa*	Knob Sedge
Casuarinaceae	*Casuarina cristata*	Belah
Asteraceae	*Centipeda cunninghamii*	
Euphorbiaceae	*Chamaesyce drummondii*	Caustic Weed
Adiantaceae	*Cheilanthes sieberi*	Rock Fern
Poaceae	*Chloris truncata*	Windmill Grass
Convolvulaceae	*Convolvulus erubescens*	Pink Bindweed
Asteraceae	*Cotula australis*	Common Cotula
Crassulaceae	*Crassula sieberiana*	Australian Stonecrop
Poaceae	*Cynodon dactylon*	Common Couch
Cyperaceae	*Cyperus spp.*	
Convolvulaceae	*Dichondra repens*	Kidney Weed
Poaceae	*Digitaria ammophila*	
Poaceae	*Digitaria diffusa*	Open Summer-grass
Chenopodiaceae	*Dysphania glomulifera*	
Chenopodiaceae	*Dysphania pumilio*	Small Crumbweed
Chenopodiaceae	*Einadia nutans*	Climbing Saltbush
Chenopodiaceae	*Einadia polygonoides*	
Poaceae	*Elymus scaber*	Common Wheatgrass
Poaceae	*Enteropogon acicularis*	Curly Windmill Grass
Poaceae	*Eragrostis brownii*	
Poaceae	*Eragrostis lacunaria*	Purple Lovegrass
Poaceae	*Eriochloa pseudoacrotricha*	

Family	Scientific Name	Common Name
Geraniaceae	*Erodium crinitum*	Blue Crowfoot
Myrtaceae	*Eucalyptus dwyeri*	Dwyer's Red Gum
Myrtaceae	*Eucalyptus microcarpa*	Grey Box
Myrtaceae	*Eucalyptus sideroxylon*	Mugga Ironbark
Myrtaceae	*Eucalyptus viridis*	Green Mallee
Asteraceae	*Euchiton sphaericus*	
Cyperaceae	*Fimbristylis dichotoma*	Common Fringe-sedge
Rutaceae	*Geijera parviflora*	Wilga
Goodeniaceae	*Goodenia pinnatifida*	Scrambles Eggs
Goodeniaceae	*Goodenia pusilliflora*	
Apiaceae	*Hydrocotyle laxiflora*	Stinking Pennywort
Hypericaceae	*Hypericum gramineum*	Small St. John's Wort
Juncaceae	*Juncus aridicola*	Tussock Rush
Juncaceae	*Juncus filicaulis*	
Brassicaceae	*Lepidium fasciculatum*	Bundled Peppercress
Lythraceae	*Lythrum hyssopifolium*	
Chenopodiaceae	*Maireana enchylaenoides*	Wingless Fissure-weed
Chenopodiaceae	*Maireana microphylla*	Small-leaf Bluebush
Scrophulariaceae	*Myoporum montanum*	Western Boobialla
Oxalidaceae	*Oxalis perennans*	
Poaceae	*Panicum effusum*	Hairy Panic
Poaceae	*Paspalidium gracile*	Slender Panic
Plantaginaceae	*Plantago debilis*	Shade Plantain
Plantaginaceae	*Plantago turrifera*	Small Sago-weed
Polygonaceae	*Polygonum plebeium*	Small Knotweed
Portulacaceae	*Portulaca oleracea*	Pigweed
Asteraceae	*Rhodanthe anthemoides*	
Polygonaceae	*Rumex brownii*	Swamp Dock
Poaceae	*Rytidosperma setaceum*	Small-flowered Wallaby-grass
Chenopodiaceae	*Sclerolaena muricata*	
Malvaceae	*Sida corrugata*	Corrugated Sida
Solanaceae	*Solanum esuriale*	
Solanaceae	*Solanum ferocissimum*	Spiny Potato Bush
Poaceae	*Sporobolus creber*	Slender Rat's Tail Grass
Asteraceae	*Stuartina muelleri*	Spoon Cudweed
Poaceae	*Tragus australianus*	Small Burrgrass
Asteraceae	*Triptilodiscus pygmaeus*	Common Sunray
Apocynaceae	*Tylophora linearis*	
Asteraceae	*Vittadinia cervicularis*	
Asteraceae	*Vittadinia cuneata*	A Fuzzweed
Asteraceae	*Vittadinia gracilis*	Woolly New Holland Daisy
Campanulaceae	*Wahlenbergia communis*	Tufted Bluebell
Campanulaceae	*Wahlenbergia gracilenta*	Annual Bluebell
Campanulaceae	*Wahlenbergia gracilis*	Sprawling Bluebell
Poaceae	*Walwhalleya subxerophila*	Gilgai Grass
Asteraceae	*Xerochrysum bracteatum*	Golden Everlasting

Exotic Species

Family	Scientific Name	Common Name
Amaranthaceae	*Alternanthera pungens*	
Asteraceae	*Arctotheca calendula*	Cape Weed
Poaceae	*Avena sativa*	Oats
Poaceae	*Bromus molliformis*	Soft Brome
Asteraceae	*Carthamus lanatus*	Saffron Thistle
Gentianaceae	*Centaurium tenuiflorum*	Branched Centaury, Slender centaury
Asteraceae	*Chondrilla juncea*	Skeleton Weed
Asteraceae	*Cirsium vulgare*	Spear Thistle
Asteraceae	*Conyza bonariensis*	Flaxleaf Fleabane
Boraginaceae	*Echium plantagineum*	Patterson's Curse
Boraginaceae	*Heliotropium europaeum*	
Poaceae	*Hordeum leporinum*	Barley Grass
Asteraceae	*Hypochaeris glabra*	Smooth Catsear
Brassicaceae	*Lepidium africanum*	Common Peppercress
Brassicaceae	*Lepidium bonariensis*	
Poaceae	*Lolium perenne*	Perennial Ryegrass
Poaceae	*Lolium rigidum*	Wimmera Ryegrass
Malvaceae	*Malva parvifolia*	
Lamiaceae	*Marrubium vulgare*	White Horehound
Fabaceae	*Medicago minima*	Woolly Burr Medic
Caryophyllaceae	*Polycarpon tetraphyllum*	Four-leaved Allseed
Asteraceae	*Sonchus oleraceus*	Common Sowthistle
Caryophyllaceae	*Spergularia diandra*	Lesser Sand-spurry
Fabaceae	*Trifolium arvense*	Haresfoot Clover
Fabaceae	*Trifolium campestre*	Hop Clover
Fabaceae	*Trifolium glomeratum*	Clustered Clover
Fabaceae	*Trifolium spp.*	A Clover
Fabaceae	*Trifolium subterraneum*	Subterranean Clover
Poaceae	*Vulpia muralis*	Wall Fescue
Poaceae	*Vulpia myuros*	Rat's Tail Fescue

Appendix B: Fauna Recorded During Surveys

Class	Family	Common Name	Scientific Name
Amphibia	Hylidae	Peron's Tree Frog	*Litoria peronii*
	Myobatrachidae	Eastern sign-bearing Froglet	*Crinia parinsignifera*
		Common Eastern Froglet	*Crinia signifera*
		Long-thumbed Frog	*Limnodynastes fletcheri*
		Spotted Grass Frog	*Limnodynastes tasmaniensis*
Aves	Acanthizidae	Yellow-rumped Thornbill	*Acanthiza chrysorrhoa*
	Alcedinidae	Laughing Kookaburra	*Dacelo novaeguineae*
	Ardeidae	White-necked Heron	*Ardea pacifica*
	Artamidae	Pied Butcherbird	*Cracticus nigrogularis*
		Australian Magpie	*Cracticus tibicen*
		Grey Butcherbird	*Cracticus torquatus*
	Cacatuidae	Galah	*Eolophus roseicapillus*
	Campephagidae	Black-faced Cuckoo-shrike	*Coracina novaehollandiae*
	Casuariidae	Emu	*Dromaius novaehollandiae*
	Charadriidae	Banded Lapwing	*Vanellus tricolor*
	Columbidae	Crested Pigeon	*Ocyphaps lophotes*
		Common Bronzewing	*Phaps chalcoptera*
	Corcoracidae	White-winged Chough	*Corcorax melanorhamphos*
		Apostlebird	*Struthidea cinerea*
	Corvidae	Australian Raven	*Corvus coronoides*
	Falconidae	Brown Falcon	*Falco berigora*
		Nankeen Kestrel	*Falco cenchroides*
	Maluridae	Variegated Fairy-wren	*Malurus lamberti*
	Meliphagidae	Spiny-cheeked Honeyeater	*Acanthagenys rufogularis*
		Blue-faced Honeyeater	*Entomyzon cyanotis*
		White-eared Honeyeater	*Lichenostomus leucotis*
		Noisy Miner	*Manorina melanocephala*
	Monarchidae	Magpie-lark	*Grallina cyanoleuca*
	Motacillidae	Australian Pipit	*Anthus novaeseelandiae*
	Phasianidae	Stubble Quail	*Coturnix pectoralis*
	Pomatostomidae	Grey-crowned Babbler (eastern subspecies)^	*Pomatostomus temporalis temporalis*
	Psittacidae	Blue Bonnet	*Northiella haematogaster*
		Eastern Rosella	*Platycercus eximius*
		Red-rumped Parrot	*Psephotus haematonotus*
	Rhipiduridae	Willie Wagtail	*Rhipidura leucophrys*
Mammalia	Bovidae	Sheep	*Ovis aries*
	Canidae	Red Fox*	*Vulpes vulpes*
	Dasyuridae	unidentified Antechinus	*Antechinus sp.*
	Felidae	Cat*	*Felis catus*
	Leporidae	European Brown Hare*	*Lepus capensis*
		European Rabbit*	*Oryctolagus cuniculus*
	Macropodidae	Eastern Grey Kangaroo	*Macropus giganteus*
		Common Wallaroo	*Macropus robustus*
	Phalangeridae	Common Brushtail Possum	*Trichosurus vulpecula*
	Tachyglossidae	Short-beaked Echidna	*Tachyglossus aculeatus*
Reptilia	Scincidae	unidentified Cryptoblepharus	*Cryptoblepharus sp.*
		Shingle-back	*Tiliqua rugosa*

^ Species listed as threatened under the BC Act or the EPBC Act
* introduced species

Appendix C: Likelihood of Occurrence – Threatened Plants

Scientific Name	Common Name	BC Act (BioNet Search)	EPBC Act (Protected Matters Search)	Credit type	PCT 82	PCT 217	Likelihood of Occurrence	Survey Effort	Recommended Survey time
Austrostipa wakoolica	A spear-grass	E	E	Species	Potential	Potential	Has been recorded in the vicinity in a previous survey (AMBS 2017).	Targeted surveys undertaken in suitable habitat. Not recorded.	Oct- Dec
Commersonia procumbens	-	V	V	Species		Potential	Unlikely; suitable PCT present but study area exposed to disturbance from clearing and grazing.	Targeted surveys undertaken in suitable habitat. Not recorded.	Aug - May
Diuris tricolor	Pine Donkey Orchid	V	-	Species	Potential		Unlikely; suitable PCT present but study area exposed to disturbance from clearing and grazing.	Random surveys in suitable habitat. Not recorded.	Sept - Oct
Swainsona sericea	Silky Swainson-pea	V	-	Species	Potential		Unlikely; suitable PCT present but study area exposed to disturbance from clearing and grazing.	Random surveys in suitable habitat. Not recorded.	Sept - Dec

