Flora and Vegetation Report

Galilee Coal Project (Northern Export Facility)

Waratah Coal

Document Control

Quality Assurance Statement				
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Front page – Photo of Silver-leafed ironbark (*Eucalyptus melanophloia*) woodland within Glen Innes Station.

Table of Contents

Figures

Tables

1 Introduction

This report has been prepared as part of additional vegetation survey work undertaken by the proponent, Waratah Coal as part of a Supplementary Environment Impact Statement (SEIS).

The study site comprises Waratah Coals tenement Exploration Permit for Coal (EPC) 1040 and part of EPC 1079 (see figure 1).

Waratah Coal commissioned Rob Friend & Associates Pty Ltd to undertake the additional vegetation survey work for the SEIS.

It must be acknowledged that this report does not cover any part of the Rail Corridor. See note 1 for a comment about the rail corridor.

Due to unusual weather conditions during the vegetation survey period a number of proposed survey sites were not able to be visited within Lambton Meadows Station, Cavendish Station and Spring Creek Station. As such a number of additional sites will also be investigated to confirm land zone and regional ecosystem descriptions within these areas.

The information within this report acknowledges prior work by the Proponent within the study (referred to in earlier reports as the China First Mine) and as part of reporting for a proposed Power Station. Additionally some vegetation assessment work has been undertaken by the State and where possible this work has also been referred to.

All data for survey sites contained in Appendix II was collected by the Author of this report.

NOTE 1 – Waratah Coal Rail Corridor

As mentioned above this report does not deal with any part of the proposed Waratah Coal Rail Corridor, however some initial work was undertaken in preparation to undertake additional field assessment of the vegetative and floristic values through which the proposed rail corridor was to traverse. This work included:-

- Revision of data collected for the Environmental Impact Study;
- A aerial photograph interpretation and identification of vegetation patterns along the corridor;
- Initial location of potential survey site to augment the existing site surveyed as part of the EIS;
- Identification of properties within which access would be required to gain access to the potential survey sites; and
- Review of EVNT and endangered ecological communities data within the northern part of the Brigalow Belt Bioregion.

A conclusion can be made with respect to potential differences between the certified Regional Ecosystem mapping (version 6.1) and the aerial photographic interpretation: -

While the regional ecosystem mapping is generally consistent in terms of line work and vegetation patterns there are a number of locations here the line work extends over the observed vegetative pattern and again based on vegetation pattern there are a number of locations where the line work is not consistent with the vegetative pattern.

Additionally based on the line work and the vegetative patterns there are also areas where no remnant vegetation has been mapped, however the vegetative pattern is such that upon ground truthing these areas may be mapped as remnant.

No further work was undertaken as the mine site was the priority for resources within the time frame available.

2 Site description

2.1 General

The study area encompasses the northern portion of EPC1040 and part of EPC1079 which are located northwest of Alpha in central Queensland. The properties which are covered by the proposed open cut and underground mines as well as the associated infrastructure include (see Figure 2): -

- Kia Ora – Lot 1 on BF72;
- Monklands – Lot 2 on SP136836, lot 3 on BF 802451, Lot 1 on BF17
- Spring Creek – Lot 11 on BF25,
- Cavendish - Lot 10 on RP894235
- Glen Innes – Lot 4 on BF22, and
- Lambton Meadows, Lot 626 on MX806585,
- Saltbush – Lot 8 on BF16 and Lot 7 on BF16.

The Study area also covers the far south-western corner of Gadwell (Lot 6 on BF16) and the eastern strip on Milangavie (Lo 9 on BF28). However, no mining activities are proposed within these two lots.

The properties are accessible from the south via the Capricorn Highway from Monklands Road and from the east from the Alpha-Clermont Road via Hobartville Road.

It is noted that Kia Ora, Cavendish and Spring Creek properties are freehold properties while the remaining properties within the study area are all lease hold properties.

All properties in the study area are cattle grazing properties. Glen Innes Station has also been designated under s46 of the *Nature Conservation Act* 1992 as a Nature Refuge, The Bimblebox Nature Refuge. The Bimblebox Nature Refuge is listed in Schedule 5 of the *Nature Conservation (Protected Areas) Regulations* 1994.

2.2 Landform

The landform is flat to gently rolling landscape intersected by a number of shallow and incised waterways. A series of sandstone hills occur in the north-western corner of Spring Creek Station.

There is a 33 metre average fall from north to south and an approximate change in elevation from east to west of 50 metres. The highest elevation within the actual mine footprint is approximately 480 metres in the north western corner of the underground mine footprint within the sandstone hills of the Spring Creek Station.

2.3 Waterways

The site is located within the catchment of the Belyando River with the properties drained by a number of waterways including: -

- Spring Creek in the northern most portion of the Study area which traverses Spring Creek and the north western corner of Kia Ora.
- Malcolm Creek which traverses the southern portion of Cavendish and Kia Ora before joining Lagoon Creek.
- Beta Creek which traverses the southern portion of Lambton Meadows.
- Tallarenha Creek which also traverses parts of Lambton Meadows before joining with Beta Creek.
- Lagoon Creek which traverses Monklands.
- Saltbush Creek which rises within Saltbush Station and traverses the central portion of Monklands before joining Lagoon Creek within the neighbouring property of Hobartville.
- Pebbly Creek which traverses the northern part of Lambton Meadows and the southern portions of Cavendish before traversing the southern portion of Glen Innes and finally joining with Lagoon Creek in Monklands.
- A number of minor drainage lines also traverse all of the properties within the study area including Glen Innes Station.

Figure 1 in Appendix I shows the creek locations, Figure 2 shows the properties.

2.4 Vegetation

The mine site area is a mix of pasture grasslands and eucalyptus woodlands within which active grazing is undertaken by all landowners.

The State has mapped areas of remnant and regrowth vegetation over properties within the study area (see figures 4, 5 and 6). A list of the regional ecosystems mapped within the study area is contained in Table 1 below.

Table 1 – Regional Ecosystems

RE	Description	VMA Status	Biodiversity Status
10.3.3	*Acacia harpophylla* and/or *Eucalyptus cambageana* low open woodland to open woodland on alluvial plains	Least Concern	Not of concern at present
10.3.4	*Acacia cambagei low open woodland to low woodland on alluvial plains*	Least Concern	Of Concern
10.3.12	*Corymbia dallachiana* and *C. plena* or *C. terminalis* open woodland on sandy alluvial terraces (eastern)	Least Concern	Not of concern at present
10.3.27	*Eucalyptus populnea* open woodland on alluvial plains	Least Concern	Of concern
10.3.28	*Eucalyptus melanophloia* or *E. crebra* open woodland on sandy alluvial fans	Least Concern	Not of concern at present
10.4.3	*Acacia harpophylla* and/or *Eucalyptus cambageana* open woodland on Cainozoic lake beds	Least Concern	Endangered
10.5.1	*Eucalyptus similis* and/or Corymbia brachycarpa and/or *Corymbia setosa* low open woodland to open woodland on sand plains	Least Concern	Not of concern at present
10.5.5	*Eucalyptus melanophloia* open woodland on sand plains	Least Concern	Not of concern at present
10.5.10	*Corymbia leichhardtii* open woodland on sand plains	Least Concern	Not of concern at present
10.5.12	*Eucalyptus populnea* open woodland on sand plains	Least Concern	Not of concern at present
10.7.3	*Acacia shirleyi* woodland or *A. catenulata* low woodland at margins of plateaus	Least Concern	Not of concern at present
10.7.5	*Eucalyptus thozetiana* open woodland on scarps and on pediments below scarps	Least Concern	Of concern
10.10.1	*Acacia shirleyi* woodland or *A. catenulata* low open woodland on sandstone ranges	Least Concern	Not of concern at present
10.10.4	*Eucalyptus exilipes* and/or *Corymbia leichhardtii* open woodland on sandstone ranges	Least Concern	Not of concern at present
10.10.5	*Corymbia trachyphloia* and/or C. lamprophylla or *Eucalyptus mediocris* open woodland on sandstone ranges	Least Concern	Not of concern at present
10.10.7	*Eucalyptus cloeziana* open woodland on sandstone ranges	Of Concern	Of Concern
11.5.5	*Eucalyptus melanophloia, Callitris glaucophylla* woodland on Cainozoic sand plains/remnant surfaces. Deep red sands	Least Concern	Not of concern at present

3 Survey Methodology

3.1 Scope of work

The scope of work for this additional vegetation survey of the mine site and adjacent parts of the mining lease area were primarily driven by the comments on the Environmental Impact Statement (see Appendix III).

The comments on EIS with respect to the mine site can be summarised into these broad areas:-

- Improve the vegetation mapping data within the mine site and include areas which were not formally surveyed in previous work.
- The assessment of BioCondition within the mine site.
- Further clarification of endangered, vulnerable and near threatened (EVNT) flora species.
- Better information with regard to pest plant and environmental weed species and distribution within the mine site.
- Improve the information presented regarding biodiversity offsets and where applicable vegetation offsets associated with the mine site and associated infrastructure.

Based on these comments the scope of work for this survey was: -

i. Undertake BioCondition surveys at all sites undertaken by Unidel (2010).
ii. Undertake groundcover survey using the survey methodology as stipulated by Neldner *et al* (2005) Secondary level survey method.
iii. Where no data was collected by Unidel and where new data would extend and/or improve the existing information with regard to vegetation communities, regional ecosystems and the floristic environment, undertake additional vegetation and BioCondition surveys. New sites were either secondary or quaternary level surveys.
iv. Undertake specific additional searches for EVNT flora species and particularly *Desmodium macrocarpum, Micromyrtus rotundifolia* and *Acacia spania*.

3.2 Information review

Prior to the field survey the following reports and mapping information was reviewed.

- Waratah Environmental Impact Statement, Executive Summary, Volumes 1, 2, 3 and 5.
- Worley Parsons 2009. Flora and Fauna Survey Report – EPC 1040 – Glen Innes, Central Queensland.
- Environmental Protection Agency 2002, *The Conservation Of Biodiversity in The Desert Uplands*, technical report prepared by G Morgan, M Lorimer, A Kutt and A Morrison, EPA, Queensland.
- Michael Mathieson and Melanie Venz, 2007. Flora and Fauna Assessment of "Lambton Meadows". EPA, Queensland.
- Regional Ecosystems mapping version 6.
- High value Regrowth mapping version 2
- Cor Veg data. Site Location geo94, as provided by Waratah Coal and cited in the EIS.
- HERBRECS data for the area, as provided by Waratah Coal and cited in the EIS
- Aerial photography: -
  - Alpha 8250 QAP5895, Runs 1 & 2
  - Edwinstowe 8151, QAP5926 Run 6
  - Edwinstowe 8151, QAP6016 Run7 & 8
  - Edwinstowe 8151, QAP9019 Run 9

3.3 Survey standard

All vegetation survey work was undertaken in accordance with Neldner *et al* (2003) to a secondary and quaternary vegetation survey standard.

In addition to these formal survey methods, random transects and linear transects were also utilised to and from secondary and quaternary survey sites as well as observations while traversing vehicle tracks within all properties visited during the survey period.

BioCondition assessment was undertaken in accordance with the BioCondition Assessment Manual v2.1 (March 2011) using the proforma contained in the manual.

All secondary surveys utilised a 50x10 metre transect while core BioCondition data was also collected in the same transect with canopy cover intercepts taken from extending the 50 metre transect to 100 metres.

Species names were as per Census of the Queensland Flora (2010).

4 Survey Constraints

As the purpose of this supplementary report was to build upon and augment the existing vegetation and flora components of the EIS, the

majority of survey sites to be visited were those undertaken by Unidel (2010).

However, as a number of Unidel sites were not able to be located from the information contained in the EIS, survey data was collected to a Secondary survey standard at several new sites. A few sites which were located in cleared or non-remnant area (BB11 and BB19) were deliberately not duplicated.

Quaternary data was collected at BB17 due to its close proximately and similarity to BB16.

Rainfall during the survey period restricted access to the study area and ultimately caused a number of sites within the Cavendish and Spring Creek properties not to be surveyed. It is expected that these sites will be surveyed before the end of the 2012 calendar year.

5 Legislative requirements

5.1 Commonwealth

The only piece of Commonwealth legislation relating to the protection and conservation of vegetation and flora is the *Environmental Protection and Biodiversity Conservation Act* 1999 (*EPBC Act*).

The *EPBC Act* (1999) provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places – defined in the *EPBC Act* as matters of national environmental significance.

This Act seeks to protect environmental values of National Significance including values such as threatened ecological communities, flora and fauna, migratory species, the Great Barrier Reef Marine Park, wetlands of national significance, world heritage and national heritage places.

Under the EPBC *Act* (1999) refers to vegetation communities as "Ecological Communities" and listed those ecological communities and flora and fauna species as well as areas protected under the *EPBC Act* (1999) in its protected matters data base.

The *EPBC Act* (1999) uses the following hierarchy of protection significance to described threatened flora and ecological communities: -

- Critically endangered,
- Endangered, and
- Vulnerable.

5.2 Queensland Legislation and Sub-ordinate Legislation

Table 2 below identifies the relevant Commonwealth and State Legislation which relates to the protection and management of vegetation and plant species and which may require a response as part of the approval of the proposed mining activity.

As the mine site is located wholly within Barcaldine Regional Council the requirements of the local planning Scheme have also been identified.

Table 2 – Legislation

Act	Purpose	Relevant
State Development and Public Works Act 1971	To provide for State planning and development through a coordinated system of public works organisations, for environmental coordination and for related purposes. This act enables the Coordinator General to coordinate the assessment of "Significant Projects" within the State and to require those projects undertake an environmental impact assessment.	✓
Nature Conservation Act 1992	To protect and manage the State's nature conservation values,	✓

Act	Purpose	Relevant
	including flora, fauna and protected areas such as National Parks and Nature refuges. The Act regulates the removal, clearing or taking of protected wildlife from the wild. As protected wildlife have been located within the study area and will be impacted upon by the mining activity, particularly within the open cut mine, Waratah Coal is required to respond to the *NCA* (1992) and any subordinate legislation and/or policies which has the NAC (1992) as its head of power. The Biodiversity Off-set Policy is one such policy which Waratah Coal is required to respond to where protected fauna is proposed to be cleared as part of obtaining a permit to clear.	
Nature Conservation (Wildlife) Regulations 2006	Provides schedules of extinct in the wild, endangered, Vulnerable, Near Threatened and Least Concern Wildlife within the State.	✓
Nature Conservation (Protected Areas) Regulations 1994	Provides a regulation for the dedication and naming of protected areas. While the Regulation provided for the dedication and naming of The Bimblebox Nature Refuge, the Regulation has no impact on Waratah Coal and its operations.	✗
Environmental Protection Act 1994	This Act seeks to regulate activities which may cause or have impacts to the environment. A number of policies sit under this act and provide specific management goals for a particular policy. The policies cover the following areas, Air, Noise, Waste Management and Water.	✓
Vegetation Management Act 1999	The purpose of this act is to regulate the management of vegetation within the State. It is noted that all mining activities where protected vegetation is to be removed is exempt from the Act within a mining lease. However, any activity outside of a mining lease that requires the removal of protected vegetation is regulated by the Act. The Act uses the States mapping of Regional Ecosystems and high value regrowth as the basis for regulating the management of woody vegetation. The Act does not apply to grassland regional ecosystems.	✓
Water Act 2000	The purpose of this act is to regulate and manage the State's water resources and includes the regulation of riparian vegetation. The jurisdiction of the *Water Act* is defined by the upstream and downstream limits of a watercourse. No waterway which traverses the mine site is listed in the schedules of the *Water Regulation* 2002.	✗
Sustainable Planning Act 2009	The purpose of the Act is to enable the regulation of development within the State by requiring local governments to have planning schemes and for Local Government to administer their planning Schemes. The *Sustainable Planning Act* 2009 works in concert with a number of other acts and permits those State Government Department which administer those acts to be a concurrency or advice agency with respect to developments.	✓
Land Protection (Pest and Stock	The purpose of this act with respect to plants and vegetation is	✓

Act	Purpose	Relevant
Route Management) Act 2002	that it identifies and classifies pest plant species as well as their management requirements. Once Waratah Coal take control of the properties over the mining leases they will be responsible for the management and control of declared pest plant species within those lands from that point.	
Barcaldine Regional Council Planning Scheme	The relevant planning scheme which covers the mine site is the Jericho Planning Scheme (2006). The Jericho Planning Scheme has general statements regarding the protection of the natural environment which includes the landscape and natural features and habitat and biodiversity and to protect riparian areas. While the mining activity for the Waratah Coal Galilee Coal Mine is exempt from the planning scheme as the assessment and approvals are being undertaken by the State under the State *Development and Public Works Act* 1971, any other activity such as a material change of use for the development of workers camp sites will be assessed by Barcaldine Regional Council under the Jericho Planning Scheme and these will have to comply with the performance criteria relating to vegetation retention (PC25) and potentially PC24 "watercourse and lakes"	✓

Other State Government Policies which may have an effect on Waratah Coal's mining operations include: -

- The Queensland Government Environmental Offset Policy.

  This Policy captures a number of specific offset policies which are required under specific Acts and relate to offsetting vegetation or protected plant species. Some of these have no effect on mining operations within a Mining Leases, such as the Vegetation Off-sets Policy, while others have an effect such as the Biodiversity Off-sets Policy (which is being applied at the discretion of the Queensland Coordinator General).

- State Planning Policy 4/11 – Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments

  This policy seeks to ensure that development in or adjacent to wetlands of high ecological significance in Great Barrier Reef catchments is planned, designed, constructed and operated to prevent the loss or degradation of wetlands and their environmental values, or enhance these values.

  The recent passing *Sustainable Planning Amendments Regulation* (N0. 5) 2012 has omitted the need for an applicant to refer an application to the Chief Executive (Environment) where that development is in or near a wetland. (Schedule 7, table 2 items 43 and 44 to 46 and the headings to items 44 to 46).

  However *SPA* (2009) Schedule 3, Table 4 – Operational Works indicates the development is code assessable, Schedule5, Table 4 items 6 and 7 indicate the code as contained in SPP4/11 is to be used.

6 Vegetation and Flora data sets

A review of the available flora and vegetation data seta have been reviewed as part of the preparations for field investigations, a summary of the findings is provided below.

6.1 EPBC Protected Matters data

A search of the Protected Matters data base was undertaken with a search radius of 10 km around a centroid of the study area was undertaken and is provided in Appendix V.

It is noted that the Act has listed some Brigalow ecological communities and Weeping Myall Woodlands as endangered and therefore are protected under the EPBC Act (1999).

However, the listing of Brigalow ecological communities does not extend to any Brigalow regional ecosystems within the Desert Uplands and as such there is no requirement to refer an action to the Commonwealth for assessment.

The other ecological community listed as endangered under the EPBC Act (1999) is the Weeping Myall Woodlands. In Queensland the EPBC states that those regional ecosystems which are included as Weeping Myall Woodlands are 11.3.2 - *Eucalyptus populnea* woodland on alluvial plains and 11.3.28 - *Casuarina cristata* +/- *Eucalyptus coolabah* open woodland on alluvial plains. Neither of these regional ecosystems occurs within the study area.

6.2 Qld Government Data sets

A number of vegetation and flora data sets were reviewed as part of the investigations undertaken to understand the vegetative and flora values of the study area. The data sets included: -

- Herbrecs
- Corveg
- Wildlife Online

The Wildlife online data is provided in Appendix VI.

The Herbrecs and Wildlife on-line data sets list three flora species which are listed as vulnerable or near threatened by the *Nature Conservation Act* (1992). These species discussed in Section 6.4 below and include: -

- *Micromyrtus rotundifolia* – Vulnerable
- *Desmodium macrocarpum* – Large-podded trefoil – Near Threatened and
- *Acacia spania* – Pretty wattle – Near Threatened.

7 Analysis of survey data

7.1 Vegetation

The vegetation survey work was undertaken over three periods in 15th May 2012 to 24th May 2012, 30th May 2012 to 1st June 2012. Field work ceased due to rain. Site survey work commenced on the 25th June to the 10th July 2012 when field work was again stopped by rainfall. Due to un-seasonal rain within the Desert Uplands access on local roads and tracks became impossible. Out of the proposed 80 sites, 66 of these were surveyed.

The purpose of the surveys was to improve on the vegetation knowledge already existing over much of the mine site area as well as collecting BioCondition data on sites undertaken by Unidel (2010) and in new sites in those areas where no survey data had been collected.

A total of 66 sites were surveyed with 34 of those sites being secondary surveys and 32 being quaternary survey sites. All site data sheets are contained in Appendix II.

The following conclusions can be drawn from the site survey data: -

i. No ecological communities or flora species protected under the *EPBC Act* (1999) were listed in the Protected Matters Report (27 August 2012) or recorded within the study area. While three areas containing *Acacia harpophylla* as the dominant canopy species can be described as remnant and are analogues with RE10.4.3. It is noted that the protection of Brigalow ecological communities under the EPBC Act (1999) does not extend to the Brigalow ecological communities within the Desert Uplands Bioregion.
ii. The existing remnant/non-remnant mapping is generally consistent with the vegetation on the ground, with a few inconsistencies with

canopy species associations and/or land zone descriptions.

iii. The inconsistencies include: -
   a. Areas which have been cleared and not correctly mapped on the certified regional ecosystem mapping in Monklands Station or the mapping has not changed in the version 6 Regional Ecosystem mapping;
   b. Areas along Lagoon Creek mapped as 10.3.27/10.312/10.3.3 could be better described as 10.3.14 with *Eucalyptus camaldulensis* as the dominant canopy species
   c. Areas within Monklands, Glen Innes and Lambton Meadows which are mapped as remnant could be better described as non-remnant based on the survey data collected within these areas. Additional survey data would need to be collected to ensure there is sufficient information to support a change from remnant to non-remnant.
   d. Land zone descriptions within Monklands Glen Innes and potentially Spring Creek are mapped incorrectly and while the vegetation in these areas can be described as remnant (the Author is yet to assess the Spring Creek area) change to the land zone could be made also through a PMAV or a Property Vegetation Management Plan (PVMP).