Scientific Name	Common Name	BC Act (BioNet Search)	EPBC Act (Protected Matters Search)	Credit type	PCT 82	PCT217	Likelihood of Occurrence Prior to the Survey	Survey Effort	Recommended Survey time
Austrostipa metatoris	-	V	V	Species			Unlikely; suitable PCT not present. Study area exposed to disturbance from clearing and grazing.	Random surveys in suitable habitat. Not recorded.	Jan - Dec
Lepidium monoplocoides	Winged Pepper-cress	E	E	Species			Has been recorded in the vicinity in a previous survey	Targeted surveys undertaken in suitable habitat. Not recorded.	Nov - Feb
Swainsona murrayana	Slender Darling-pea	V	V	Species			Unlikely; suitable PCT not present. Study area exposed to disturbance from clearing and grazing.	Random surveys in suitable habitat. Not recorded.	Sept - Feb
Tylophora linearis	-	V	E	Species			Has been recorded in the vicinity in a previous survey.	Targeted surveys undertaken in suitable habitat. Recorded in road reserve outside of Development Site Footprint.	Sept - May

Appendix D: Likelihood of Occurrence – Threatened Fauna

Species identified using the NSW BioNet Search tool or the EPBC Protected Matters Search Tool (Department of Environment and Energy, 2017)

Common Name	Scientific Name	BC Act (BioNet Search)	EPBC Act (Protected Matters Search)	Credit type	PCT 82	PCT 217	Likelihood of Occurrence	Survey Effort	Recommended Survey time
Australian Bustard	*Ardeotis australis*	E	-	Species	Yes		Unlikely. Suitable PCT present although requires some shrubland for cover. Study area exposed to disturbance from clearing and grazing.	Not recorded during any surveys. PCT 82 will not be impacted.	All year.
Brush-tailed Phascogale	*Phascogale tapoatafa*	V	-	Species		Yes	Unlikely. Suitable PCT present but study area exposed to disturbance from clearing and grazing. Hollow-bearing trees and fallen timber uncommon.	Habitat surveys undertaken, suitable habitat considered to be absent in the Development Site Footprint. No habitat trees likely to be removed.	All year.
Bush Stone-curlew	*Burhinus grallarius*	E	-	Species	Yes	Yes	Unlikely. Suitable PCT present but study area exposed to disturbance from clearing and grazing. Hollow-bearing trees and fallen timber uncommon.	Habitat surveys undertaken, suitable habitat considered to be absent in the Development Site Footprint. No habitat trees likely to be removed.	All year.
Glossy Black-Cockatoo	*Calyptorhynchus lathami*	V	-	Species	Yes		Unlikely. Suitable PCT present but study area exposed to disturbance from clearing and grazing. Only one potential feed tree within the Development Site Footprint but no foraging signs observed.	Surveys for foraging signs undertaken. No signs or animals observed. No potential breeding trees likely to be removed.	All year.
Sloane's Froglet	*Crinia sloanei*	V	-	Species	Yes		Unlikely. Suitable PCT present but study area exposed to disturbance from clearing and grazing.	Targeted surveys not undertaken. PCT 82 will not be impacted.	Jul - Aug
Barking Owl	*Ninox connivens*	V	-	Ecosystem & Species	Yes	Yes	Foraging possible. Suitable PCT present but study area exposed to disturbance from clearing and	Habitat surveys undertaken. No tree hollows likely to be impacted. No signs of the	May - Dec

Common Name	Scientific Name	BC Act (BioNet Search)	EPBC Act (Protected Matters Search)	Credit type	PCT 82	PCT 217	Likelihood of Occurrence	Survey Effort	Recommended Survey time
							grazing. No tree hollows suitable for breeding observed in the Development Site Footprint.	species recorded.	
Koala	*Phascolarctos cinereus*	V	V	Ecosystem & Species	Yes	Yes	Unlikely. Suitable PCT present but Primary feed trees absent. Secondary feed trees very uncommon in the Development Site Footprint (limited to sparsely distributed Western Grey Box, *Eucalyptus microcarpa*).	Searches for signs of the species undertaken. No animals, scats or scratches were observed.	All year.
Little Eagle	*Hieraaetus morphnoides*	V	-	Ecosystem & Species	Yes	Yes	Foraging possible. Suitable PCT present but study area exposed to disturbance from clearing and grazing. Potential breeding trees not observed in the Development Site Footprint.	2x 20min diurnal bird surveys undertaken. Searches for potential nests (e.g. large stick nests) undertaken, none observed in the Development Site Footprint.	Aug - Oct
Major Mitchell's Cockatoo	*Lophochroa leadbeateri*	V	-	Ecosystem & Species	Yes	Yes	Foraging possible. Suitable PCT present but study area exposed to disturbance from clearing and grazing. No tree hollows suitable for breeding observed in the Development Site Footprint.	2x 20min diurnal bird surveys and habitat surveys undertaken. No tree hollows likely to be impacted. No signs of the species recorded.	Sep - Dec
Masked Owl	*Tyto novaehollandiae*	V	-	Ecosystem & Species	Yes	Yes	Foraging possible. Suitable PCT present but study area exposed to disturbance from clearing and grazing. No tree hollows suitable for breeding observed in the Development Site Footprint.	Habitat surveys undertaken. No tree hollows likely to be impacted. No signs of the species recorded.	May - Aug
Square-tailed Kite	*Lophoictinia isura*	V	-	Ecosystem & Species		Yes	Foraging possible. Suitable PCT present but study area exposed to disturbance from clearing and grazing. Potential breeding trees not observed in the Development Site Footprint.	2x 20min diurnal bird surveys undertaken. Searches for potential nests (e.g. large stick nests) undertaken, none observed in the Development Site Footprint.	Sep - Dec

Common Name	Scientific Name	BC Act (BioNet Search)	EPBC Act (Protected Matters Search)	Credit type	PCT 82	PCT 217	Likelihood of Occurrence	Survey Effort	Recommended Survey time
Superb Parrot	*Polytelis swainsonii*	V	V	Ecosystem & Species	Yes	Yes	Foraging possible. Suitable PCT present but study area exposed to disturbance from clearing and grazing. No tree hollows suitable for breeding observed in the Development Site Footprint.	2x 20min diurnal bird surveys and habitat surveys undertaken. No tree hollows likely to be impacted. No signs of the species recorded.	Sep - Nov
Swift Parrot	*Lathamus discolor*	E	CE	Ecosystem & Species	Yes	Yes	Unlikely. Suitable PCT present but study area exposed to disturbance from clearing and grazing. Suitable foraging resources sparsely distributed in the Development Site Footprint, landscape heavily fragmented.	Habitat surveys undertaken. Species unlikely to utilise habitats within the Development Site Footprint.	May - Aug

Additional species identified using only the EPBC Protected Matters Search Tool (Department of Environment and Energy, 2017)

Common Name	Scientific Name	BC Act	EPBC Act	Likelihood of Occurrence	Survey Effort	Recommended Survey time
Regent Honeyeater	*Anthochaera phrygia*	CE	CE	Unlikely. Study area exposed to disturbance from clearing and grazing. Suitable foraging resources sparsely distributed in the Development Site Footprint, landscape heavily fragmented.	Habitat surveys undertaken. Species unlikely to utilise habitats within the Development Site Footprint.	Sep – Dec
Curlew Sandpiper	*Calidris ferruginea*	E	CE	Unlikely. Study area exposed to disturbance from clearing and grazing. Suitable habitats absent from footprint.	Habitat surveys undertaken. Species unlikely to utilise habitats within the Development Site Footprint.	Sep - Mar
Painted Honeyeater	*Grantiella picta*	V	V	Unlikely. Study area exposed to disturbance from clearing and grazing. Suitable foraging resources sparsely distributed in the Development Site Footprint.	2x 20min diurnal bird surveys and habitat surveys undertaken. Species unlikely to utilise habitats within the Development Site Footprint.	N/A
Malleefowl	*Leipoa ocellata*	E	V	Unlikely. Study area exposed to disturbance from clearing and grazing. Suitable mallee habitats absent from footprint.	Habitat surveys undertaken. Species unlikely to utilise habitats within the Development Site Footprint.	N/A
Eastern Curlew	*Numenius madagascariensis*	-	CE	Unlikely. Study area exposed to disturbance from clearing and grazing. Suitable habitats absent from footprint.	Habitat surveys undertaken. Species unlikely to utilise habitats within the Development Site Footprint.	All year
Plains-wanderer	*Pedionomus torquatus*	E	CE	Unlikely. Study area exposed to disturbance from clearing and grazing. Suitable habitats absent from footprint.	Habitat surveys undertaken. Species unlikely to utilise habitats within the Development Site Footprint.	Aug - Oct
Australian Painted Snipe	*Rostratula australis*	E	E	Unlikely. Study area exposed to disturbance from clearing and grazing. Suitable habitats absent from footprint.	Habitat surveys undertaken. Species unlikely to utilise habitats within the Development Site Footprint.	N/A
Corben's Long-eared Bat	*Nyctophilus corbeni*	V	V	Unlikely. Study area exposed to disturbance from clearing and grazing, limiting their potential to occur. Potential roosting trees uncommon.	Habitat surveys undertaken. No hollow-bearing trees likely to be impacted within the Development Site Footprint.	Oct - Apr
Grey-headed Flying-fox	*Pteropus poliocephalus*	V	V	Unlikely. Study area exposed to disturbance from clearing and grazing, limiting their potential to occur. No camps observed.	Habitat surveys undertaken. No camps observed in the Development Site Footprint and none likely to occur.	Oct - Dec

Appendix E: Tree Feature Data

Easting	Northing	Tree Species	Tree Features			Habitat Features																				Comments	Habitat Assessment			Meets Habitats Constraint Criteria for occurring listed species?	Relevant Fauna Species
						Small4 Mid-branch Hollow		Medium5 Mid-branch Hollow		Large6 Mid-branch Hollow		Small4 End-of-branch Opening		Medium5 End-of-branch Opening		Large6 End-of-branch Opening		Small4 Trunk Hollow		Medium5 Trunk Hollow		Large6 Trunk Hollow		Crevices	Loose Bark	>12 Small4 Hollows all Types						
			Height (m)	DBH	Stag	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Present	Present	Present		Birds	Aboreal Mammal	Bats		
537636	6371194	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	Y	N	Mallee	N	N	N		
537531	6371162	*Brachychiton populneus subsp. populneus*	6.5	30-60	No	0		0		0		0		0		0		0		0		0		N	N	N		N	N	N		
537461	6371197	*Eucalyptus viridis*	6	<30	No	0		0		0		0		0		0		0		0		0		N	Y	N	Mallee	N	N	N		
537463	6371164	*Eucalyptus viridis*	9	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537379	6371114	*Eucalyptus microcarpa*	13	>60	No	0		0		0		0		0		0		0		0		0		N	N	N		N	N	N		
537288	6371428	*Casuarina cristata*	12	30-60	No	0		0		0		0		0		0		0		0		0		Y	N	N	No cones evident	N	N	Y		
537282	6371086	*Eucalyptus microcarpa*	16	>60	No	0		0		0		0		0		0		0		1	6	0		N	N	N	Bank around hollow has been chewed. Stick nest 50cm diameter at 12m.	Y	Y	Y		
537468	6371100	*Eucalyptus viridis*	6	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537468	6371096	*Eucalyptus viridis*	6	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537472	6371078	*Eucalyptus viridis*	7	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537502	6370972	*Callitris glaucophylla*	8.5	30-60	No	0		0		0		0		0		0		0		0		0		N	N	N	Chewed seed pods	N	N	N		
537503	6371009	*Callitris glaucophylla*	6.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Chewed cones.	N	N	N		
537497	6371025	*Eucalyptus viridis*	5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537497	6371027	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537529	6371049	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		

Easting	Northing	Tree Species	Tree Features			Habitat Features																						Comments	Habitat Assessment			Meets Habitats Constraint Criteria for occurring listed species?	Relevant Fauna Species
						Small4 Mid-branch Hollow		Medium5 Mid-branch Hollow		Large6 Mid-branch Hollow		Small4 End-of-branch Opening		Medium5 End-of-branch Opening		Large6 End-of-branch Opening		Small4 Trunk Hollow		Medium5 Trunk Hollow		Large6 Trunk Hollow		Crevices	Loose Bark	>12 Small4 Hollows all Types							
			Height (m)	DBH	Stag	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Present	Present	Present		Birds	Aboreal Mammal	Bats		
537551	6371052	*Eucalyptus viridis*	7	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537557	6371053	*Eucalyptus viridis*	7	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537594	6371092	*Eucalyptus viridis*	7	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee	N	N	N		
537608	6371073	*Eucalyptus viridis*	6	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537589	6371066	*Eucalyptus viridis*	6	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537656	6371043	*Eucalyptus viridis*	6.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537658	6371036	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537657	6371030	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	stick nest 25cm	Y	N	N		
537659	6371026	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Stick nest 20cm	Y	N	N		
537660	6371019	*Eucalyptus viridis*	9	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537660	6371042	*Eucalyptus viridis*	7	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537663	6371045	*Eucalyptus viridis*	6.5	<30	Yes	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537678	6371049	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	Y	N	Mallee	N	N	N		
537690	6371050	*Eucalyptus viridis*	6.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee	N	N	N		
537699	6371051	*Eucalyptus viridis*	7	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee	N	N	N		
537700	6371051	*Eucalyptus viridis*	7	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee, mistletoe	N	N	N		
537697	6371274	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537621	6371364	*Acacia dorataxylon*	4.5	<30	No	0		0		0		0		0		0		0		0		0		N	Y	N		N	N	N		
537582	6371389	*Eucalyptus viridis*	5.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee	N	N	N		
537751	6371505	Eucalyptus viridis	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
536795	6371778	Geijera parviflora	3.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N		N	N	N		

Easting	Northing	Tree Species	Tree Features			Habitat Features																						Comments	Habitat Assessment			Meets Habitats Constraint Criteria for occurring listed species?	Relevant Fauna Species
						Small4 Mid-branch Hollow		Medium5 Mid-branch Hollow		Large6 Mid-branch Hollow		Small4 End-of-branch Opening		Medium5 End-of-branch Opening		Large6 End-of-branch Opening		Small4 Trunk Hollow		Medium5 Trunk Hollow		Large6 Trunk Hollow		Crevices	Loose Bark	>12 Small4 Hollows all Types							
			Height (m)	DBH	Stag	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Present	Present	Present		Birds	Aboreal Mammal	Bats		
536792	6371803	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee, mistletoe	N	N	N		
536801	6371828	*Eucalyptus viridis*	9	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee, mistletoe	N	N	N		
536719	6371785	*Eucalyptus viridis*	3	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
536713	6371778	*Eucalyptus viridis*	2	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
536700	6371777	*Eucalyptus viridis*	9	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Stick nest 40cm, mallee, mistletoe	N	N	N		
536733	6371851	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
536778	6371881	*Eucalyptus viridis*	6.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee	N	N	N		
536775	6371893	*Eucalyptus viridis*	3.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
536821	6372013	*Eucalyptus viridis*	5.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
536822	6372031	*Eucalyptus viridis*	8.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
536901	6371854	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee	N	N	N		
536953	6371841	*Eucalyptus viridis*	4	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N		
537075	6371990	*Eucalyptus microcarpa*	16	>60	No	0		0		0		0		0		0		0		0		0		N	N	N	Stick nest 35cm 15m high	N	N	N		
537818	6371482	*Eucalyptus microcarpa*	15	>60	No	0		0		0		1	6.5	0		0		1	10	1	9	1	7	Y	N	N		Y	Y	Y	Y	Glossy Black-Cockatoo, Major Mitchell's Cockatoo, Superb Parrot, Little Eagle, Square-tailed Kite
537824	6371455	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Flowering, mallee,	N	N	N	Y	Square-tailed Kite

Easting	Northing	Tree Species	Tree Features			Habitat Features																					Comments	Habitat Assessment			Meets Habitats Constraint Criteria for occurring listed species?	Relevant Fauna Species
						Small4 Mid-branch Hollow		Medium5 Mid-branch Hollow		Large6 Mid-branch Hollow		Small4 End-of-branch Opening		Medium5 End-of-branch Opening		Large6 End-of-branch Opening		Small4 Trunk Hollow		Medium5 Trunk Hollow		Large6 Trunk Hollow		Crevices	Loose Bark	>12 Small4 Hollows all Types						
			Height (m)	DBH	Stag	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Present	Present	Present		Birds	Aboreal Mammal	Bats		
																											stick nest 35cm diameter					
537824	6371446	*Eucalyptus viridis*	7.5	<30	No	0		0		0		0		0		0		0		0		0		Y	N	N	Mallee	N	N	Y	Y	Square-tailed Kite
537830	6371443	*Eucalyptus viridis*	9	<30	No	0		0		0		0		0		0		0		0		0		Y	N	N	Several dead stems, mallee	N	N	Y	Y	Square-tailed Kite
537836	6371443	*Eucalyptus viridis*	10	<30	No	0		0		0		1	8	0		0		0		0		0		Y	Y	N	Mallee	Y	Y	Y	Y	Brush-tailed Phascogale, Square-tailed Kite
537840	6371444	*Eucalyptus viridis*	7	<30	No	0		0		0		2	1.5	0		0		0		0		0		Y	N	N	Short dead stem, mallee	N	N	Y	Y	Brush-tailed Phascogale, Square-tailed Kite
537836	6371451	*Eucalyptus viridis*	7	<30	No	0		0		0		2	3	0		0		1	1	0		0		Y	N	N	Some dead stems, mallee	Y	Y	Y	Y	Brush-tailed Phascogale, Square-tailed Kite
537843	6371442	*Eucalyptus viridis*	5	<30	No	0		0		0		0		0		0		0		0		0		Y	N	N	Mallee	N	N	Y	Y	Square-tailed Kite
537839	6371435	*Eucalyptus viridis*	8	<30	No	0		0		0		1	3	0		0		1	0.5	0		0		Y	N	N	Mallee	N	N	Y	Y	Brush-tailed Phascogale, Square-tailed Kite
537835	6371436	*Eucalyptus viridis*	6.5	<30	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N	Y	Square-tailed Kite
537831	6371438	*Eucalyptus viridis*	8	<30	No	0		0		0		0		2	4.5	0		0		0		0		Y	N	N	Broad multi-stemmed tree, some dead	Y	Y	Y	Y	Major Mitchell's Cockatoo, Square-tailed Kite
537824	6371437	*Eucalyptus microcarpa*	12	30-60	No	0		0		0		0		0		0		0		0		0		N	N	N		N	N	N	Y	Superb Parrot, Square-tailed Kite
537825	6371441	*Eucalyptus viridis*	8	<30	No	0		0		0		0		0		0		0		0		0		Y	N	N	Mallee	N	N	Y	Y	Square-tailed Kite
537819	6371474	*Eucalyptus*	15	>60	No	0		0		0		0		0		0		0		0		0		N	N	N		N	N	N	Y	Superb

Easting	Northing	Tree Species	Tree Features			Habitat Features																						Comments	Habitat Assessment			Meets Habitats Constraint Criteria for occurring listed species?	Relevant Fauna Species
						Small4 Mid-branch Hollow		Medium5 Mid-branch Hollow		Large6 Mid-branch Hollow		Small4 End-of-branch Opening		Medium5 End-of-branch Opening		Large6 End-of-branch Opening		Small4 Trunk Hollow		Medium5 Trunk Hollow		Large6 Trunk Hollow		Crevices	Loose Bark	>12 Small4 Hollows all Types						
			Height (m)	DBH	Stag	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Present	Present	Present		Birds	Aboreal Mammal	Bats		
		microcarpa																														Parrot, Little Eagle, Square-tailed Kite
537819	6371476	*Geijera parviflora*	3.8	<30	No	0		0		0		0		0		0		0		0		0		N	N	N		N	N	N	Y	Square-tailed Kite
537831	6371482	*Eucalyptus viridis*	9	30-60	No	0		0		0		1	3	1	4	1	5	3		1		0		Y	N	N	Mallee	Y	Y	Y	Y	Major Mitchell's Cockatoo, Superb Parrot, Barking Owl, Masked Owl, Square-tailed Kite
537831	6371466	*Eucalyptus viridis*	9	30-60	No	0		0		0		2	2	0		1	5	1	2	0		0		Y	N	N	Several stems along ground, mallee	Y	Y	Y	Y	Major Mitchell's Cockatoo, Superb Parrot, Barking Owl, Masked Owl, Square-tailed Kite
537836	6371473	*Eucalyptus viridis*	8	30-60	No	0		0		0		0		0		0		0		0		0		N	N	N	Mallee	N	N	N	Y	Superb Parrot, Square-tailed Kite
537836	6371465	*Eucalyptus viridis*	9	30-60	No	0		0		0		4	3-7	2	5	0		0		2	6	1	7	Y	N	N	Mallee	Y	Y	Y	Y	Glossy Black-Cockatoo, Major Mitchell's Cockatoo, Superb Parrot, Square-tailed Kite
538073	6372112	*Eucalyptus microcarpa*	14	>60	No	0		0		0		1	9	2	9-10	0		0		0		0		N	N	N	Sunrise Lane	Y	Y	Y	Y	Glossy Black-

Easting	Northing	Tree Species	Tree Features			Habitat Features																					Comments	Habitat Assessment			Meets Habitats Constraint Criteria for occurring listed species?	Relevant Fauna Species
						Small4 Mid-branch Hollow		Medium5 Mid-branch Hollow		Large6 Mid-branch Hollow		Small4 End-of-branch Opening		Medium5 End-of-branch Opening		Large6 End-of-branch Opening		Small4 Trunk Hollow		Medium5 Trunk Hollow		Large6 Trunk Hollow		Crevices	Loose Bark	>12 Small4 Hollows all Types						
			Height (m)	DBH	Stag	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Number	Height	Present	Present	Present		Birds	Aboreal Mammal	Bats		
																																Cockatoo, Major Mitchell's Cockatoo, Superb Parrot
538071	6372116	*Eucalyptus microcarpa*	11	30-60	No	0		0		0		0		1	10	0		0		1	9	0		Y	N	N	Sunrise Lane	Y	Y	Y	Y	Glossy Black-Cockatoo, Major Mitchell's Cockatoo, Superb Parrot
538052	6372117	*Eucalyptus microcarpa*	15	>60	No	0		0		0		3	5-10	2	10-12	0		0		1	11	0		Y	N	N	Sunrise Lane	Y	Y	Y	Y	Glossy Black-Cockatoo, Major Mitchell's Cockatoo, Superb Parrot, Little Eagle