      A review of the potential Land Zone changes indicates there will not be an effect on the Regional ecosystem or biodiversity status.

   e. An area within the northern part of Monklands is mapped as 10.4.3 and data for this work indicates that the area could be better described as non-remnant/regrowth or 10.5.5 (see MVS 19 and MVS 64, Appendix II).
   f. An area within Glen Innes mapped as 10.5.5/10.5.12 or 10.3.27/10.3.12/10.3.3 could be mapped as 10.4.3 based on survey data (see MVS 44).
   g. The survey data also indicates that a majority of the groundcover was native grass and herbaceous species with only approximately 11% of cover represented by weed grass species such as *Pennisetum ciliare* and *Melinis repens*. However, at MVS66 the groundcover was estimated at 100% and at MVS65 the cover represented by *Pennisetum ciliare* was greater than 80%.

iv. All existing property managers/owners use fire as a pasture management tool and a fire in 2011 had a substantial impact on area within the northern and western portions of Lambton Meadows. Additionally, fire has also had an impact on areas within Monklands.

v. An area within the eastern portion of Monklands Station contained an area dominated by *Melaleuca tamariscina* which was in association with *Petalostigma pubescens* and a number of Acacia species. This area was surrounded by *Eucalyptus melanophloia* woodland but was a distinct community outside of the *E. melanophloia* woodland. This area is mapped on the certified regional ecosystems map as 105.1b/10.5.5a.

vi. The area in the north-western portion of Glen Innes was cleared in the early 1990's, and is currently regenerating from that event. However the area is substantially different in terms of species association than the rest of Glen Innes which is dominated by *Eucalyptus melanophloia* woodland in the central and western portions of the property and *Eucalyptus populnea* woodland in the eastern portion of the property. The area contains *Corymbia leichhardtii*, *Eucalyptus ammophila*, *C. setosa* and a wallum type understorey dominated by Acacia and Myrtaceae species. While the area is not mapped as remnant it is noteworthy in terms of the floristics, which is different from the rest of Glen Innes.

vii. Another area which is also noteworthy within the Study area is the *Corymbia leichhardtii, E. ammophila* and *C setosa* in association with *Melaleuca tamariscina* within the western portion of Lambton Meadows. This area is similar in species composition to the area in the north-western portion of Glen Inness and due to the presence of *M. tamariscina* sets it apart from the large area of 10.5.10 to the north of the area (see MVS40).

7.2 Regional Ecosystems

Table 1 contains a list of Regional Ecosystems mapped by the State within the study area. An analysis of the survey data listing the dominant canopy species is provided in Table 3 below. This table also places each site into the most analogous regional ecosystem, however several survey sites were located within areas which were clearly non-remnant but where there were trees in the upper most stratum these areas are also listed.

Table 3 – Canopy species by survey site

Site	*Eucalyptus populnea*	*Eucalyptus melanophloia*	*Brachychiton populneus*	*Corymbia clarksoniana*	*Corymbia dallachiana*	*Eucalyptus cambageana*	*Corymbia Leichhardtii*	*Corymbia plena*	*Eucalyptus camaldulensis*	*Acacia harpophylla*	*Corymbia erythrophloia*	*Corymbia setosa*	*Eucalyptus ammophila*	*Eucalyptus crebra*	*Callitris glaucophylla*	*Lysiphyllum carronii*	*Corymbia tessellaris*	*Acacia salicina*	RE
MVS01		d																	10.3.13
MVS02		d																	10.5.5a
MVS03																			Non-rem
MVS04		d									a								10.5.5a
MVS05		d																	10.5.5a
MVS06	d																	a	10.5.12
MVS07	d		a		a														10.5.12
MVS08	d				s											s			10.5.12
MVS09		d																	10.5.5a
MVS10																			Non-rem
MVS11		d			a														10.5.5a
MVS12		e																	10.5.1g
MVS13		d		s															10.5.5a
MVS14	c								c										10.3.14b
MVS15																			Non-rem
MVS16		d																	Non-rem
MVS17	d	a		a	a														10.5.12
MVS18	s	a																	10.5.5a
MVS19					c					c									Non-rem
MVS20	d								s								s		10.3.27d
MVS21	s	d			s			s											10.5.5a
MVS22	d								s		s							s	10.5.12
MVS23	c	c			s														12.3.28a
MVS24	c			s					c										10.3.14d
MVS25	c																c		10.3.27
MVS26	d																		10.5.12
MVS27		d																	10.5.5a
MVS28		d																	10.5.5a
MVS29		d	a																10.5.5a
MVS30										d						a			10.4.3a
MVS31		d	a					a											10.5.5a
MVS32	d																		10.3.27a
MVS33	c	a	a						c										10.3.14j
MVS34		d						a							a				10.5.5a
MVS35																			Non-rem

Site	*Eucalyptus populnea*	*Eucalyptus melanophloia*	*Brachychiton populneus*	*Corymbia clarksoniana*	*Corymbia dallachiana*	*Eucalyptus cambageana*	*Corymbia Leichhardtii*	*Corymbia plena*	*Eucalyptus camaldulensis*	*Acacia harpophylla*	*Corymbia erythrophloia*	*Corymbia setosa*	*Eucalyptus ammophila*	*Eucalyptus crebra*	*Callitris glaucophylla*	*Lysiphyllum carronii*	*Corymbia tessellaris*	*Acacia salicina*	RE
MVS36																			Non-rem
MVS37	a	d			a														10.5.5a
MVS38		a					s					d	d						10.5.1g
MVS39		a	a																Non-rem
MVS40							d							a					10.5.10
MVS41		d																	10.5.5a
MVS42	d																		10.5.12
MVS43	d																		10.5.12
MVS44		d						a											10.5.5a
MVS45	a	d			s														10.5.5a
MVS46	a	d																	10.5.5a
MVS47	s	d		a							a								10.5.5a
MVS48	c	c																	10.5.5a
MVS49			a									d	d						Non-rem
MVS50	a	d			a		s					s							10.5.5a/ 10.5.10
MVS51	c	c																	10.5.5a
MVS52		d						a											10.5.5a
MVS53		d						s											10.5.5a
MVS54			a																Non-rem
MVS55		d	a	a	a			a											10.5.5a
MVS56		d	a					a											10.5.5a
MVS57		d			a														10.5.5a
MVS58		d	a																10.5.5a
MVS59	a									d									10.4.3
MVS60	d																		10.5.27a
MVS61	a	d						a											10.5.5a
MVS62	a	d																	10.5.5a
MVS63	a	d																	10.5.5a
MVS64	a	d																	10.5.5a
MVS65				a					d										10.3.14a
MVS66		d		a															10.5.5a

Abundance codes: - d – Dominant; c –Co-dominant; s - Sub-dominant; a - Associated

7.3 Vegetation Community/Regional Ecosystem Analysis

Based on the above summary table and the field data, a detailed description is provided with respect to those regional ecosystems currently mapped over the study area by the state.

10.3.3 *Acacia harpophylla* and/or *Eucalyptus cambageana* low open woodland to open woodland on alluvial plains

10.3.3b has been mapped as a minor element in mosaic polygons along the lower reach of Beta Creek, and within all polygons along Tallarenha Creek and Lagoon Creek. The presence of this community within the study area is not supported by the field data.

10.3.4 *Acacia cambagei* low open woodland to low woodland on alluvial plains

10.3.4 is mapped in the northern part of Monklands Station and extends to the north in Hobartville Station. Unidel (2010) located a tertiary site within a mosaic polygon mapped as 10.3.4b/10.3.3b/10.3.3a/10.3.25 (75/10/10/5) and concluded based on the survey data the patch could be described as 10.3.3. RF&A (2012) did not survey this area. Both of these areas are outside of the mine footprint.

10.3.12 *Corymbia dallachiana* and *C. plena* or *C. terminalis* open woodland on sandy alluvial terraces (eastern)

10.3.12 is mapped as part of a number of mosaic polygons in associated with Lagoon Creek, Tallarenha Creek and the junction of Beta Creek with Lagoon Creek. Based on the survey data the species associations for the reaches of Lagoon Creek and Beta Creeks indicates *Eucalyptus camaldulensis* becomes dominant and is association with *E. populnea* and *Corymbia plena/C. clarksoniana* and as such these areas would be more analogous with 10.3.14d.

In the reaches of Tallarenha and Beta Creeks *Eucalyptus populnea* appears to be dominant and in association with *E. melanophloia, E. camaldulensis, C. dallachiana, E, cambageana, C. tessellaris, C. plena and C. clarksoniana*. *Callitris glaucophylla* dominates the T2/T3 stratum in places along Tallarenha and Beta Creeks at MVS22 and MVS33.

Therefore based on the field data it would appear that there is none to very little 10.3.12 within the study area.

Photographic plate 1 – 10.3.27 woodland at MVS22

Photographic plate 2 – 10.3.27 woodland at MVS23

Photographic plate 3 – 10.3.14 woodland at MVS24

Photographic plate 4 – 10.3.14 woodland at MVS63

10.3.27 *Eucalyptus populnea* open woodland on alluvial plains

10.3.27a is mapped over all waterways and adjacent areas within the study area and in mosaic polygons also containing 10.3.12a and 10.3.3b. 10.3.27a. It is the dominant RE with percentage of 80% or greater within Lagoon Creek, Beta Creek, Tallarenha Creek but only 10% on Saltbush Creek and other large polygons within Saltbush and Monklands Stations.

As indicated above in the discussion on 10.3.12, the data collected to date would seem to indicate that the land zone 3 areas along Tallarenha Creek are analogous with 10.3.27a (see Photographic plates 1 and 2 above) while the communities surveyed in the Lagoon Creek and Beta Creek are more analogous with 10.3.14d.

Saltbush Creek is a difficult creek to map based on dominant upper stratum species. *Eucalyptus camaldulensis* dominates the immediate waterway or the easily identified land zone 3 area. However, just outside of the area *E. populnea* dominates. It is noted that a polygon of 10.4.3/10.3.27a (70/30) is mapped over a portion of Saltbush Creek within Monklands Station. Field data from the Unidel site BB245 and this report MVS14 identifies this community as a thin belt of 10.3.14d with 10.3.27a immediately outside of the bed and banks (see Photographic plates 5 & 6).

The current regional ecosystem mapping also has parts of the southern portion of Glen Innes Station mapped as a mosaic of 10.3.27a/10.3.28a. However, ground observations and the topographic mapping would seem to indicate the extent of land zone 3 mapped is somewhat greater than it is on the ground. Pebbly Creek which presumably forms the basis of the Land Zone 3 mapping, traverses south-western portion of the Glen Innes to join Beta Creek south of Monklands Road within Lambton Meadows. The mapping shows a continuous zone of Land Zone 3 extending across the southern portion of Glen Innes from its western to eastern boundary. The mapping also extends the area of Land Zone 3 northward along the eastern boundary of Glen Innes, presumably under the influence of the Lagoon Creek flood plain.

Additional field survey would potentially provide the data to support a view that much of the area currently mapped as Land Zone 3 should be mapped as Land Zone 5 and the regional ecosystems would change from 10.3.27a/10.3.28a to 10.5.12 or 10.5.5 for most of this area. Pebbly Creek traverses this area however, the alignment of Pebbly Creek and the Land Zone 3 areas are inconsistent. It is noted that the alignment of Pebbly Creek is derived from old topographic maps (pers. coms. Vannisse. A. 2012). It is acknowledged however that there are a number of small drainage lines which drain micro-elevations within this part of Glen Innes and Lambton Meadows, however these would not justify the extent of Land Zone 3 in this area.

Therefore based on the survey data the following comments on the existing mapping can be made: -

i. Lagoon Creek and Beta Creek can be mapped as 10.3.14d
ii. Saltbush Creek could be mapped as a mosaic of 10.3.14d/10.3.27a. 10.5.12 may also occur in places outside of the influence of Land Zone 3
iii. The areas outside of the Pebbly Creek alignment and following the collection of additional data, could be mapped as land Zone 5 with some areas being 10.5.12 and other areas being 10.5.5a and

iv. The area along the eastern boundary of Glen Innes should be re-mapped as 10.5.12.

Photographic plate 5 – Beta Ck. at MVS33

Photographic plate 6 – Lagoon Ck. at MVS30

10.3.28 *Eucalyptus melanophloia* or *E. crebra* open woodland on sandy alluvial fans

10.3.28 has been mapped over parts of Lambton Meadows and Glen Innes in association with the alignment of Pebbly Creek and Beta Creek. This discussion above in relation to 10.3.27a is the same discussion with the extent of 10.3.28 mapped within the Study Area. However, as the two polygons containing 10.3.28 and 10.3.27a in the northern portion of Lambton Meadows have not been inspected the comments made with regard to 10.3.27 cannot be supported by any field data.