[1] 2.5 to 4 cm wide
[2] >4 to <20 cm wide
[3] 20 cm or greater

Appendix F: Vegetation Integrity (Site Condition) Data

Plot	PCT	Condition Class	Zone	Easting	Northing	Bearing	Composition Tree	Composition Shrub	Composition Grass	Composition Forbs	Composition Ferns	Composition Other	Structure Tree	Structure Shrub	Structure Grass	Structure Forbs	Structure Ferns	Structure Other	Function Large Trees	Function Hollow Trees	Function Litter Cover	Function Length Fallen Logs	Function Tree Stem 5 to 10	Function Tree Stem 10 to 20	Function Tree Stem 20 to 30	Function Tree Stem 30 to 50	Function Tree Stem 50 to 80	Function Tree Regen	Function High Threat Exotic
SB01	217	Derived native grass land (Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217))	55	537392	6371200		0	0	7	11	0	1	0.0	0.0	15.9	4.7	0.0	0.1	0	0	18.0	0.0	0	0	0	0	0	0	0.0
SB02	217	Derived native grass land (Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217))	55	537650	6371481		0	0	9	10	1	1	0.0	0.0	3.4	2.3	0.1	35.0	0	0	28.0	0.0	0	0	0	0	0	0	0.0
SB03	217	Derived native grass land (Previously cleared land with advanced grassland/shrubland regeneration (PCT 217))	55	536788	6371967		0	1	9	21	1	1	0.0	2.0	42.2	2.2	2.0	10.0	0	0	39.0	0.0	0	0	0	0	0	0	0.0
SB04	217	Derived native grass land (Previously cleared land with advanced grassland/shrubland regeneration (PCT 217))	55	536912	6371822		0	1	9	18	1	1	0.0	3.0	26.3	2.3	0.4	4.0	0	0	34.0	0.0	0	0	0	0	0	0	0.0
SB05	217	Derived native grass land (Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217))	55	537673	6371166		0	0	5	14	0	1	0.0	0.0	10.9	4.9	0.0	0.3	0	0	25.0	0.0	0	0	0	0	0	0	0.0
SB06	217	Semi cleared woodland (Green Mallee Low Woodland (PCT 217))	55	537844	6371454		1	1	9	8	0	4	20.0	0.1	7.7	0.9	0.0	4.1	0	16	30.0	86.0	1	0	2	4	0	0	0.0
SB07	217	Degraded woodland (Green Mallee, Mugga Ironbark Grey Box Woodland (PCT 217))	55	537977	6372118		0	0	8	12	1	2	0.0	0.0	17.4	1.9	0.1	0.3	0	0	20.0	0.0	0	0	0	0	0	0	0.0
SB08	82	Derived native grass land (Low lying area with Derived Native Grassland (PCT 82))	55	536956	6371574		0	0	12	26	0	7	0.0	0.0	9.4	5.8	0.0	5.5	0	0	40.0	0.0	0	0	0	0	0	0	0.0

SB09	217	Derived native grass land (Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217))	55	538000	6371757		0	0	11	5	1	0	0.0	0.0	26.1	1.3	0.1	0.0	0	0	35.0	0.0	0	0	0	0	0	0	0.0

Appendix G: Vegetation Integrity (Site Condition) – Field Data Sheets

BAM Plot – Field Survey Form — Site Sheet no: 1

		Survey Name	Plot Identifier	Recorders
Date	31/10/17	STERSTON	SB-01	DAN CLARKE + JAMES ASCH,
Zone 55	Datum		Photo # 100 + 0001 + 0002	Zone ID
Easting 537392	Northing 6371200	Dimensions	50 x 20 m	Orientation of midline from the 0 m point: NORTH
Vegetation Class				Confidence: H M L
Plant Community Type			EEC:	Confidence: H M L

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	7
	Forbs	11
	Ferns	0
	Other	1
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	15.9
	Forbs	4.7
	Ferns	0
	Other	0.1
High Threat Weed cover		0

clarify if sum of abundance or # species

BAM Attribute (20 x 50 m plot) dbh	Euc*	Non Euc	HBTs †	20cm+
large trees for Euc* & Non Euc 80 + cm				
50 – 79 cm				
30 – 49 cm				
20 – 29 cm	ABSENT			
10 – 19 cm				n/a
5 – 9 cm			n/a	
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)	ABSENT			total

Record living eucalypt (Euc) and living native non-eucalypt (Non Euc) stems separately.

Average = 18%

BAM Attribute (1 x 1 m plots)	Litter cover (%)
Subplot score (% in each)	20 15 20 15 20
Average of the 5 subplots	3 4 5 6 7

PHOTOS — Physiography + site features that may help in determining PCT and Management Zone (optional)

Plot Disturbance: Clearing (inc. logging); Cultivation (inc. pasture); Soil erosion; Firewood / CWD removal; Grazing; Fire damage; Storm damage; Weediness; Other

Free Text Section for brief site description

Paddock plot
Sparsely consistent groundlayer with >50% bare ground. Soil moist on top - dry underneath
No trees + shrubs.
Additional general site photos 0008-0012
Some rock litter 5%

Form version designed September 2017 — Printed 30 October 2017

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 31/10/17	Syerston Minecamp	SB01	JS + DC

GF Code	Species name	N, E or HTE	Cover	Abund	Stratum
G	Panicum sp.1 (SB-01) Urochloa alleyca Sylvaeophila	N	15	1000	G
—	Gypsophila ?tubulosa (SB-02) Sporgularia diandra	E	1	500	
F	Calotis ?cuneifolia (SB-03) Calotis cuneifolia	N	3	500	
L	Convolvulus ?erubescens (SB-04)	N	0.2	~~500~~ S	
D	?Digitaria sp. 1 (hairy) (SB-05) Digitaria diffusa	N	0.3	50	
F	?Eragrostis sp. 1 (SB-06) Polygonum plebeium	?N	0.8	500	
G	Panicum ?effusum (SB-07) Poaceae	N	0.1	20	
F	Calotis ?hispidula (SB-08)	N	0.1	4	
F	Maireana enchylaenoides	N	0.1	20	
—	Lolium ?rigidum (SB-09)	E	0.1	20	
F	Tripteridiscus pygmaeus	N	0.1	20	
F	Crassula sieberiana	N	0.1	20	
F	Chamaesyce ?drummondii (SB-10)	N	0.1	4	
G	Austrostipa ?scabra (SB-11)	N	0.1	2	
F	?Goodenia sp. 1 (SB-12) Goodenia pinnatifida	N	0.1	20	
G	Chloris truncata	N	0.2	20	
—	Hypochaeris glabra	E	0.1	3	
~~—~~	~~Goodenia ?heterodoxa hed (SB-13)~~ Goodenia pinnatifida	~~N~~	0.1	1	
F	Einadia nutans nutans	N	0.1	3	
F	?Lepidium sp. 1 (SB-14) Lepidium fasiculatum	?N	0.1	1	
F	Vittadinia sp. 1 (SB-15) Vittadinia gracilis	N	0.1	2	
—	Sonchus oleraceus	E	0.1	1	
G	Rytidosperma sp. 1 (SB-16) Rytidosperma setaceum ~~Setaria~~	N	0.1	1	
D	Cynodon ?dactylon (SB-17)	N	0.1	3	

GF Code: see Growth Form definitions in Appendix 4 (can be worked out later) **N:** native, **E:** exotic, **HTE:** high threat exotic
Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*
Abundance: For species with cover less than or equal to 5% count or estimate the number of individuals or shoots of each species within the plot using the following intervals: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 50, 100, 500, 1000, 1500, 2000 etc. Numbers above 20 are estimates.
Stratum: not for entry to calculator, to assist with PCT identification.
Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed September 2017 Printed 30 October 2017

BAM Plot – Field Survey Form

Site Sheet no: 2nd BAM

Survey Name	Plot Identifier	Recorders
STERSTON	SB-02	DAN CLARKE + JAMES S

Date	31/10/17	Photo #	0013+0014	Zone ID	
Zone	Datum				
55					
Easting	Northing	Dimensions	50 x 20	Orientation of midline from the 0 m point.	North
537650	6371481				
Vegetation Class					Confidence: H M L
Plant Community Type				EEC:	Confidence: H M L

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	9
	Forbs	10
	Ferns	1
	Other	1
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	6
	Grasses etc.	3.4
	Forbs	2.3
	Ferns	0.1
	Other	35
High Threat Weed cover		0

BAM Attribute (20 x 50 m plot) dbh	Euc*	Non Euc	Stem Classes and Hollows HBTs†	20cm+
large trees for Euc* & Non Euc: 80 + cm				
50 – 79 cm				
30 – 49 cm				
20 – 29 cm			ABSENT.	
10 – 19 cm				n/a
5 – 9 cm			n/a	
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)	ABSENT			total

Average = 28%

BAM Attribute (1 x 1 m plots)	Litter cover (%)														
Subplot score (% in each)	30	20	30	40	20										
Average of the 5 subplots	15	16	17	18	19										

Photo numbers

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological type	Landform Element	Landform Pattern	Microrelief
Lithology	Soil Surface Texture	Soil Colour	Soil Depth
Slope	Aspect	Site Drainage	Distance to nearest water and type

Plot Disturbance

	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)		
Soil erosion		
Firewood / CWD removal		
Grazing		
Fire damage		
Storm damage		
Weediness		
Other		

Free Text Section for brief site description

Sheep-grazed paddock with regenerating Mairena microphylla above sparse groundlayer
Bare ground <50% in most areas
Grasses reduced to very low tussocks.
Mairena to 60cm tall.

General photos = 20 to 22

Most → Litter most likely blown in and trapped by Mairena

Form version designed September 2017 Printed 30 October 2017

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 31/10/17	Syerston Mineral	SB02	JS + DC

GF Code	Species name	N, E or HTE	Cover	Abund	Stratum
C	Maireana microphylla	N	35	500	
F	Triptilodiscus pygmaeus	N	0.4	500	
F	Chamaesyce ?drummondii (SB-10)	N	0.1	5	
G	Aristida ?ramosa (SB-18)	N	0.2	20	
—	Lepidium africanum	E	0.1	4	
F	Alternanthera sp. A (SB-19)	N	0.1	3	
F	Einadia nutans nutans	N	0.2	50	
F	Atriplex ?semi (SB-20) Atriplex spinibractea	N	0.1	20	
G	Chloris truncata	N	0.8	100	
—	Trifolium subterraneum	E	0.1	6	
G	Rytidosperma sp. 2 (SB-21) Rytidosperma setaceum	N	0.8	500	
F	Oxalis perennans (SB-22)	N	0.1	10	
D	Digitaria sp. 1 (SB-05) Digitaria diffusa	N	0.2	20	
G	Bothriochloa ?macra (SB-23)	N	0.1	50	
G	?Enteropogon acicularis (SB-24)	N	1	100	
E	Chenopodium sieberi sieberi	N	0.1	3	
—	Hypochaeris glabra	E	0.1	2	
R	Juncus sp. 1 (SB-25) Juncus filicaulis	N	0.1	2	
F	Stuartina ?hamata (SB-26) Stuartina muelleri	N	1	500	
~~F~~	~~Rytidosperma sp. 3 (SB-27)~~	~~N~~	0.1	10	
G	Tragus australianus	N	0.1	10	
G	Austrostipa ?scabra (SB-11)	N	0.1	3	
—	Gypsophila ?tubulosa (SB-02) Spergularia diandra	E	0.1	20	
F	Dichondra repens	N	0.1	1	
—	Hordeum sp. (SB-28) Hordeum leporinum	E	0.1	10	
F	Dysphania pumilio	N	0.1	10	
F	Crassula sieberiana	N	0.1	3	

GF Code: see Growth Form definitions in Appendix 4 (can be worked out later) **N:** native, **E:** exotic, **HTE:** high threat exotic
Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m. 5% = 4 x 5 m, 25% = 10 x 10 m*
Abundance: For species with cover less than or equal to 5% count or estimate the number of individuals or shoots of each species within the plot using the following intervals: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 50, 100, 500, 1000, 1500, 2000 etc. Numbers above 20 are estimates.
Stratum: not for entry to calculator, to assist with PCT identification.
Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.
Form design designed September 2017 Printed 30 October 2017

BAM Plot – Field Survey Form | Site Sheet no: 3RD BAM

	Survey Name	Plot Identifier	Recorders	
Date 31/10/17	STYERSTON	SB-03 03	DAN CLARKE / JAMES SCH	
Zone 55 / Datum		Photo # 0023		Zone ID
Easting 536788 / Northing 6371967	Dimensions	50 x 20	Orientation of midline from the 0 m point.	NORTH
Vegetation Class				Confidence: H M L
Plant Community Type			EEC:	Confidence: H M L

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	1
	Grasses etc.	9
	Forbs	21
	Ferns	1
	Other	1
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	2
	Grasses etc.	42.2
	Forbs	2.2
	Ferns	2
	Other	10
High Threat Weed cover		0

BAM Attribute (20 x 50 m plot) dbh	Euc*	Non Euc	HBTs †	20cm+
large trees for Euc* & Non Euc 80 + cm				
50 – 79 cm				
30 – 49 cm	absent			
20 – 29 cm				
10 – 19 cm				n/a
5 – 9 cm			n/a	
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)	Absent			total

Average = 39%

BAM Attribute (1 x 1 m plots)	Litter cover (%)
Subplot score (% in each)	30 15 30 90 30
Average of the 5 subplots	24, 25, 26, 27, 28

Photo numbers

Physiography + site features that may help in determining PCT and Management Zone (optional)

Plot Disturbance (Severity code / Age code): Clearing (inc. logging); Cultivation (inc. pasture); Soil erosion; Firewood / CWD removal; Grazing; Fire damage; Storm damage; Weediness; Other

Free Text Section for brief site description

- Regenerating native grassland / shrubland.
- *90% leaf cover score - underneath Acacia aspera (?) (3x3m) shrub
- Bare ground patches but only around 30%
- Strong intact native groundlayer. (Aristida, Panicum) - General photos 29-31
- Shrubs to 3m tall - Acacia aspera ? + Maireana micro.

Copious macropod scats + large ?

Malles outside 50x20 E. viridis? (flowering)

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 31/10/17	Syerston Minecamp	SB03	JS + DC

GF Code	Species name	N, E or HTE	Cover	Abund	Stratum
G	Panicum sp. 1 (SB-01) Waltheria subxerophylla	N	20	71000	
C	Maireana microphylla	N	10	100	
F	Chamaesyce ?drummondii (SB-10)	N	0.1	20	
F	Stuartina ?hamata (SB26) S. muelleri	N	0.2	500	
F	Maireana enchylaenoides	N	0.1	10	
G	Aristida sp. 1 (SB-29) Aristida berthoumieu	N	20	71000	
—	Hypochaeris glabra	E	0.1	20	
E	Chelanthes sieb. sieb.	N	2	1000	
G	Chloris truncata	N	0.3	50	
D	Digitaria sp. 1 (SB-05) Digitaria diffusa	N	0.7	100	
F	Oxalis perennans (SB-27)	N	0.1	10	
F	Triptilodiscus pygmaeus	N	0.1	50	
F	Alternanthera sp. (SB-19)	N	0.1	2	
F	Plantago debilis turrifera	N	0.1	5	
G	Enteropogon acicularis	N	0.5	50	
—	Sonchus oleraceus	E	0.2	20	
—	Conyza spp. (SB-38) Conyza bonariensis	E	0.2	50	
G	Austrostipa ?scabra (SB-11)	N	0.3	50	
G	Rytidosperma sp. 2 (SB-21) Rytidosperma setacea	N	0.2	50	
F	Vittadinia sp. 2 (SB-30) Vittadinia cervicularis	N	0.1	2	
—	Gypsophila ?tubulosa (SB-02) Spergularia diandra	E	0.1	20	
F	Calotis ?cuneifolia (SB-03)	N	0.1	10	
F	Vittadinia sp. 3 (SB-31) Vittadinia cuneata	N	0.1	1	
S	Acacia ?aspera (SB-32) Acacia linearia	N	2	5	
G	Elymus sp. 1 (SB-33) Elymus scaberrimus	N	0.1	7	
—	Vulpia myuros f. megalura	E	0.1	10	
—	Centaurium tenuiflorum	E	0.1	1	
F	Bulbine semibarbata	N	0.1	3	
F	Atriplex ?semibarbata (SB-20) A. spinibractea	N	0.1	3	
F	Goodenia sp. 1 (SB-12) Goodenia pinnatifida	N	0.1	1	
F	Vittadinia sp. 1 (SB-15) Vittadinia gracilis	N	0.1	1	
—	Vulpia muralis	E	0.1	3	
G	Eragrostis sp. 1 (SB-34) Eragrostis kennedyae	N	0.1	20	
F	Xerochrysum bracteatum	N	0.1	10	
F	"Spreading Bonepod" (SB-35) Dysphania glomulifera	N	0.1	20	
F	Crassula sieberiana	N	0.1	3	
F	Actinobole uliginosum (SB-36)	N	0.1	10	
F	Wahlenbergia sp. (SB-37) W. gracilenta	N	0.1	2	
F	Rhadinothe sp. 1 (SB-38) R. anthemoides	N	0.1	20	
F	Rumex brownii	N	0.1	1	

GF Code: see Growth Form definitions in Appendix 4 (can be worked out later) **N:** native, **E:** exotic, **HTE:** high threat exotic

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: For species with cover less than or equal to 5% count or estimate the number of individuals or shoots of each species within the plot using the following intervals: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 50, 100, 500, 1000, 1500, 2000 etc. Numbers above 20 are estimates.

Stratum: not for entry to calculator, to assist with PCT identification.

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed September 2017 Printed 30 October 2017

4TH BAM

BAM Plot – Field Survey Form

Site Sheet no:

		Survey Name	Plot Identifier	Recorders	
Date	31/10/17	STERSTON	SB-04	DAN CLARKE / JAMES S.	
Zone 55	Datum		Photo # 32+33	Zone ID	
Easting 536912	Northing 6371622	Dimensions 50 x 20		Orientation of midline from the 0 m point.	NORTH
Vegetation Class					Confidence: H M L
Plant Community Type			EEC:		Confidence: H M L

Record easting and northing from the plot marker. If applicable, orient plot so that centre-line 50 points along direction of midline. Dimensions (Shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified. Magnetic bearing taken along midline.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	1
	Grasses etc.	9
	Forbs	18
	Ferns	1
	Other	1
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	3
	Grasses etc.	26.3
	Forbs	2.3
	Ferns	0.4
	Other	4
High Threat Weed cover		0

BAM Attribute (20 x 50 m plot) dbh	Euc*	Non Euc	HBTs †	20cm+
large trees for Euc* & Non Euc 80 + cm				
50 – 79 cm				
30 – 49 cm	Absent		No Hollows	
20 – 29 cm				
10 – 19 cm		But see		n/a
5 – 9 cm		notes below!	n/a	
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)	Absent			total

Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately. Data needed at presence only unless a large tree for that class. * includes all species of Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia. † Hollow must be at least 1m above ground, entrance at least 5cm.

Each size class is noted as present by the living tree stems only. Measured at 1.3m above the ground. Depending on the Vegetation Class, DBH values and counts may be needed for a class. For a multi-stemmed tree, only the largest living stem is included in the count/estimate. For hollows count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow-bearing stem may be a dead stem.

Average = 34% 35

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	30 25 20 ~~40~~ 50 70			
Average of the 5 subplots	35 36 37 38 39			

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots located on alternate sides and 5 m from the plot midline at the locations 5, 15, 25, 35 and 45 m along the midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Within these 1 m x 1 m plots assessors may also record the cover of rock, bare ground and cryptogam soil crusts. Collection of these data is optional – the data do not currently contribute to assessment scores; they hold potential value for future vegetation integrity assessment attributes and benchmarks, and for enhancing PCT description.

Photo numbers

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern		Microrelief	
Lithology		Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)		
Soil erosion		
Firewood / CWD removal		
Grazing (identify native/stock)		
Fire damage		
Storm damage		
Weediness		
Other		

Severity: 0=no evidence, 1=light, 2=moderate, 3=severe. Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

Macropod + pig scats.

Form version designed September 2017

Free Text Section for brief site description

1x mallee with foliage overhanging plot BUT NOT WITHIN 20x50. - See photo 0034. (DBH of largest stem ≈30cm, 12 m ↑)

- Regenerating grassland/shrubland with intact native ground + shrub layer.
- Patches of bare ground - approx 30%.
- Acacia aspera? + Maireana microphylla + Aristida + Panicum

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26-47

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 31/10/17	Sunrise mine camp	SB04	JS + DC

GF Code	Species name	N, E or HTE	Cover	Abund	Stratum
G	Aristida sp. 1 (SB29) Aristida benthamii	N	10	1000	
C	Maireana microphylla	N	4	50	
G	Panicum sp. 1 (SB-01) Walwhalleya subxerophila	N	2	100	
—	Gypsophila ?tubulosa (SB-02) Spergularia diandra	E	0.5	100	
F	Triptilodiscus pygmaeus	N	0.5	100	
—	Hypochaeris glabra	E	0.2	20	
G	Eragrostis sp. 1 (SB-34) Eragrostis lacunaria	N	0.2	50	
F	Calotis ?emerfolia (SB-03) ✓	N	0.1	10	
G	Enteropogon acicularis	N	10	1000	
E	Cheilanthes sieb. sieb.	N	0.1	50	
F	Rhodanthe sp. 1 (SB-38) R. anthemoides	N	0.1	20	
F	Crassula sieberiana	N	0.1	10	
—	Vulpia myuros ✓ megalura	E	0.1	10	
G	Elymus sp. 1 (SB-33) Elymus scabra ✓	N	0.1	5	
F	Chamaesyce ?drummondii (SB-10) ✓	N	0.2	20	
—	Conyza spp. (SB-38) Conyza bonariensis	E	0.1	4	
D	Digitaria sp. 1 (SB-05) D. ctenantha diffusa	N	0.8	50	
F	Oxalis perennans ✓ (SB-22) Oxalis [illegible]	N	0.1	7	
F	Bulbine semibarbata	N	0.1	2	
G	Rytidosperma sp. 4 (SB-39) Rytidosperma setacea	N	0.1	20	
—	Sonchus oleraceus	E	0.1	5	
F	Stuartina ?hamata (SB-26) Stuartina muelleri	N	0.1	10	
F	Maireana ?enchylaenoides ✓ (SB-40)	N	0.1	10	
—	Trifolium glomeratum	E	0.1	10	
F	Einadia nutans nutans	N	0.1	5	
G	Chloris truncata	N	3	500	
—	Centaurium tenuiflorum	E	0.1	4	
F	Alternanthera sp. 1 (SB-19) Alternanthera sp1	N	0.1	4	
F	Atriplex ?semi (SB-20) Atriplex spinibractea	N	0.1	10	
—	Trifolium arvense	E	0.1	1	
F	Dysphania pumilio	N	0.1	1	
F	Plantago turrifera	N	0.1	8	
	~~Rytidosperma sp. 2 (SB-21)~~	N	0.1	2	
	~~Rytidosperma sp. 5 (SB-41) Rytidosperma setacea~~	N	0.1	3	
F	Wahlenbergia sp. (SB-37) W. gracilenta	N	0.1	1	
—	Polycarpon tetraphyllum	E	0.1	2	
F	Vittadinia sp. 2 (SB-30) Vittadinia cervicularis	N	0.1	1	
S	Acacia ?aspera (SB-32) Acacia linearifolia	N	3	4	
G	Austrostipa ?scabra (SB-11) ✓	N	0.1	2	
F	Portulaca oleracea	N	0.1	1	

GF Code: see Growth Form definitions in Appendix 4 (can be worked out later) **N:** native, **E:** exotic, **HTE:** high threat exotic
Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*
Abundance: For species with cover less than or equal to 5% count or estimate the number of individuals or shoots of each species within the plot using the following intervals: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 50, 100, 500, 1000, 1500, 2000 etc. Numbers above 20 are estimates.
Stratum: not for entry to calculator, to assist with PCT identification.
Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed September 2017 Printed 30 October 2017

PJO

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date: 31/10/17	Sycamore Minecamp	SB04	JS + DC

GF Code	Species name	N, E or HTE	Cover	Abund	Sv tratum	
F	Cotula australis	N	0.1	1		

GF Code: see Growth Form definitions in Appendix 4 (can be worked out later) **N:** native, **E:** exotic, **HTE:** high threat exotic
Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*
Abundance: For species with cover less than or equal to 5% count or estimate the number of individuals or shoots of each species within the plot using the following intervals: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 20, 50, 100, 500, 1000, 1500, 2000 etc. Numbers above 20 are estimates.
Stratum: not for entry to calculator, to assist with PCT identification.
Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed September 2017 Printed 30 October 2017

BAM Plot – Field Survey Form

Site Sheet no:

		Survey Name	Plot Identifier	Recorders	
Date	27/11/17	Syerston, mine 2	SB05	TD + JS	
Zone	Datum	IBRA region	Photo # 1S 2N	Zone ID	
Easting	Northing	Dimensions		Orientation of midline from the 0 m point.	