10.3.14 *Eucalyptus camaldulensis* and/or *E. coolabah* open woodland along channels and on floodplains

10.3.14 is not mapped as occurring within the study area. Field data from a number of sites as mentioned in 10.3.27 below indicate a number of the polygons mapped as 10.3.27 could be described as 10.3.14 based on the presence and dominance of *Eucalyptus camaldulensis* in these areas.

10.4.3 *Acacia harpophylla* and/or *Eucalyptus cambageana* open woodland on Cainozoic lake beds

10.4.3 is mapped in three patches within the study area, a patch on Pebbly Creek or another minor drainage line within the eastern portion Lambton Meadows, a patch within Saltbush Station and a patch within the northern portion of Monklands. The patches within Lambton Meadows and Monklands were surveyed by Unidel (2010) (BB25 and BB10) and by RF&A as part of the field work for this report (MVS19, MVS30 & MVS64). The patch within Saltbush was not assessed by Unidel or RF&A.

Unidel accepted the existing regional ecosystem mapping that both patches it surveyed were considered to be remnant and confirmed the accuracy of the mapping. The data collected by RF&A confirms the extent and status of the patch within Lambton Meadows. However, the data does not support the mapping of the patch of 10.4.3 within Monklands.

Data collected as part of MVS19 indicates this area contains *Acacia harpophylla* with emergent *Eucalyptus cambageana* however the area is currently mapped as non-remnant and is approximately 1.74 hectares in size. The patch mapped as 10.4.3 was also inspected (see MVS64) and this indicated this area was a regrowth stand dominated by *Eucalyptus melanophloia* with some *Corymbia plena/C. clarksoniana* on its southern periphery. The dominance of *Pennisetum ciliare*, near 100% would seem to indicate the historic disturbance of the area.

With regard to the 10.4.3 patch within Saltbush Station, aerial photography interpretation of the patch and data collected from an adjacent area (MVS08) indicates that the area may be a dense stand of *Eucalyptus populnea*, however to confirm the description and status of this patch additional field data is required.

Data collected by Worley Parsons (2009) and RF&A (2012) identifies the existence of a small patch dominated by *Acacia harpophylla* in the central eastern portion of Glen Innes. This patch is approximately 3.79 hectares in area which is too small to be mapped as a regional ecosystem, however it existence is noted (see MVS59).

It is noted that the patches in Monklands and Glen Innes will be removed as part of the mine site works. The Lambton Meadows and the mapped Saltbush patches will not be disturbed as they are outside of the mine operational area.

Photographic plate 7 – Panorama view of the *Acacia harpophylla* patch at MVS19

Photographic plate 8 – *A. harpophylla* patch at MVS30

Photographic Plate 9 – *A. harpophylla* patch at MVS59

10.5.1 *Eucalyptus similis* and/or *Corymbia brachycarpa* and/or *Corymbia setosa* low open woodland to open woodland on sand plains, and

10.5.10 *Corymbia leichhardtii* open woodland on sand plains.

A mosaic polygon of 10.5.10/10.5.1 (80/20) is mapped over a large area along the western boundary of Lambton Meadows and the mine subsidence area. The southern portion of the polygon was assessed (see MVS38 & MVS40). Several other sites were identified in the northern portion of this area. These sites were not able to be assessed due to weather conditions at the time of the survey.

MVS38 and MVS40 supports the mapping of this area as 10.5.10 and this will be confirmed once additional sites have been surveyed later in 2012.

Photographic Plate 10 – view of 10.5.10 at MVS38

Photographic Plate 11 – view of 10.5.10 at MVS40

10.5.5 *Eucalyptus melanophloia* open woodland on sand plains

10.5.5 is the dominant regional ecosystem throughout the study area. All survey sites located within areas mapped as mosaic 10.5.5/10.5.12 are predominantly 10.5.5. The field data clearly indicates that the majority of mosaic polygons within the study area are 10.5.5 and not 10.5.12.

On ground observations and the survey sites described below indicate that 10.5.5 is not present or prevalent within mosaic polygons within central and northern Saltbush Stations and the eastern portion of Glen Innes as well as outside of the influence of land zone 3 within Tallarenha Creek.

Photographic plate 12 – view of 10.5.5 from MVS29

10.5.12 *Eucalyptus populnea* open woodland on sand plains

10.5.12 is mapped over much of the Study area as being the subordinate regional ecosystem to 10.5.5 in many of the mosaic polygons however, within Saltbush Stations 10.5.12 is the dominant over 10.5.5.

The field data from survey sites MVS06, MCS07, MVS08, all of which are in Saltbush, confirms the existing Regional Ecosystem mapping in terms of the dominance of 10.5.12 in these areas. The data also indicates that there is a lack of 10.5.5 in these areas. However additional field data would be required to confirm this proposition.

Additionally, field data from polygons within Monklands and Glen Innes Stations within which survey sites MVS17, MVS22, MVS26, MVS42 and MVS43 were located, all indicate 10.5.12 is the dominant or only regional ecosystem present.

Photographic plate 13 – View of 10.5.12 at MVS42

10.7.5 *Eucalyptus thozetiana* open woodland on scarps and on pediments below scarps

10.7.5 is mapped with 10.5.5a and 10.7.5 in the western portion of Monklands Station. The mine camp site has been located in this area. No survey site was located in this community to date. It is proposed to survey this site in the later part of 2012 to confirm the description and land zone.

11.5.5 *Eucalyptus melanophloia, Callitris glaucophylla* woodland on Cainozoic sand plains/remnant surfaces. Deep red sands

11.11.5 is mapped over mosaic polygons in the southern portion of Saltbush Station. While the two indicative species are present within these communities and in locations the soils may be described as deep red sands, as yet there is not enough data to confirm or otherwise the presence of this regional ecosystem within the study area.

7.4 Regional Ecosystems yet to be determined

The following Regional Ecosystems are mapped in areas which have not yet been assessed. These will be assessed as part of further vegetation survey work to be undertaken by Waratah Coal in the coming months.

- 10.10.1a - *Acacia shirleyi* woodland or *A. catenulata* low open woodland on sandstone ranges
- 10.10.4a - *Eucalyptus exilipes* and/or *Corymbia leichhardtii* open woodland on sandstone ranges
- 10.10.5c - *Corymbia trachyphloia* and/or *C. lamprophylla* or *Eucalyptus mediocris* open woodland on sandstone ranges
- 10.10.7 - *Eucalyptus cloeziana* open woodland on sandstone ranges
- 10.7.3b *Acacia shirleyi* woodland or *A. catenulata* low woodland at margins of plateaus, and
- 10.7.5 *Eucalyptus thozetiana* open woodland on scarps and on pediments below scarps.

7.5 Groundcover

The following table is an analysis of the dominant groundcover recorded at each secondary survey site based on cover derived from averages from 5 one square metre quadrats along the 50 metre transect. Additionally the percentage of litter and bare ground is also provided to give a picture of the total ground cover at the secondary site. Groundcovers at Quaternary sites are expressed as dominant (d), co-dominant (c) or associated (s).

Table 4 – Percentage cover of groundcover species by survey site.

Survey Site (MVS)	*Pennisetum ciliare*	*Themeda triandra*	*Dichanthium queenslandicum*	*Aristida contorta*	*Aristida latifolia*	*Aristida calycina*	*Aristida personata*	*Aristida leptopoda*	*Paspalidium gracile*	*Chrysopogon fallax*	*Heteropogon contortus*	*Aristida caput-medusae*	*Melinis repens*	*Cyperus spp.*	*Cynodon dactylon*	*Wahlenbergia gracilis*	*Paspalidium caespitosum*	*Digitaria brownii*	*Digitaria divaricatissima*	*Eragrostis lacunaria*	*Eragrostis fallax*	*Eragrostis sororia*	*Eragrostis elongata*	*Eragrostis sp.*	*Enteropogon acicularis*	*Enteropogon ramosus*	*Brachyscome ciliaris*	*Stylosanthes scabra*	*Setaria spp.*	*Eriachne mucronata*	*Harmogia densifolia*	*Cymbopogon obtectus*	*Herb*	*Lomandra spp.*	*Dianella Longifolia*	*Cheilanthes sieberi*	*Melichrus procumbens*	*Unidentified grass*	*Desmodium spp.*	*Chrysocephalum apiculatum*	*Goodenia hirsuta*	*Aristida personata*	*Triodia pungens*	*Sida cordifolia*	*Bothriochloa ewartiana*	*Entolasia sororia*	*Schizachyrium fragile*	*Panicum ammophila*	*Panicum sp.*	*Litter %*	*Bare ground %*
01		1							7					1	4									1																							2	49
02	**21**	**2**						**3**	**2**							**3**										**1**	**27**						**2**					**2**											**28**	**26**
03																	a												a																					
04	d	a			a			a					a														a																							
05	**6**												**1**											**16**								**43**	**7**		**1**				**1**	**1**	**2**							**3**	**14**
06	**31**	**4**																																						**6**	**28**	**1**	**1**						
07		**8**	**1**					**1**																								**3**					**1**				**8**						**1**	**22**	**28**
08	a		a					a																																										
09	**1**	**11**			**1**				**1**					**2**																		**1**							**4**			**16**				**30**		**1**	**13.4**	**19**
10	d	s						a																																		s								
11	d	d			s												a									a														a								
12	s	s						s																																s			s			s		a		
13	**7**	**1**					**12**																																**6**				**5**			**11**			**9**	**41**
14	**24**							**3**						**1**												**3**																						**34**	**29**
15	s						d				d		a																									a											
16		**8**		**7**	**4**						**33**					**2**						**1**																**1**	**1**						**2**		**4**	**14**	**20**
17	**15**			**13**				**19**	**5**																							**2**					**1**	**1**			**2**				**1**		**1**	**7**	**24**
18		**3**						**31**									**1**										**1**															**2**							**14**	**18**
19	**11**				**5**		**1**							**6**																																		**2**	**8**	**63**
20																																																		
21		**5**		**10**	**4**						**37**					**3**																																**4**		**4**	**12**	**18**
22	**32**						**8**				**2**													**1**								**2**						**1**								**1**			**31**	**21**

Survey Site (MVS)	Pennisetum ciliare	Themeda triandra	Dichanthium queenslandicum	Aristida contorta	Aristida latifolia	Aristida calycina	Aristida personata	Aristida leptopoda	Paspalidium gracile	Chrysopogon fallax	Heteropogon contortus	Aristida caput-medusae	Melinis repens	Cyperus spp.	Cynodon dactylon	Wahlenbergia gracilis	Paspalidium caespitosum	Digitaria brownii	Digitaria divaricatissima	Eragrostis lacunaria	Eragrostis fallax	Eragrostis sororia	Eragrostis elongata	Eragrostis sp.	Enteropogon acicularis	Enteropogon ramosus	Brachyscome ciliaris	Stylosanthes scabra	Setaria spp.	Eriachne mucronata	Harmogia densifolia	Cymbopogon obtectus	Herb	Lomandra spp.	Dianella Longifolia	Cheilanthes sieberi	Melichrus procumbens	Unidentified grass	Desmodium spp.	Chrysocephalum apiculatum	Goodenia hirsuta	Aristida personata	Triodia pungens	Sida cordifolia	Bothriochloa ewartiana	Entolasia sororia	Schizachyrium fragile	Panicum ammophila	Panicum sp.	Litter %	Bare ground %
23	d	a								a	s	a												s														a		a										
24	**25**			**5**									**6**	**4**	**4**						**15**						**9**													**2**									**18**	**11**
25																																																		
26	**2**													**2**										**65**																									**27**	**1**
27	**2**				**1**	**1**		**26**			**8**																**5**	**1**																			**2**			**26**	**16**
28	a						a																																											
29	**1**	**12**			**1**		**11**													**9**														**1**												**4**		**2**		**1**		**5**	**39**	**14**
30	**5**																																	**2**							**2**									**13**	**14**	**57**
31	a				a			a			a		a																																						
32	d			a							a		a	a																																					
33	s	a									d		s												s																							s				
34	d	s			s						s		a															a																			s				
35	d	d									s			a	s						a							s																							
36	d	d											d								a							s																							
37	s	s			s			s			s																						a												s			s			
38					a								a						a														a	a											a						
39	s	s						s			d																																								
40		**20**																**1**															**8**												**4**				**5**		**14**	**47**
41	s	s			s			s			s		s									a	a																							s	a			
42	**29**							**4**			**2**																																			**13**						**26**	**26**
43	**26**							**12**																																						**32**						**10**	**20**
44	**6**			**13**	**1**			**1**										**1**														**2**							**2**	**2**				**4**				**4**		**31**	**32**
45	**4**	**2**		**12**	**6**																																							**28**				**1**		**32**	**15**
46	s	s		s				s			s		a															s						a								a			s			a			a		
47	**8**	**2**			**3**						**3**		**6**																																**12**				**6**		**45**	**13**
48	a	a		a	a			a			a																a		a											a							a			
49					**6**																						**1**				**20**												**23**				**4**		**6**	**11**
50	s	s			s			s			d													a																											
51	**3**				**2**						**3**													**6**				**1**												**1**	**1**			**36**	**1**			**3**		**12**	**31**
52	**30**	**8**			**14**						**7**																																						**4**	**8**
53	**1**				**18**						**2**																														**1**			**27**				**31**		**13**	**7**
54	d	d			a								a																a															d	a			s			
55	d	s			s		a				d		a			a						s						s						a							a	a			d			
56	s				s		s				s					a												s	a					a						a	a			s				d			