Vegetation Class			Confidence: H M L
Plant Community Type		EEC:	Confidence: H M L

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	5
	Forbs	14
	Ferns	0
	Other	1
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	10.9
	Forbs	4.9
	Ferns	0
	Other	0.3
High Threat Weed cover		0

BAM Attribute (20 x 50 m plot)	Stem Classes and Hollows			
dbh	Euc*	Non Euc	Hollows†	20cm+
large trees for Euc* & Non Euc 80 + cm				
50 – 79 cm				
30 – 49 cm				
20 – 29 cm				
10 – 19 cm				n/a
5 – 9 cm			n/a	
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)				total

Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground cover (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	35	20	15	35	20						0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots	25																			

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern		Microrelief	
Lithology		Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)	✓	
Soil erosion		
Firewood / CWD removal		
Grazing		
Fire damage		
Storm damage		
Weediness		
Other		

Free Text Section for brief site description

Previously cropped (within 2 years). Also recently grazed although no stock at time of survey.

Form version designed September 2017

Printed 23 November 2017

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 27/11/17	Sgarston mineral SBOS		JS + TO

GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
G	Panicum sp. 1 (? Walwhalleya subg. Xerophila	N	10	>1000	G	SBS-1
F	Calotis cuneifolia	N	3	500	G	
G	Eragrostis ?leptocarpa	N	0.2	20	G	SBS-2
F	Spergularia diandra	RE	0.7	500	G	
R	Juncus filicaulis	N	0.2	20	G	
F	Einadia nutans nutans	N	0.1	5	G	
G	Digitaria diff ? brownii Digitaria ammophila	N	0.3	50	G	SBS-5
F	Dysphania glomulifera	N	0.1	10	G	
G	Chloris truncata	N	0.2	20	G	
F	'Decumbent forb 1' Einadia polygonoides?	N	0.2	50	G	SBS-3
G	Lolium rigidum	E	0.1	7	G	
F	Crassula sieberiana	N	0.1	10	G	
F	Stuartina muelleri	N	0.1	3	G	
F	Calotis lappulacea	N	0.1	2	G	
F	Chamaesyce drummondii	N	0.1	6	G	
G	Panicum effusum	N	0.2	20	G	
F	Vittadinia sp. 1 Vittadinia cuneata	N	0.1	3	G	SBS-4
F	Dysphania pumilio	N	0.1	20	G	
F	Sonchus oleraceus	E	0.1	2	G	
G	Avena fatua	E	0.1	3	G	
F	Wahlenbergia gracilenta	N	0.1	1	G	
F	Atriplex spinibractea	N	0.1	2	G	
F	'Anagallis' arvensis	E	0.1	2	G	
F	Goodenia ?pinnatifida	N	0.1	2	G	SBS-6
F	Dichondra ? repens	N	0.1	1	G	
L	Convolvulus erubescens	N	0.1	1	G	

GF Code: see Growth Form definitions in Appendix 4 **N:** native, **E:** exotic, **HTE:** high threat exotic **GF – circle code** if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:** 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Stratum: not for entry to calculator, to assist with PCT identification.

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed September 2017. Printed 23 November 2017.

BAM Plot – Field Survey Form

Site Sheet no:

Survey Name	Plot Identifier	Recorders
Syerston Mine 2	SB06	To & JS

Date	28/11/17	IBRA region		Photo #	17 S 18 N
Zone	Datum			Zone ID	
Easting	Northing	Dimensions		Orientation of midline from the 0 m point.	

Vegetation Class		Confidence: H M L
Plant Community Type	EEC:	Confidence: H M L

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	1
	Shrubs	1
	Grasses etc.	9
	Forbs	8
	Ferns	0
	Other	434
Sum of Cover of native vascular plants by growth form group	Trees	20
	Shrubs	0.1
	Grasses etc.	7.7
	Forbs	0.9
	Ferns	0
	Other	4.1
High Threat Weed cover		0

BAM Attribute (20 x 50 m plot) dbh	Euc*	Non Euc	Stem Classes and Hollows: Hollows¹	20cm+
large trees for Euc* & Non Euc: 80 + cm				
large trees for Euc* & Non Euc: 50 – 79 cm				
30 – 49 cm	IIII		IIII IIII I	
20 – 29 cm	II			
10 – 19 cm				n/a
5 – 9 cm		I	n/a	
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)				total ≈ 86 m

BAM Attribute (1 x 1 m plots)	Litter cover (%)														
Subplot score (% in each)	45	5	95	5	10						0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots	≈ 30														

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern	
Lithology		Soil Surface Texture		Soil Colour	
Slope		Aspect		Site Drainage	

Plot Disturbance

	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)		
Soil erosion		
Firewood / CWD removal		
Grazing (specify stock type)	✓	Sheep
Fire damage		
Storm damage		
Weediness		
Other		

Free Text Section for brief site description

Moderate grazing
Plot is associated with small drainage line which contains a moderate level of litter accumulation.

Form version designed September 2017

Printed 23 November 2017

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 28/11/17	Sycamore Mallee	SB06	JoS + T.O.

GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
T	Eucalyptus viridis	N	20	2	U	
R	Juncus aridicola	N	3	100	G	
G	Paspalidium gracile	N	0.2	20	G	
R	Carex inversa	N	0.9	50	G	
F	Oxalis perennans	N	0.1	3	G	
F	Rumex brownii	N	0.1	5	G	
F	Dichondra repens	N	0.2	100	G	
F	Plantago debilis	N	0.1	20	G	~~SB6-21~~
F	Hydrocotyle lanigera	N	0.1	7	G	
G	Lolium rigidum	E	0.1	1	G	
G	Chloris truncata	N	1	500	G	
S	Enteropogon acicularis	N	3	1000	G	
S	Cyperus spp.	N	0.1	5	G	
E	Maireana microphylla	N	0.1	3	G	
G	Austrostipa scabra	N	0.8	100	G	
F	Atriplex spinibractata	N	0.1	1	G	
G	Aristida ramosa	N	0.2	50	G	
G	Rytidosperma sp. 2 SB8-1	N	0.2	50	G	
F	Alternanthera sp. A	N	0.1	2	G	
S	Solanum ferocissimum	N	0.1	1	G	
G	Walwhalleya subxerophila	N	0.2	20	G	
G	Elymus scaber	N	0.1	1	G	
F	Alternanthera denticulata	N	0.1	1	G	
G	Bothriochloa decip decip	N	2	1000	G	

GF Code: see Growth Form definitions in Appendix 4 **N:** native, **E:** exotic, **HTE:** high threat exotic **GF – circle code** if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Stratum: not for entry to calculator, to assist with PCT identification.

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Flora version designed September 2017 Printed 23 November 2017

BAM Plot – Field Survey Form

Site Sheet no:

Survey Name	Plot Identifier	Recorders
Sterston Mine2	SB 07	TO & JS

Date	Zone	Datum	IBRA region	Photo #	Zone ID
28/11/17				23 S 24 N	

Easting	Northing	Dimensions	Orientation of midline from the 0 m point.

		Confidence: H M L
Vegetation Class		
Plant Community Type	EEC:	Confidence: H M L

Record easting and northing from the pole marker. If applicable, where poles do not exist please provide a grid direction of transect.
Dimensions (Shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	8
	Forbs	12
	Ferns	1
	Other	2
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	10
	Grasses etc.	17.4
	Forbs	1.9
	Ferns	0.1
	Other	0.3
High Threat Weed cover		0

BAM Attribute (20 x 50 m plot)		Stem Classes and Hollows			
dbh		Euc*	Non Euc	Hollows†	20cm+
large trees for Euc* & Non Euc	80 + cm				
	50 – 79 cm				
30 – 49 cm					
20 – 29 cm					
10 – 19 cm					n/a
5 – 9 cm				n/a	
< 5 cm				This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)					total

Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately.
Data needed is presence only unless a 'large tree' for that class.
* Includes all species of Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia.
† Record stems by size class with hollows (including dead stems/trees).

Each size class is mean as present by the living tree stems only. Measured at 1.3 m above the ground. Depending on the Vegetation Class, DBH values and counts may be needed for a size.
For a multi-stemmed tree, only the largest living stem is recorded in the count/estimate. For hollows count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow bearing stem may be a dead stem.

BAM Attribute (1 x 1 m plots)	Litter cover (%)														
Subplot score (% in each)	15	15	35	10	30	30	10	20	5	30	10	10	5	10	0	0	0	0	0	0
Average of the 5 subplots	≈ 20														

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots located on alternate sides and 5 m from the plot midline at the locations 5, 15, 25, 35, and 45 m along the midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Within these 1 m x 1 m plots assessors may also record the cover of rock, bare ground and cryptogam soil crusts. Collection of these data is optional - the data do not currently contribute to assessment scores, they hold potential value for future vegetation integrity assessment attributes and benchmarks, and for enhanced PCT description.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern	
Lithology		Soil Surface Texture		Soil Colour	
Slope		Aspect		Soil Drainage	

Plot Disturbance	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)		
Soil erosion		
Firewood / CWD removal		
Grazing	✓	Sheep
Fire damage		
Storm damage		
Weediness		

no evidence, 1=light, 2=moderate, 3=severe

Free Text Section for brief site description

Heavily grazed.
Ground cover height 1-3 cm

Age: R=recent (<5 years), H=historic (5-20 years), O=old (>20 years)

sion designed September 2017

Printed 23 November 2017

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date: 28/11/17	Sunrise Minecamp 2	SB07	JS + TO

GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
G	Chloris truncata	N	15	>1000	G	
G	Austrostipa setacea	N	0.7	100	G	
G	Aristida browniana	N	1	100	G	
G	Digitaria ?brawii	N	0.2	50	G	SBS-5
G	Tragus australianus	N	0.1	10	G	
F	Plantago turrifera	N	0.1	2	G	
F	Sida corrugata	N	0.5	500	G	
F	Triptilodiscus pygmaeus	N	0.2	100	G	
G	Panicum effusum	N	0.1	20	G	
Fern	Cheilanthes sieb. sieb.	N	0.1	20	G	
G	Vulpia myuros	E	0.1	3	G	
Vine	Convolvulus erubescens	N	0.1	4	G	
F	Trifolium subterraneum	E	0.1	5	G	
F	Dichondra repens	N	0.3	100	G	
F	Chamaesyce drummondii	N	0.1	20	G	
F	Carthamus lanatus	E	0.3	20	G	
F	Oxalis perennans	N	0.1	1	G	
F	Atriplex spinibracteata	N	0.1	7	G	
G	Austrostipa scabra	N	0.2	20	G	
F	Alternanthera sp. A	N	0.1	7	G	
S	Solanum esuriale	N	0.1	3	G	
S	Maireana microphylla	N	0.2	4	G	
F	Vittadinia sp. 2 cuneata	N	0.1	1	G	SBB-2
F	Maireana enchylaenoides	N	0.1	1	G	
G	Eriochloa pseudoacrotricha	N	0.1	10	G	
F	Goodenia pinnatifida	N	0.1	1	G	
F	Wahlenbergia communis	N	0.1	1	G	

GF Code: see Growth Form definitions in Appendix 4 **N:** native, **E:** exotic, **HTE:** high threat exotic **GF – circle code** if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: 1, 2, 3, ..., 10, 20, 30, ..., 100, 200, ..., 1000, ...

Stratum: not for entry to calculator, to assist with PCT identification.

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed September 2017 Printed 23 November 2017

BAM Plot – Field Survey Form

Site Sheet no:

Survey Name	Plot Identifier	Recorders
Syerston mine2	SB08	TO & JS

Date: 28/11/17	Zone	Datum	Photo #: 13 SE, 14 NW	Zone ID	
Easting	Northing	Dimensions		Orientation of midline from the 0 m point.	
Vegetation Class					Confidence: H M L
Plant Community Type				EEC:	Confidence: H M L

Record easting and northing from the plot marker. If applicable, orient picket so that perforated rib points along direction of midline.
Dimensions (Shape) of 0.04 ha base plot inside 0.1 ha FA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	12
	Forbs	26
	Ferns	0
	Other	7
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	4·4
	Forbs	5·8
	Ferns	0
	Other	5·5
High Threat Weed cover		0

BAM Attribute (20 x 50 m plot) dbh	Euc*	Non Euc	Stem Classes and Hollows: HBTs†	20cm+
large trees for Euc* & Non Euc: 80 + cm				
large trees for Euc* & Non Euc: 50 – 79 cm				
30 – 49 cm				
20 – 29 cm				
10 – 19 cm				n/a
5 – 9 cm			n/a	
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)				total

Record **living** eucalypt* (Euc*) and **living native** non-eucalypt (Non Euc) stems separately.

Data needed is presence only, unless a 'large tree' for that class.

* Includes all species of *Eucalyptus*, *Corymbia*, *Angophora*, *Lophostemon* and *Syncarpia*.

†Hollow must be at least 1m above ground, entrance at least 5cm.

Each size class is noted as present by the **living tree stems** only. Measured at 1.3m above the ground. Depending on the Vegetation Class, DBH values and counts may be needed for a class.

For a **multi-stemmed tree**, only the largest living stem is included in the count/estimate. For **hollows**, count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow-bearing stem may be a dead stem.

BAM Attribute (1 x 1 m plots)	Litter cover (%)	Bare ground cover (%)	Cryptogam cover (%)	Rock cover (%)
Subplot score (% in each)	60, 30, 50, 45, 20		0, 0, 0, 0, 0	0, 0, 0, 0, 0
Average of the 5 subplots	40			

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots located on alternate sides and 5 m from the plot midline at the locations 5, 15, 25, 35, and 45 m along the midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Within these 1 m x 1 m plots assessors may also record the cover of rock, bare ground and cryptogam soil crusts. Collection of these data is optional - the data do not currently contribute to assessment scores, they hold potential value for future vegetation integrity assessment attributes and benchmarks, and for enhancing PCT description.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern		Microrelief	
Lithology		Soil Surface Texture		Soil Colour		Soil Depth	
Slope		Aspect		Site Drainage		Distance to nearest water and type	

Plot Disturbance	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)		
Soil erosion		
Firewood / CWD removal		
Grazing (identify native/stock)		
Fire damage		
Storm damage		
Weediness		
Other		

Severity: 0=no evidence, 1=slight, 2=moderate, 3=severe

Free Text Section for brief site description

Erosion gully outside and NE of plot.

Age: R=recent (<3yrs), NR=not recent (3-10yrs), O=old (>10yrs)

Form version designed September 2017

Printed 26 November 2017

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date: 28/11/17	Sunrise Mine Camp 2	SB08	JS + TO

GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
G	Maireana microphylla	N	3	50	G	
G	Chloris truncata	N	4	1000	G	
F	Chamaesyce drummondii	N	0.3	500	G	
F	Portulaca oleracea	N	0.1	8	G	
F	Atriplex spinibractata	N	0.1	10	G	
F	Oxalis perennans	N	0.2	100	G	
F	Vittadinia sp. 2 (SBS-2) Vittadinia cuneata	N	0.1	20	G	
F	Trifolium subterraneum	*E	0.2	50	G	
F	Tetragonia tetragonioides Tetragonia australiana	N	1	500	G	
F	Erodium cf. cicutarium	N	0.3	20	G	
F	Leptochloa digitata	*E	1	500	G	
G	Enteropogon acicularis	N	3	1000	G	
F	Spergularia diandra	*E	1	500	G	
F	Alternanthera sp. A	N	0.2	20	G	
G	Rytidosperma sp. 2 (SBS-1)	N	0.3	50	G	SBS-1
F	Arctotheca calendula	E	0.1	20	G	
V	Convolvulus erubescens	N	0.1	20	G	
F	Trifolium glomeratum	E	0.3	50	G	
F	Dichondra repens	N	0.9	500	G	
F	Plantago turrifera	N	0.1	3	G	
R	Juncus filicaulis	N	2	1000	G	
G	Cynodon dactylon	N	0.2	20	G	
F	Dysphania pumilio	N	0.3	100	G	
F	Salsola australis	N	0.1	4	G	
F	Echium plantagineum	E	0.9	100	G	
S	Carex inversa	N	0.1	8	G	
F	Boerhavia dominii	N	0.1	20	G	
F	Sida corrugata	N	0.2	20	G	
F	Polycarpaea tetraphylla	E	0.1	8	G	
F	Rumex brownii	N	0.1	10	G	
G	Bothriochloa decipiens decip.	N	0.3	50	G	
G	Eragrostis falcata (SBS-2)	N	0.1	20	G	SBS-2
F	Tribulus micrococcus	N	0.1	10	G	
G	Sporobolus creber	N	0.1	1	G	
F	Stuartina muelleri	N	0.1	20	G	
FE	Chenopodium sieb. sieb.	N	0.1	4	G	
G	Digitaria ammophila (SBS-5)	N	0.3	50	G	SBS-5
F	Crassula sieberiana	N	0.1	5	G	
G	Hordeum leporinum	*E	0.1	3	G	
F	Alternanthera denticulata	N	0.1	8	G	

GF Code: see Growth Form definitions in Appendix 4 **N:** native, **E:** exotic, **HTE:** high threat exotic **GF – circle code** if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Stratum: not for entry to calculator, to assist with PCT identification.

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed September 2017 Printed 23 November 2017

See over page

400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date 28/11/17	Sunrise Nilecamp2	SB08	JS + TO

GF Code	*Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable*	N, E or HTE	Cover	Abund	stratum	voucher
G	Elymus Scaber	N	0.1	1	G	
S	Sclerolaena muricata	N	0.1	1	G	
F	Triptilodiscus pygmaeus	N	0.1	5	G	
F	Malva preissiana	E	0.1	10	G	
G	Austrostipa scabra	N	0.1	5	G	
F	Alternanthera pungens	E	0.1	6	G	
G	Lolium rigidum	E	0.1	10	G	
F	Lythrum sp. 1 Lythrum hyssopifolium (SB8-3)	N	0.2	20	G	SB8-3
F	Hypochaeris glabra	E	0.1	5	G	
F	Sonchus oleraceus	E	0.1	4	G	
G	Pseudoplidium gracile	N	0.1	4	G	
F	Calotis cuneifolia	N	0.2	20	G	
F	Conyza spp	E	0.1	2	G	
F	Centipeda cunninghamii	N	0.1	1	G	
Rush	Juncus sp. 1	N	0.1	1	G	SB8-4
F	Xerochrysum bracteatum	N	0.1	1	G	
F	Wahlenbergia gracilis	N	0.1	7	G	
F	?Heliotropium sp1 Heliotropium europaeum	E	0.1	1	G	SB8-5
G	Aristida ramosa	N	0.1	1	G	
Rush	Fimbristylis dichotoma	N	0.1	4	G	
G	Eriochloa pseudoacrotricha	N	0.1	10	G	
F	Enchylaena tomentosa	NE	0.1	2	G	
F	Lepidium bonariense	E	0.1	1	G	
G	Avena sativa	E	0.1	1	G	
F	Cotula australis	N	0.1	1	G	
F	Marrubium vulgare	E	0.1	3	G	
F	Plantago debilis	N	0.1	2	G	

GF Code: see Growth Form definitions in Appendix 4 **N:** native, **E:** exotic, **HTE:** high threat exotic **GF – circle code** if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:** 0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Stratum: not for entry to calculator, to assist with PCT identification.

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

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BAM Plot – Field Survey Form

Site Sheet no:

Survey Name	Plot Identifier	Recorders
Syerston Mine2	SB09	TO & JS

Date	28/11/17	Zone	Datum	Easting	Northing

IBRA region: | Photo #: 20 S 21 N | Zone ID:

Dimensions: | Orientation of midline from the 0 m point.:

Vegetation Class: | Confidence: H M L

Plant Community Type: | EEC: | Confidence: H M L

Record easting and northing from the plot marker. If applicable, orient pickets so that perforated PVC points along direction of midline.
Dimensions (Shape) of 0.04 ha base plot inside 0.1 ha EA plot should be identified, magnetic bearing taken along midline.

BAM Attribute (400 m² plot)		Sum values
Count of Native Richness	Trees	0
	Shrubs	0
	Grasses etc.	11
	Forbs	5
	Ferns	1
	Other	0
Sum of Cover of native vascular plants by growth form group	Trees	0
	Shrubs	0
	Grasses etc.	26.1
	Forbs	13
	Ferns	0.1
	Other	0
High Threat Weed cover		0

BAM Attribute (20 x 50 m plot) dbh	Euc*	Non Euc	Stem Classes and Hollows: Hollows†	20cm+
large trees for Euc* & Non Euc: 80 + cm				
large trees for Euc* & Non Euc: 50 – 79 cm				
30 – 49 cm				
20 – 29 cm				
10 – 19 cm				n/a
5 – 9 cm			n/a	
< 5 cm			This size class records tree regeneration	
Length of logs (m) (≥10 cm diameter, >50 cm in length)				total

Record living eucalypt* (Euc*) and living native non-eucalypt (Non Euc) stems separately.
Data needed is presence only, unless a large tree for that class.
* Includes all species of Eucalyptus, Corymbia, Angophora, Lophostemon and Syncarpia.
† Record stems by size class with hollows (including dead stems/trees).

Each size class is noted as present or absent. Only living tree stems are measured at 1.3m above the ground. Depending on the Vegetation Class, DBH values and counts may be needed in a class.
For a multi-stemmed tree, only the largest living stem is included in the count/estimate. For hollows count only the presence of a stem containing hollows, not the count of hollows in that stem. Only count as 1 stem per tree where tree is multi-stemmed. The hollow bearing stem may be a dead stem.

BAM Attribute (1 x 1 m plots)	Litter cover (%)					Bare ground (%)					Cryptogam cover (%)					Rock cover (%)				
Subplot score (% in each)	25	35	20	40	50						0	0	0	0	0	0	0	0	0	0
Average of the 5 subplots	35																			

Litter cover is assessed as the average percentage ground cover of litter recorded from five 1 m x 1 m plots located on alternate sides and 5 m from the plot midline at the locations 5, 15, 25, 35, and 45 m along the midline. Litter cover includes leaves, seeds, twigs, branchlets and branches (less than 10 cm in diameter). Within these 1 m x 1 m plots assessors may also score the cover of rock, bare ground and cryptogam soil crusts. Collection of these data is optional – the data do not currently contribute to assessment scores, they note potential value for future vegetation integrity assessment attributes and benchmarks, and for enhancing PCT description.