Survey Site (MVS)	*Pennisetum ciliare*	*Themeda triandra*	*Dichanthium queenslandicum*	*Aristida contorta*	*Aristida latifolia*	*Aristida calycina*	*Aristida personata*	*Aristida leptopoda*	*Paspalidium gracile*	*Chrysopogon fallax*	*Heteropogon contortus*	*Aristida caput-medusae*	*Melinis repens*	*Cyperus spp.*	*Cynodon dactylon*	*Wahlenbergia gracilis*	*Paspalidium caespitosum*	*Digitaria brownii*	*Digitaria divaricatissima*	*Eragrostis lacunaria*	*Eragrostis fallax*	*Eragrostis sororia*	*Eragrostis elongata*	*Eragrostis sp.*	*Enteropogon acicularis*	*Enteropogon ramosus*	*Brachyscome ciliaris*	*Stylosanthes scabra*	*Setaria spp.*	*Eriachne mucronata*	*Harmogia densifolia*	*Cymbopogon obtectus*	*Herb*	*Lomandra spp.*	*Dianella Longifolia*	*Cheilanthes sieberi*	*Melichrus procumbens*	*Unidentified grass*	*Desmodium spp.*	*Chrysocephalum apiculatum*	*Goodenia hirsuta*	*Aristida personata*	*Triodia pungens*	*Sida cordifolia*	*Bothriochloa ewartiana*	*Entolasia sororia*	*Schizachyrium fragile*	*Panicum ammophila*	*Panicum sp.*	*Litter %*	*Bare ground %*
57	s	s				a							a									s		a		a																							
58	a				a	a		a			a					a												a			a		a	a	a	a		a				a				a		
59	**20**				**1**		**4**																																										**39**	**36**
60	**20**							**6**						**2**															**14**														**8**						**2**	**4**	**44**
61	s	a		a	a			s																							a											d				d				
62	d	d						s			a													a																										
63	a							a																				s					a																	
64	d																																																		
65	**1**				**2**			**27**														**1**							**1**										**1**									**1**		
66	a	c		a	c			c																a				s	a									a			c						a		

Abundance codes: - d – Dominant; c –Co-dominant; s - Sub-dominant; a – Associated

No groundcover species cover data collected for MVS20 & MVS25

7.6 Groundcover analysis

Based on the above summary of the cover of the groundcover species throughout the study area surveyed to date the following conclusions can be drawn:

- *Pennisetum ciliare* is present at 58 sites of the 66 sites surveyed.
- Based on the average of secondary sites for groundcover, *Pennisetum ciliare* consisted of: -
  - 9.25% of groundcover in Saltbush Station with the maximum recorded cover being 31%.
  - 12.45% of groundcover in Monklands Station with the maximum recorded cover being 28%
  - 1.8% of groundcover in Lambton Meadows Station with the maximum recorded cover being 5%
  - 13.36% of groundcover in Glen Innes Station with the maximum recorded cover being 30%
- While the above values are restricted to secondary sties, *P ciliare* was also the dominant cover at seven Quaternary survey sites.
- Other dominant ground cover species include *Triodia pungens, Themeda triandra, Aristida latifolia, Heteropogon contortus, A. leptopoda* and *Schizachyrium fragile*.
- The environmental weed species *Melinis repens* and *Stylosanthes scabra* were also occurring throughout the study area, usually in low numbers based on cover.

Using the data from the BioCondition surveys a comparison of the native grasses and forbs to non-native grasses can be made (see Table 5).

The information has been presented comparing the three categories by property. Cadwell and Kia Ora have not been included due to the sample size.

Table 5 – Average percentage of groundcover per property

Property	Native grasses (%)	Forbs (%)	Non-native grasses (%)
Saltbush	34.08	21.5	9.5
Monklands	31.20	5.91	20.78
Lambton Meadows	38.40	3.60	2.00
Glen Innes	36.82	1.20	15.81

The data indicates there is approximately an 8% difference between the percentage cover of native grasses between the four properties.

The average percentage of non-native grasses within Lambton Meadows is significantly lower than the other properties and this may be that two of the secondary sites were in areas which had suffered a substantial burn which had limited the regrowth of exotic grass species while the native grasses were a lot quicker in regenerating or sprouting.

Again based on the average percentages of cover as contained in Table 5, it would mean that the bare ground and cover provided by litter accounts for somewhere between 40 to 50 percent of the area within the various communities within each property.

A conclusion could be drawn based on this data that the various land management practices undertaken within the remnant vegetation within the four properties is resulting in similar outcomes in terms of groundcover and in terms of native grasses verses non-native grasses. However, additional data would need to be collected to validate this conclusion.

7.7 EVNT Flora

The Herbrecs data lists four plant species which occur or have been recorded within close proximity of the Study area.

***Desmodium macrocarpum* – Large-podded trefoil.**

This species is listed in Schedule 5 of the *Nature Conservation (Wildlife) Regulations* 2006 (NC(W)R) as Near Threatened. The plant is a small herbaceous plant which occurs in *Eucalyptus populnea* and *E. melanophloia* woodlands within the region.

Photo Plate 1 – *Desmodium macrocarpum* from MVS46 (4th July 2012)

A review of the current mapped records of *D. macrocarpum* on (http://bie.ala.org.au/species/Desmodium+macrocarpum) indicates it has been recorded from eucalyptus woodlands west of Cardwell in the vicinity of Forty Mile Scrub National Park and Undara Volcanic National Park west to Longreach and south to an area west of Wondai.

The Herbrecs database search has records this species from three locations within Glen Innes Station with Worley Parsons confirming these locations and recording the species from an additional two sites.

A search was also undertaken for this species as part of the field investigations for this report with the Queensland Herbarium Herbrecs and the Worley Parsons sites re-visited to confirm the presence of the species in those areas. In addition to those sites, general searches were also undertaken for the species while moving around the study area. The search effort was able to confirm the presence of *Desmodium macrocarpum* at all of the Queensland Herbarium and Worley Parsons sites with the exception of the Worley Parsons location #2.

In addition to those sites a number of additional records were also made of *D. macrocarpum* at other locations within Glen Innes and one within Monklands (see Table 6 below and Figure 10).

Table 6 – Location of *Desmodium Macrocarpum*

Site No.	Location	No.	Notes
Dm01	55 K 447466 7406750	1	Record outside of the secondary survey transect at MVS16 within Monklands Station. This area is not within the mine footprint.
Dm02	55k 439691 7410317	3	Specimens were located at this site, MVS46 in Glen Innes Station. Specimens were located in and around *Triodia pungens*. This area is within the open cut mine footprint.
Dm03	55k 438779 7410175	19	Coincides with the Herbrecs record 748023 and Worley Parsons location #3 within Glen Innes Station, with all specimens located in an area approximately 30x30 metres. All specimens apart from one were located on the southern shaded side of *Eucalyptus melanophloia* or *Acacia salicina* with *Carissa ovata* also present. This site is within the open cut mine footprint.

Site No.	Location	No.	Notes
Dm04	55K 433111 7407358	1	Specimen was located close to MVS52 and in the location of the Herbrecs record 748024. This area is within the open cut mine footprint.
Dm05	55K 432882 7407008	2	Specimens were located on the side of the fence track within Glen Innes Station. The location is very exposed and potentially subject to disturbance from track maintenance and vehicle movements along the track. This area is within the underground mine footprint.
Dm06	55K 433953 7405482	1	Specimen was located at the location of MVS53. This site is approximately 500 metres north-east from the Queensland herbarium record 778083 and Worley Parsons location 1. A search was undertaken of the Worley Parson's site however no specimens were located. This area is within the underground mine footprint.
Dm07	55K 438312 7407253	12	Specimens were located at this site which coincides with Worley Parsons location 4 where they recorded 2 specimens. The specimens were located in two areas at this site, one under a stand of *Archidendropsis basaltica* and the other was on the edge of the track along the fence. This area is within the underground mine footprint.
Dm08	55K 434515 7407880	5	Specimens were located at this location. An area approximately 40x30 metres was searched. Specimens were located in both shaded and open areas and those in the open areas were associated with *Triodia pungens*. This area is within the underground mine footprint.
Dm09	55K 434495 7408046	5	Specimens were recorded at this location in an open area with partial shade within *Eucalyptus melanophloia* woodland with a mix of *Pennisetum ciliare, Themeda triandra* and *Triodia pungens* groundcover. This area is within the underground mine footprint.
Dm10	55k 434477 7408093	10	Specimens were recorded at this location. The site was within *Eucalyptus melanophloia* woodland with a mixed grassy groundcover with *Pennisetum ciliare, Themeda triandra* and *Triodia pungens*. This area is within the underground mine footprint.
Dm11	55K 434476 7408223	3	Specimens were recorded at this location. These specimens were in association with *Carissa ovata* and *Archidendropsis basaltica* and *Triodia pungens*. This area is within the underground mine footprint.
Dm12	55K 440077 7406486	1	Specimen was located at this location. The site is just of the eastern side of a vehicle track in an area dominated by *Eucalyptus populnea* woodland with *Carissa ovata* and *Triodia pungens.*

Site No.	Location	No.	Notes
			This area is within the open cut mine footprint.
Dm13	55K 439435 7406028	5	Specimens were recorded at this location on the western side of the vehicle track. All specimens were within *Triodia pungens* grassland. Inspection of adjacent *Themeda triandra* and *Aristida spp.* areas failed to locate any specimens. This area is within the open cut mine footprint.
Dm14	55K 439402 7406014	25	Specimens were recorded at this location with the majority of specimens growing under *Petalostigma pubescens* or within close proximity of *P. pubescens* trees. This area is within the open cut mine footprint.
Dm15	55K 439401 7406034	1	Specimen was recorded on the western side of the vehicle track under a stand of *Archidendropsis basaltica*. This area is within the open cut mine footprint.
Dm16	55K 439412 7405978	7	Specimens were recorded at this location all growing within *Triodia pungens* areas. This area is within the open cut mine footprint.
Dm17	55K 439219 7405776	17	Specimens were located at this location in two areas on either side of the vehicle track. All specimens were growing in association with *Carissa ovata* and *Triodia pungens*. This area is within the open cut mine footprint.
Dm18	55k 439826 7407469	10	Specimens were recorded at this location on the southern side of the main access track into Glen Innes Station. All specimens were growing in *Triodia pungens*. This area is within the open cut mine footprint.
Dm19	55K 440015 7407513	7	Specimens were recorded at this location on the southern side of the main access track into Glen Innes Station. This area is within the open cut mine footprint.
Total		**135**	

It has been reported that *Desmodium macrocarpum* is often associated with *Carissa ovata* and *Grewia retusifolia*; however within Glen Innes Station the association would appear to be primarily with *Triodia pungens* and secondarily with *Carissa ovata* and *Archidendropsis basaltica*.