Physiography + site features that may help in determining PCT and Management Zone (optional)

Morphological Type		Landform Element		Landform Pattern	Microrelief
Lithology		Soil Surface Texture		Soil Colour	Soil Depth
Slope		Aspect		Site Drainage	Evidence of recent disturbance and type

Plot Disturbance	Severity code	Age code
Clearing (inc. logging)		
Cultivation (inc. pasture)		
Soil erosion		
Firewood / CWD removal		
Grazing (stock/feral/pest)	✓	Sheep
Fire damage		
Storm damage		
Weediness		
Other		

Severity: 1=no evidence, 2=light, 3=moderate, 4=severe
Age: R=recent (<2yrs), RR=not recent (3-10yrs), O=old (>10yrs)

Free Text Section for brief site description

moderate grazing.

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400 m² plot: Sheet _ of _	Survey Name	Plot Identifier	Recorders
Date: 28/11/17	Syerston Reference 2	SB09	JS + TO

GF Code	Top 3 native species in each growth form group: Full species name mandatory All other native and exotic species: Full species name where practicable	N, E or HTE	Cover	Abund	stratum	voucher
G	Aristida benthamii	N	20	>1000	G	
F	Chamaesyce drummondii	N	0.2	100	G	
G	Chloris truncata	N	3	1000	G	
G	Digitaria ~~brownii~~ diffusa ~~ammophila~~	N	1	500	G	SBS-5
F	Triptilodiscus pygmaeus	N	0.5	500	G	
F	Sturtina muelleri	N	0.1	10	G	
F	Cheilanthes sieb. sieb.	N	1	500	G	
G	Austrostipa scabra	N	1	500	G	
G	Eragrostis lacunaria	N	0.4	100	G	
G	Vulpia ~~myuros~~ myuros f. megalura	E	0.1	100	G	
G	Tragus australianus	N	0.1	50	G	
~~G~~ F	Xanthium lanatum	E	0.1	10	G	
F	Dichondra repens	N	0.1	5	G	
G	'Panicum sp1' i.e. Walwhalleya ~~subxerophila~~	N	0.2	20	G	SBS-1
G	Eragrostis sp. 2 Eragrostis brownii	N	0.1	3	G	SB9-1
G	Digitaria sp. 2 Digitaria ammophila	N	0.1	1	G	SB9-2
G	Vulpia muralis	E	0.1	50	G	
G	Panicum effusum	N	0.1	20	G	
F	Wahlenbergia gracilenta	N	0.1	1	G	
~~E~~	~~Chamaesyce Tetratheca drummondii~~	~~N~~	~~0.2~~	~~100~~	~~G~~	~~SB9-3~~
G	Aristida ramosa	N	0.1	2	G	

GF Code: see Growth Form definitions in Appendix 4 **N:** native, **E:** exotic, **HTE:** high threat exotic **GF – circle code** if 'top 3'.

Cover: 0.1, 0.2, 0.3, ..., 1, 2, 3, ..., 10, 15, 20, 25, ...100% (foliage cover); ***Note:*** *0.1% cover represents an area of approximately 63 x 63 cm or a circle about 71 cm across, 0.5% cover represents an area of approximately 1.4 x 1.4 m, and 1% = 2.0 x 2.0 m, 5% = 4 x 5 m, 25% = 10 x 10 m*

Abundance: 1, 2, 3, ..., 10, 20, 30, ... 100, 200, ..., 1000, ...

Stratum: not for entry to calculator, to assist with PCT identification.

Print more copies of this sheet to allow for higher species counts at a plot. All species at a plot need to be recorded.

Form version designed September 2017 Printed 23 November 2017

ATTACHMENT C
VEGETATION INTEGRITY (SITE CONDITION) DATA (AMBS, 2017a)

Table C1
Vegetation Integrity (Site Condition) Data

Plot	PCT	Condition Class	Zone	Easting	Northing	Bearing	Composition Tree	Composition Shrub	Composition Grass	Composition Forbs	Composition Ferns	Composition Other	Strucutre Tree	Strucutre Shrub	Strucutre Grass	Strucutre Forbs	Strucutre Ferns	Strucutre Other	Function Large Trees	Function Hollow Trees	Function Litter Cover	Function Length Fallen Logs	Function Tree Stem 5 to 10	Function Tree Stem 10 to 20	Function Tree Stem 20 to 30	Function Tree Stem 30 to 50	Function Tree Stem 50 to 80	Function Tree Regen	Function High Threat Exotic
SB01	217	Derived native grass land (Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217))	55	537392	6371200	0	0	0	7	11	0	1	0	0	15.9	4.7	0	0.1	0	0	18	0	0	0	0	0	0	0	0
SB02	217	Derived native grass land (Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217))	55	537650	6371481	0	0	0	9	10	1	1	0	0	3.4	2.3	0.1	35	0	0	28	0	0	0	0	0	0	0	0
SB05	217	Derived native grass land (Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217))	55	537673	6371166	0	0	0	5	14	0	1	0	0	10.9	4.9	0	0.3	0	0	25	0	0	0	0	0	0	0	0
SB09	217	Derived native grass land (Previously cleared land with regrowth of predominantly native grasses, herbs and low shrubs (PCT 217))	55	538000	6371757	0	0	0	11	5	1	0	0	0	26.1	1.3	0.1	0	0	0	35	0	0	0	0	0	0	0	0

Source: AMBS (2017a)

ATTACHMENT D
REVIEW OF MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

Table D1
Review of Matters of National Environmental Significance

Scientific Name	Common Name	Conservation Status[1]		Class of Credit	Table in the Main Text	Protected Matters Search	Potential impact
		BC Act	EPBC Act				
Ecological Community							
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-Eastern Australia		E	E	Ecosystem	-	●	Derived Native Grassland (PCT 82) (Vegetation Community 2) is a degraded example of this community (Attachment B). The Modification would not impact this community.
Birds							
Leipoa ocellata	Malleefowl	E	V	Ecosystem	Table 3	●	No significant impact expected to occur. Suitable habitat for this species is not present within the Development Site Footprint (AMBS, 2017)
Anthochaera phrygia	Regent Honeyeater	CE	CE	Species / Ecosystem	-	●	No significant impact expected to occur due to the lack of potential habitat in the Development Site Footprint.
Calidris ferruginea	Curlew Sandpiper	E	CE	Species / Ecosystem	-	●	No significant impact expected to occur. Suitable habitat for this species is not present within the Development Site Footprint (AMBS, 2017)
Numenius madagascariensis	Eastern Curlew	-	CE	Species / Ecosystem	-	●	No significant impact expected to occur. Suitable habitat for this species is not present within the Development Site Footprint (AMBS, 2017)
Lathamus discolor	Swift Parrot	E	CE	Species / Ecosystem	Tables 3 and 4	-	No significant impact expected to occur due to the lack of potential habitat in the Development Site Footprint.

Table D1 (Continued)
Review of Matters of National Environmental Significance

Scientific Name	Common Name	Conservation Status[1]		Class of Credit	Table in the Main Text	Protected Matters Search	Potential impact
		BC Act	EPBC Act				
Polytelis swainsonii	Superb Parrot	V	V	Species / Ecosystem	Tables 3 and 4	●	No significant impact expected to occur due to the lack of potential habitat in the Development Site Footprint.
Grantiella picta	Painted Honeyeater	V	V	Ecosystem	Table 3	●	No significant impact expected to occur due to the lack of potential habitat in the Development Site Footprint.
Pedionomus torquatus	Plains-wanderer	E	CE	Species / Ecosystem	-	●	No significant impact expected to occur. Suitable habitat for this species is not present within the Development Site Footprint (AMBS, 2017)
Rostratula australis	Australian Painted Snipe	E	E	Ecosystem	-	●	No significant impact expected to occur. Suitable habitat for this species is not present within the Development Site Footprint (AMBS, 2017)
Mammals							
Dasyurus maculatus maculatus (south-eastern mainland population)	Spotted-tailed Quoll	V	E	Ecosystem	Table 3	●	No significant impact expected to occur. Suitable habitat for this species is not present within the Development Site Footprint
Phascolarctos cinereus	Koala	V	V	Species / Ecosystem	Tables 3 and 4	●	No significant impact expected to occur due to the lack of potential habitat in the Development Site Footprint.
Nyctophilus corbeni	^Corben's Long-eared Bat	V	V	Ecosystem	Table 5	-	No significant impact expected to occur due to the lack of potential habitat in the Development Site Footprint.

Table D1 (Continued)
Review of Matters of National Environmental Significance

Scientific Name	Common Name	Conservation Status[1]		Class of Credit	Table in the Main Text	Protected Matters Search	Potential impact
		BC Act	EPBC Act				
Chalinolobus dwyeri	^Large-eared Pied Bat	V	V	Species	Table 5	-	No significant impact expected to occur. Suitable habitat for this species is not present within the Development Site Footprint
Pteropus poliocephalus	Grey-headed Flying-fox	V	V	Species / Ecosystem	-	●	No significant impact expected to occur. Any trees with potential roosting habitat for this species were avoided and no camps have been identified within the Development Site Footprint (AMBS, 2017).

[1] Threatened fauna species status under the BC Act and/or EPBC Act (current as at December 2017).

V = Vulnerable; E = Endangered, CE = Critically Endangered

^ unconfirmed calls possibly recorded via bat recording devices.

References:

AMBS Ecology and Heritage (2017a) *Clean TeQ Sunrise Project Accommodation Camp - Ecological Surveys*.

DEE (2017c) *EPBC Protected Matters Report for Search Area: -32.7133 147.2862,-32.6858 147.5002,-32.8647 147.5285,-32.8897 147.3194,-32.7133 147.2862*.Date received: November 2017.

ATTACHMENT E

BIODIVERSITY ASSESSMENT METHOD CREDIT CALCULATOR BIODIVERSITY CREDIT REPORT

BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	Report Created
00009503/BAAS17080/17/00009504	Clean TeQ Sunrise Project Accommodation Camp	22/12/2017

Assessor Name	Assessor Number
Jamie Gleeson	0

Proponent Names

Candidate Serious and Irreversible Impacts

No Data

No Data

Additional Information for Approval

PCTs With Customized Benchmarks

No Changes

BAM Biodiversity Credit Report (Like for like)

Predicted Threatened Species Not On Site

No Changes

Ecosystem Credit Summary

PCT	TEC	Area	Credits
217-Mugga Ironbark - Western Grey Box - cypress pine tall woodland on footslopes of low hills in the NSW South Western Slopes Bioregion	Not a TEC	27.5	200.00

Credit classes for 217	**Like-for-like options**			
	Any PCT in the below Class	And in any of below trading groups	Containing HBT	In the below IBRA subregions
	Western Slopes Dry Sclerophyll Forests (including PCT's 54, 110, 217, 255, 273, 287, 330, 333, 341, 343, 346, 348, 358, 403, 455, 456, 472, 577, 581, 592, 617, 673, 676, 713, 940, 956, 1277, 1279, 1313, 1316, 1381, 1610, 1661, 1668, 1709)	Western Slopes Dry Sclerophyll Forests - ≥ 50% - < 70% cleared group (including Tier 6 or higher).	No	Nymagee,Barnato Downs, Bogan-Macquarie, Canbelego Downs, Darling Depression, Lachlan Plains and Lower Slopes. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

BAM Biodiversity Credit Report (Like for like)

Species Credit Summary

No Species Credit Data