Of the nineteen locations 11 of these are located within the open cut mine footprint and eight within the underground mine footprint and the single record within Monklands Station at site Dm01 (see Figure 10, Appendix I), is outside both of the mine footprints.

Based on the numbers of *Desmodium macrocarpum* located within Glen Innes and Monklands Station, 95 specimens will be directly impacted by the open cut mining operations and 39 which may potentially be impacted upon within the subsidence area.

However it is likely that the numbers are greater than the number recorded from the field investigations. As review of the three vegetation surveys undertaken in recent times i.e. in the last 5 years by Worley Parsons (2009), Unidel (2010) and RF&A (2012) as total number of

Desmodium macrocarpum recorded within Glen Innes Station is provided in Table 7 below.

Table 7 – Occurrences of *Desmodium macrocarpum* per survey effort – Glen Innes Station

Worley Parson sites (2009)	Specimens recorded	Unidel sites (2010)	Specimens recorded	RF&A sites (2012)	Specimens recorded
V1	p	BB01	p	MVS42	p
V2	p	BB02	p	MVS43	p
V3	p	BB03	p	MVS44	p
V4	p	BB05	p	MVS45	p
V5	p	BB14	n	MVS46	3
V6	p	BB15	n	MVS47	p
V7	p	BB16	p	MVS48	n
V8	p	BB17	p	MVS49	n
V9	<5	BB31	n	MVS50	n
V10	10-15			MVS52	1
V11	2			MVS53	p
V12	p			MVS54	p
V13	n			MVS55	p
V14	p			MVS56	P (23)
V15	20-30			MVS57	n
V16	1			MVS58	p
V17	p			MVS59	n
V18	n			MVS60	P (1)
				MVS61	n
				MVS62	n

Notes: - p - Potential to occur; n – no potential to occur, (x) – Recorded within close proximity

Table 7 represents the numbers of *Desmodium macrocarpum* recorded in standard secondary, tertiary and/or quaternary surveys throughout Glen Innes Station and where the recorders indicated the likelihood of *D. macrocarpum* occurring within similar vegetation around the survey site.

Again the data does not provide any reliable basis to make any predictions as to the probable presence or absence of *Desmodium macrocarpum* within Glen Innes Station.

The mapping provided by the Atlas of Living Australia[1] indicates the species is disjunct within its range with four recorded sites within the Jericho Sub-region with an additional 4 records within other sub regions of the Desert Uplands Bioregion. This compares with 9 within the Northern Brigalow Belt Bioregion.

It was noted the Hancock Prospecting Pty Ltd Alpha Coal Project Environmental Impact Statement Flora and Fauna Assessment Report[2] did not record any *Desmodium macrocarpum* despite there being substantial areas of 10.5.5 and 10.5.12 within their study area.

Without having the particular site data for the other records no comparisons can be made with respect to actual numbers, however the designation of this species as Near Threatened instead of Vulnerable or Endangered indicates

[1] http://spatial.ala.org.au/?q=lsid:%22urn:lsid:biodiversity.org.au:apni.taxon:134304%22%20AND%20geospatial_kosher:true#

[2] Aust/Asian Resource Consultants Pty Ltd (AARC). 2010.Flora and Fauna Assessment.

that its distribution and range and habitats are not as restricted as other significant species.

While the total number of specimens located in the last survey amounted to 135 specimens, it is likely that there may be additional specimens within Glen Innes Station and potentially within Lambton Meadows and Monklands Stations as well. It could be concluded however, given the level of survey work undertaken within the study area in the recent past, the total numbers of *Desmodium macrocarpum* within the area may amount to less than 500 individual specimens.

It is important to ensure that all specimens and others should they be located, are dealt with through the Rehabilitation Plan and all specimens are re-located to suitable habitat to ensure their presence within the Sub-region and Bioregion.

***Micromyrtus rotundifolia* – Round-leafed heath-myrtle.**

This species is listed in Schedule 3 of the *Nature Conservation (Wildlife) Regulations* 2006 as Vulnerable. The plant is a low shrub species which has been recorded to the north-west of the study area.

The surveys of two areas containing *Corymbia leichhardtii* and *E ammophila* in association with *Melaleuca tamariscina and C. setosa*, one in the western part of Lambton Meadows (sites MVS38) and in the north-western corner of Glen Innes Station (site MVS49) a number of *Micromyrtus spp*. were observed. It is therefore possible that *Micromyrtus rotundifolia* may occur within the mine footprint within areas identified in the 2012 surveys as MVS38 and MVS49. Both sites are located within the underground mine footprint and may be subjected to change as a result of a drawdown of groundwater.

***Acacia spania* - Western rosewood.**

This species is a tree to 15 metres with an ironbark type bark. One specimen is listed in the Herbrecs from the southern part of Cavendish Station near the Station house.

The location where the *Acacia spania* was recorded (record 769467) has yet to be assessed to confirm whether the specimen is still at that location.

No specimens were recorded within any other part of the study area surveyed to date.

Leptosema chapmanii

A leafless plant to 0.3 m tall, densely branching from the stem[3].

The plant has been recorded in areas around the mine site area to the south-west near the town of Jericho and to the north closer to Cudmore Resource Park.

While the vegetation and habitat where the plant has been recorded is not too dissimilar from that within the mine site, given the level of historic vegetation investigations within the area it considered unlikely the species occurs within the mine site area.

No specimens were recorded within any part of the study area surveyed to date.

7.8 Pest Plants and Environmental weeds

Apart from the suite of introduced pasture grasses such a *Pennisetum ciliare* and *Melinis repens* etc. the incidence of pest plants and environmental weeds over the mine site vegetation communities including the remnant and non-remnant areas is considered to be relatively low.

Pennisetum ciliare is by far the greatest invader of natural vegetation communities through the mine site. The pulling of standing vegetation and the distribution of Buffel grass as a principal pasture grass has permitted this species to gain a permanent foothold in many of the vegetation communities throughout the mine site area.

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[3] http://www.tropicalgrasslands.asn.au/Legumes%20of%20Qld/Contents%20Legumes%20book/Genera/Leptosema.pdf

Species such as *Senna obtusifolia* (Arsenic weed) is primarily restricted to disturbed areas within Lambton Meadows. It would appear other landholders actively manage this species within their properties.

A number of exotic pears (*Opuntia spp*.) were also noted as occurring within all the properties within the mine site area.

A range of exotic improved pasture grasses and herbaceous species such as *Stylosanthes scabra* and *Side spp.* also occur within the area, however these are in relatively low numbers throughout the mining site area.

7.9 BioCondition

Comments on the Environmental Impact Statement by the State included comments on the lack of BioCondition assessment of various vegetation communities within the mine site area.

Part of the secondary survey work undertaken for the Supplementary Environmental Impact Statement was to also undertake a number of BioCondition surveys in accordance with BioCondition Assessment Manual v2.1 (March 2011) using the proforma contained in the manual.

Based on the secondary level survey 33 BioCondition surveys were also undertaken (see Figure 9, Appendix I and data sheets in Appendix II).

It is important to note that there are no benchmark BioCondition sites to compare with the data collected at the various vegetation communities within the Study area and as such no specific comments can be made as to the comparative condition of any of these sites.

However some general comments can be made from the data collected: -

- There is little difference in terms of BioCondition status between woodlands within Saltbush, Monklands and Lambton Meadows when compared to Glen Innes.
- Many sites contained a number of coarse woody debris on the ground, with the exception of areas which had been burnt with a high intensity fire or had been cleared in the recent past.
- A number of trees within the *Eucalyptus populnea* and *E. camaldulensis* communities contained tree hollows. These were not as prevalent within *E. melanophloia* woodlands.

7.10 Wetlands

The State Government has adopted a classification system for describing wetlands within the State (DERM, 2011), which includes: -

- Lacustrine – lakes
- Palustrine - swamps
- Riverine – waterways
- Estuarine – tidal
- Marine – seas, and
- Subterranean – underground storages.

The three wetlands mapped within the Study area are (see figure 12, Appendix I):

- lacustrine
- palustrine and
- riverine

In addition a number of the Palustrine wetlands also have a wetland buffer or trigger area which would require an entity undertaking any activity within that area to refer the application to the regulatory authority.

These wetlands have been mapped by the State and these are identified in Figure 12 (Appendix I). A number of the lacustrine wetlands mapped by the State include farm dams which are either on-stream or off-stream storages.

A number of notable palustrine wetlands are located to the south of the mine footprint within Saltbush Station and Eureka Station to the south of Saltbush.

Part wetland Regional Ecosystems are also mapped to the north of the open cut mine area within Hobartville Station with a small area extending into the northern portion of Monklands

Station. These wetland regional ecosystems will not be directly impacted upon by the mining operations.

The State's Regional Ecosystem mapping identifies areas of 10.3.4b which are said to contain palustrine wetlands in swales. The survey data does not support that this regional ecosystem exists within the study area.

In addition to these mapped wetlands there is a large lacustrine wetland located on an old ox-bow section of Lagoon Creek within Monklands Station west of Monklands Road (see Figure 12). This wetland is a permanent body of water bounded by *Eucalyptus camaldulensis*.

None of the Regional Ecosystems mapped over the study area are considered to be wetland regional ecosystems, however as this report proposes that areas of 10.3.3/10.3.27 within Lagoon Creek and Beta Creek should be mapped as 10.3.14a, as this RE is identified as a riverine wetland or fringing riverine wetland.

This area is within the mining operations area and as such will be removed as a result of those operations.

7.11 Groundwater dependant ecosystems

While not considered by the State as a wetland, there are vegetation communities containing *Melaleuca tamariscina* which could be considered to be groundwater dependant ecosystems.

Melaleuca tamariscina is an indicative species within 10.5.1g and based on the existing Regional Ecosystem mapping and the data collected during the field survey (see MVS12, MVS38 and MVS49), it would appear this species and potentially the regional ecosystem occurs in three areas within the mines site.

These sites are located: -

- in the western part of Lambton Meadows;
- in the north-western corner of Glen Innes Station. This area is currently mapped as non-remnant; and
- in the eastern part of Monklands Station.

It is noted that the area in Monklands Station is outside of the mine operations footprint, while the two others areas are within the subsidence area over the underground component of the mine.

It is therefore likely that the drawdown of groundwater would have an impact on this community and potentially it would no longer be suitable for many of those species which occur within the community.

8 Impacts

8.1 Construction and development

8.1.1 Remnant Vegetation

The impacts to the vegetation and flora from the mine site can be generally classed in two types (see figure 11):-

- Complete loss of vegetation, and
- Potential loss of vegetation.

The complete removal impacts relate to the open cut mine footprint as well as the associated infrastructure to be established to support the mine operations.

The complete removal also entails the removal of vegetation to divert Lagoon Creek away from the mine infrastructure as well as Malcolm Creek and the potential removal of vegetation associated with the management of the minor waterways which traverse the mine footprint.

These impacts will occur over the various stages of the mining operations and will include: -

- The preparation for mining operations will include: -
  - The actual open cut mine area. It is noted this will be undertaken in stages with the initial stages commencing in the northern part of the mine footprint area and progressing to the south and west over time
  - The areas identified for the construction of sediment dams and other water storages
  - The re-alignment of various waterways which traverse the mine footprint
  - The location of the mine camp in the eastern portion of the mining Lease Application Area.
- The removal of vegetation will also result in the loss of 92 recorded *Desmodium macrocarpum* specimens.
- It is likely that the loss of a significant portion of vegetation currently included within the Bimblebox Nature Refuge (Glen Innes Station) will result in the removal of the Nature Refuge status of that property.

The "potential loss of vegetation" refers to the vegetation over the underground mining areas. As there will be some subsidence and potentially a substantial draw down of ground water, these two factors may cause a loss of vegetation within and immediately adjacent to the underground subsidence area.

For the purpose of estimating the loss of vegetation it is assumed that the vegetation within the subsidence area will change to such a degree that it should be considered to be a total loss and as such the combined values for vegetation loss within the whole mine site is provided in Table 8 below.

The values provided in the EIS (Table 9, Unidel, 2010) for regional ecosystems that will be impacted upon were re-calculated and the figures contained in Table 8 below contains figures for the open cut mine, the subsidence area and the total for the mining area with percentage loss for the Desert Uplands Bioregion.

It is noted the original description of the Desert Uplands Bioregion (Sattler and Williams, 1999) did not contain the Jericho Sub-region. However, in the Version 7 of the Interim Biogeographic Regionalisation of Australia (IBRA)[4] the DEU04 was mapped. Under the Queensland Bioregion descriptions (after Sattler and Williams, 1999) DEU 04 was named the Jericho Subregion of the Desert Uplands Bioregion.

Additionally, the initial Terrestrial Flora and Fauna Report (Unidel 2010) provide values and comparisons for the loss of vegetation when compared to the whole Desert Uplands Bioregion. Table 4 seeks to provide additional information and compare the loss of remnant vegetation in terms of total areas of mapped polygons when compared to those particular mosaic polygons within the Jericho Sub-region.

[4] http://www.environment.gov.au/parks/nrs/science/bioregion-framework/ibra/index.html

Table 8 – Percentage area of RE's to be impacted upon as compared with the RE's in the Desert Uplands Bioregion.

Re Label	Total Open Cut (ha)	Total Subsidence (ha)	% Cleared DU	Desert Uplands Bioregion (ha)
10.10.1	0	170.536	0.186%	91,739.28
10.10.3	0	11.665	0.525%	2,220.91
10.10.4	0	443.596	0.629%	70,530.11
10.10.5	0	32.304	1.399%	2,309.72
10.10.7	0	16.152	0.684%	2,362.80
10.3.12	74.369	0	0.226%	32,853.64
10.3.14	0	17.825	0.012%	144,101.89
10.3.27	1,173.61	983.668	1.951%	110,571.79
10.3.28	127.978	469.53	0.098%	610,798.04
10.3.3	37.1845	30.641	0.214%	31,742.12
10.4.3	35.791	3.23	0.216%	18,028.79
10.5.1	0	999.669	0.113%	882,476.38
10.5.10	0	250.137	0.633%	39,515.92
10.5.12	342.949	884.824	0.867%	141,547.88
10.5.4	0	6.027	0.008%	79,210.53
10.5.5	3,002.56	8,014.54	1.172%	940,367.59
10.7.3	67.504	189.767	0.256%	100,560.18
10.7.5	8.438	108.575	0.442%	26,458.19
11.5.5	7.109	0	0.308%	2,309.72
Totals	4,877.49	12,632.69	0.526%	3,329,705.48

Note: - *the above figures are based on the areas for individual regional ecosystems in accordance with the Version 6 REDD.*

Based on the above values the total area of remnant vegetation to be cleared as a result of the operation of the mine would be 17,510.18 hectares or 0.526% of the area of remnant vegetation within Desert Uplands Bioregion.

8.1.2 Wetlands

Figure 12 identifies the mapped wetlands within and around the study area. A number of lacustrine and riverine and palustrine wetlands will be impacted upon as a result of the mining operations.

The impacts will be direct for all wetlands within the mining footprint due to the removal of the wetland or as a result of the subsidence activity over the underground component of the mine.

Other wetland areas outside of the mine footprint will receive negligible impacts as there will be minimal impacts on surface and groundwater flows coming into these wetlands from upstream areas around the mine (see the Mine Site Flooding and Creek diversions Report, Energy, 2012).

Table 9 below identifies the various riverine, lacustrine and palustrine wetlands as contained in the States wetlands mapping.

The proposed works will require an operational works application under *SPA* (2009) which is to respond to the Relevant Code in SPP4/11 Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments.

Table 9 – Areas of wetland impacted by the mine operations

Impact Area	Area (Ha)	Wetland Type
Clearing Footprint		
Clearing Footprint	2.38	Lacustrine Waterbodies
Clearing Footprint	1.44	
Clearing Footprint	1.13	
Clearing Footprint	1.81	
Clearing Footprint	1.35	
Clearing Footprint	2.81	
Clearing Footprint	1.56	
Clearing Footprint	2.37	
Clearing Footprint	23.14	
Lacustrine Waterbodies Total	**37.99**	
Clearing Footprint	2.69	Palustrine Waterbodies
Clearing Footprint	2.88	
Clearing Footprint	1.69	
Clearing Footprint	2.12	
Clearing Footprint	2.44	
Clearing Footprint	2.81	
Palustrine Waterbodies Total	**14.63**	
	52.62 ha	
Subsidence Footprint		
Subsidence Footprint	1.38	Lacustrine Waterbodies
Subsidence Footprint	1.37	
Subsidence Footprint	1.18	
Subsidence Footprint	5.63	
Subsidence Footprint	2.38	
Subsidence Footprint	1.19	
Subsidence Footprint	4.07	
Subsidence Footprint	1.27	
Lacustrine Waterbodies Total	**18.47**	**Ha**
Subsidence Footprint	0.34	Riverine Waterbodies
Riverine Waterbodies Total	**0.34**	**Ha**
	18.81 ha	

8.1.3 Groundwater dependant ecosystems

As noted above two areas which have been identified as RE10.5.1g have been located within the mine subsidence area and it is likely that the drawdown of groundwater will have an adverse impact on these communities potentially resulting in the loss of many of the groundwater dependant species.

8.1.4 Pest plants and Environmental Weeds

Pest plants are considered to be those plant species listed in the Schedule 2 of the *Land Protection (Pests and Stock Route Management) Regulations* 2003 as either Class 1, 2 or 3 Pests. Environmental weeds are those species which also have a significant impact on environmental and biodiversity values. An example of an environmental weed is *Pennisetum ciliare* (Buffel grass). This species is a pasture grass which has been imported into Queensland, however due to its strength in prospering within a wide range of environmental situations, it has become a significant environmental weed by displacing an array of native grass and herbaceous species from their natural habitats.

The whole of the mine site and surrounding area has a relatively low occurrence of pest plant species and environmental weeds, with the exception of *Pennisetum ciliare*, however, without the appropriate environmental and land management controls the influx of plant, equipment and vehicles into the area is likely to introduce additional pest plants or environmental weeds.

Pest plant species and other environmental weeds would colonise disturbed areas before invading partially disturbed or degraded areas outside of the mine footprint.

The area above the underground component of the mine may be susceptible to pest plant and environmental weed invasion if the existing vegetation, remnant, grassland and regrowth, is disturbed by the subsidence and ground water draw-down to result in a significant change to the existing native groundcover.

8.2 Mining Operations

Other impacts to vegetation may occur during the mining operations and this may result from a number of operational factors, including: -

- Incidental clearing of vegetation. It is possible that remnant vegetation may be cleared either accidentally or in un-planned events. While the mining footprint has buffers around the footprint an incident may occur where remnant vegetation may be required to be removed for a range of reasons.
- Coal mining and transport operations will result in the creation of coal dust particles to be emitted into the surrounding environment. This coal dust may have an effect on the vitality of vegetation around the mine site. While there is little knowledge about the impacts of coal dust on vegetation, it is possible that, where it falls onto remnant and regrowth vegetation, sensitive plant species in those areas may be affected.
- As surrounding land holders will continue to use fire as a pasture management tool it is likely that controlled and uncontrolled fire may burn through the mining lease area with a resultant impact on vegetation. Despite all the vegetation communities around the mine site requiring fire from time to time to ensure continual regeneration, an increase in the fire frequency may result in the loss of fire sensitive species which are likely to be replaced by fire tolerant species, decreasing biodiversity within these communities.
- Depending on the land management practices of areas outside the mine footprint i.e. increase in the grazing intensity, this may have an impact on the remnant vegetation within those areas. Other disturbances may also allow for undisturbed areas to be invaded by *Pennisetum ciliare*.

9 Mitigation measures

9.1 Vegetation

The following mitigation measures have been developed under the following assumptions: -

- All vegetation within the open cut mine area as well as other operational and infrastructure areas will be removed;
- All vegetation within the underground component of the mine will be impacted to a degree that the vegetation will change and that change will be permanent
- All vegetation within and along the reaches of Lagoon and Saltbush Creeks as well as other minor waterways within the mine footprint will be removed to permit the re-alignment of those waterways.

9.1.1 Planning

1. The following management plans should be prepared to provide the basis for ongoing management of vegetation within and around lands to be managed by Waratah Coal: -
   a. A Vegetation Management Plan to guide the tree clearing operations as well as transplanting of EVNT species where appropriate and the disposal of cleared vegetation from the site.

      The disposal of vegetation may require the implementation of actions contained in the fire management plan relating to obtaining permit to burn from the Local Fire Warden or First Officer from the local Rural Fire Brigade as well as other procedures to ensure the fire is properly managed.

      The vegetation management plan should also contain a set of actions which sets up a vegetation monitoring program within and around the mine site and operational areas including over the underground mine.

      The monitoring program will need good base line data which will inform the monitoring program over the ensuing years.

      The VMP should also have a section that deals the management of vegetation within which EVNT plant species have been recorded.

   b. A Rehabilitation Management Plan to guide the rehabilitation and restoration of disturbed areas within and around the mining operations.

      The creek diversions will have a specific riparian revegetation management plan which will specify the performance requirements and process for revegetation of the affected sections of those diverted waterways.

      The rehabilitation management plan should also ensure it has appropriate measures to facilitate the transplanting/relocation of all *Desmodium macrocarpum* that are located within the open cut mine footprint.

      The rehabilitation management plan should also deal with the rehabilitation and restoration issues which will come with the mine closure, however at this stage these specifications may only be high order objectives with the monitoring program and assessments toward the latter half of the mine's life providing the details about mine closure rehabilitation of the landscape.

   c. A Fire Management Plan which will seek to provide the basis for the management of fuels and bushfire hazards within the lands to be managed by Waratah Coal. The plan will also outline the location and type of fire trail and firebreaks and controlled burning plan for remnant and regrowth vegetation to ensure both ecological and hazard mitigation outcomes.
   d. A Weeds Management Plan which will provide a set of management actions to ensure pest plants and environmental weeds are appropriately managed within

the land managed by Waratah Coal, from being exported from these lands and new weeds from coming into these lands.

9.1.2 Mine site and Operational Areas

1. Ensure all actions and specification contained in the VMP are implemented in accordance with the VMP and, if required, the Environmental Management Plan covering the site and all operations.
2. All areas to be cleared should be located on the ground and uploaded onto GPS units for all tree clearing operators to use when undertaking any tree clearing activities.
3. All cleared vegetation should be disposed of in accordance with the VMP.
4. If deemed appropriate all vegetation outside of the mine and operational area and camp site and other infrastructure should be fenced to restrict un-necessary access into those areas and if they are being used for grazing purposes then to separate animals from mining operations.
5. All disturbed areas are to be rehabilitated/revegetated in accordance with the Rehabilitation Management Plan.

9.1.3 Camp site

1. The current location of the camp site is in an area of remnant vegetation. Explore the opportunity to relocate the workers camp site to the south near the current boundary between Saltbush and Monklands in an area of non-remnant.
2. Where possible, native trees should be maintained within and around the camp site to improve visual amenity and as a physical buffer from mining operations.
3. Firebreaks as specified by the fire management plan should be established and maintained around the camp site. The location of firebreaks should take into consideration the retention of trees and shrubs for maintenance of visual amenity and buffering purposes.
4. All litter and other waste/rubbish should be regularly monitored and removed from all areas of native vegetation including any landscaped areas around the camp site.

9.1.4 Human Resources

1. All Waratah Coal staff, contractors and other visitors to the mine site are to be made aware of the relevant parts of all of the management plans which relate to vegetation, flora, and weeds etc. as part of their site inductions.
2. It may be appropriate for some permanent staff that have experience in the management of vegetation fires etc. to be part of a Mine response team to assist local Rural Brigades and property owners in the management of controlled fire and wildfire which may threaten the mine site and other areas where people and EVNT plant species are located.

9.2 Wetlands

1. Table 9 identifies the types and areas of wetlands which will be removed as a consequence of the mine development.
2. With regard to riverine wetlands:
   a. All diverted drainage lines should be designed to ensure the bed and banks reflect a natural waterway and that riparian vegetation can be established within these drainage lines where they will not result in adverse flooding from Q50 floods levels.
   b. Where possible natural features such as sandy and stony bars/riffles, billabongs and other nature features should be designed into the diverted drainage lines.
3. Where topographically possible lacustrine wetlands are be established downstream of the mine area where they will be no adverse impacts from mining operations. Additionally, it may be possible to establish lacustrine wetlands in degraded sections of Tallarenha, Beta and Saltbush Creeks to offset the loss of those wetland types within the mine footprint.
4. Surface and groundwater monitoring should be undertaken in proximity of the series of palustrine wetlands to the south of the mine footprint to identify any adverse impacts to those wetlands over time.
5. With regard to palustrine wetlands, there are opportunities to off-set the loss of these wetlands by adding to or replicating palustrine wetlands at existing locations within the mine lease area. A number occur

within Saltbush, Eureka, Corntop and Oakridge Stations.

9.3 Significant Flora species

1. Prior to the commencement of tree clearing operations an extensive ground survey should be undertaken within all open cut mine areas to identify the location of any new specimens of EVNT flora species.
2. All relocation and replanting actions are to comply with the relevant section in the Rehabilitation management plan.
3. All specimens should be transplanted into an area of similar vegetation and soil outside of any disturbance area. This area should be free from any grazing pressure and have no or a controllable level of *Pennisetum ciliare* in the groundcover.

9.4 Pest plant and Environmental Weeds

1. The management of pest plants and environmental weeds is to be undertaken in accordance with the Weeds Management Plan.
2. Goals in the weeds management plan should include: -
   a. The removal and control of all Class 1, 2 and 3 pest plants within the lands managed by Waratah Coal
   b. Ensure that all vehicles moving into Waratah Lands have been properly cleaned and have appropriate approvals form Authorised Pest Plant Management Officers in Alpha or Jericho.
   c. Manage all other environmental weeds to ensure there are no increase in their distribution and domination in areas where they were in low numbers.
   d. Presence and distribution of pest plants and environmental weeds should be included in all vegetation monitoring programs as specified in the vegetation management plan, rehabilitation management plan and weeds management plan.

10 Glossary of Terms

Term	Meaning
Bioregion	An ecologically and geographically defined area as defined by IRBA.
BOP	Biodiversity Offsets Policy
Buffer	An area of vegetation or space providing protection from disturbance such as dust, noisy, activity etc.
Clearing	includes cultivation of non-woody natural vegetation
Declared pest plan	A plant species identified as a Class 1, 2 or 3 pest in the *Land Protection (Pest and Stock Route Management) Act* 2002
Desert Uplands	Bioregion 10 within Queensland section of IBRA.
Drawdown	a lowering of the groundwater level caused by pumping
EIS	Environmental Impact Statement
Endangered Biodiversity Status	▪ less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss; or ▪ 10-30 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or ▪ it is a rare regional ecosystem subject to a threatening process.
Endangered VMA	remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares.
Environmental weed	A plant which does not naturally occur within a particular area. Can include an exotic or native plant to Australia which are used for other purposes such as pasture improvement
EPBC	*Environmental Protection and Biodiversity Conservation Act 1999*
EPC	Exploration Permit for Coal
EVNT	Relates to the status of wildlife under the *Nature Conservation Act* 1992. EVNT – Endangered, Vulnerable, Near Threatened.
Herbrecs	Qld Herbarium Plant Species Data base
IBRA	Interim Biogeographic Regionalisation for Australia
Lacustrine wetland	Refers to a lake or similar water body
Least Concern VMA	Remnant vegetation is over 30 per cent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares.
Mine Footprint	The area over which the mine will have an impact
Mining lease	Area of land where exploration has identified suitable resources for extraction and a lease arrangement has been entered into relevant land holders and authorities to investigate and commence extraction
Mitigation	Actions that can be taken or implemented to reduce the effect of actions or works
Moderate degradation	floristic and/or faunal diversity is greatly reduced but unlikely to biodiversity loss recover within the next 20 years even with the removal of threatening processes; or Soil surface is moderately degraded
MVS	Mine Vegetation Site
NCA	*Nature Conservation Act 1992*
No concern at present - Biodiversity Status	the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

Term	Meaning
Non-remnant vegetation	Is all vegetation not mapped and described as remnant vegetation
Of Concern – Biodiversity Status	10-30 per cent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss[4]
Of Concern VMA	Remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 30 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares.
Offsetting	Anything that balances or compensates for something else which is to be removed, cleared, degraded or otherwise destroyed. Offsetting can involve protecting a similar area from future impacts if that area can be subjected to similar impacts or re-establishing similar ecosystems in an area where those ecosystems do not currently exist.
Open cut	the area within which mining activities will be undertaken by removal of overburden to access the Coal seem
Palustrine wetland	Refer to a swamp or similar vegetated area which is retains water at or near ground level.
PMAV	Property Map of Assessable Vegetation
Pre-clearing	vegetation is defined as the vegetation present before clearing
PVMP	Property Vegetation Management Plan
QGEOP	Queensland Government Environmental Offsets Policy
Rare regional ecosystem	pre-clearing extent (1000 ha); or Patch size (100 ha and of limited total extent across its range)
Red earths	Massive, reddish sandy profiles with a gradual increase in clay content with depth over diffused to gradual boundary
Regrowth	A native vegetation community that has regrown after clearing, in which native species that would have naturally occurred within this vegetation community dominate but have not reached the height and canopy cover necessary to be regarded as remnant vegetation.
Rehabilitation	The process of environmental restoration to an area which has been degraded or lost its normal ecological processes.
Remnant vegetation	Remnant vegetation is vegetation that meets the following criteria: ▪ 50% of the predominant canopy cover that would exist if the vegetation community were undisturbed; and ▪ 70% of the height of the predominant canopy that would exist if the vegetation community were undisturbed; and ▪ composed of the same floristic species that would exist if the vegetation community were undisturbed.
Remnant woody vegetation	vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy. For further clarification of the definition and mapping methods of remnant vegetation see
Riverine wetland	Refers to a waterway
SEIS	Supplementary Environmental Impact Statement
Severe degradation and/or biodiversity loss	floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or

Term	Meaning
	Soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity, surface compaction, loss of organic matter or sheet erosion.
Study area	The area within which the field work for this report was undertaken
Threatening processes	those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing[5], weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.
VMA	*Vegetation Management Act 1999*
VOP	Vegetation Offsets Policy

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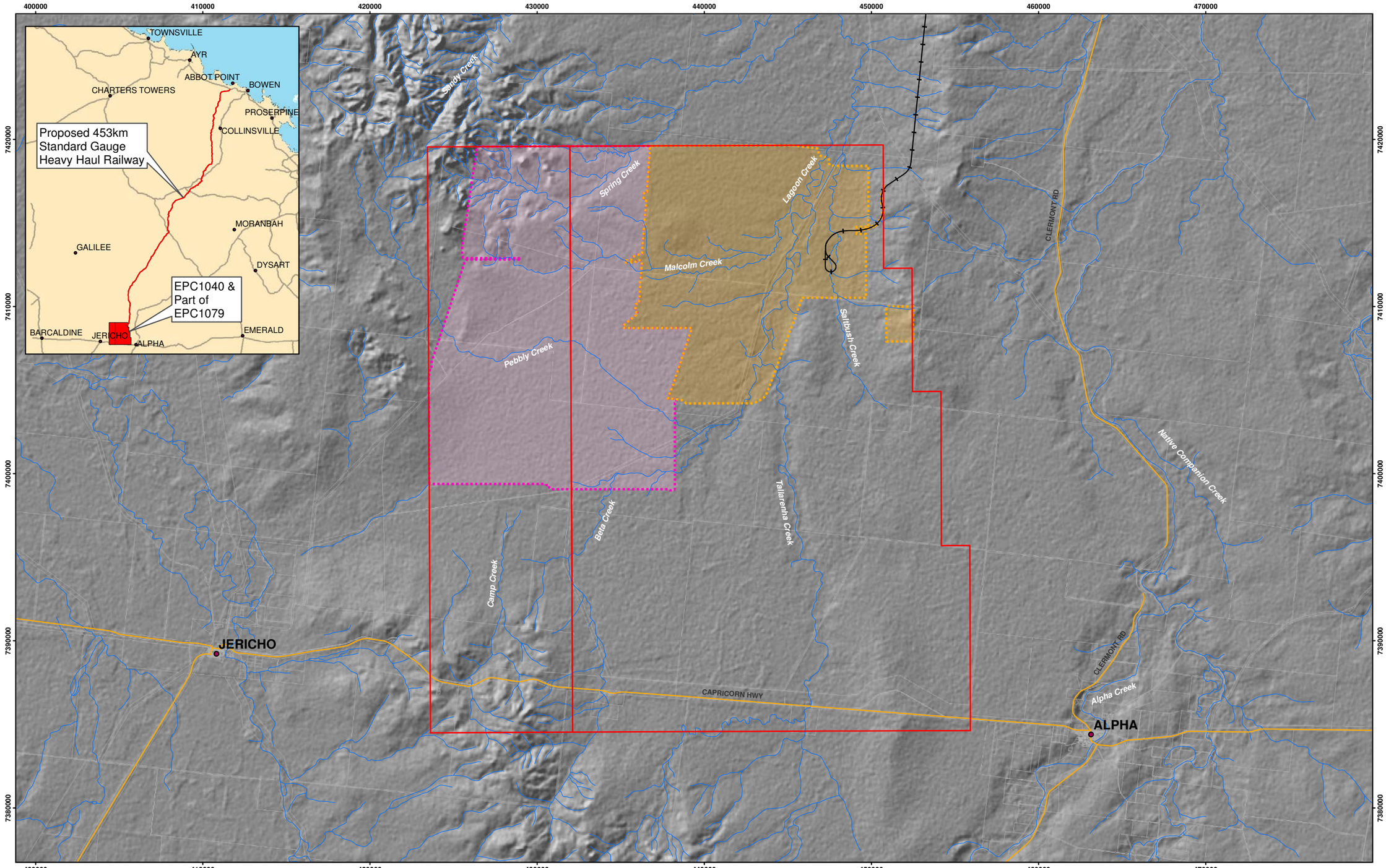
12 Appendices

12.1 Appendix I – Figures



GALILEE COAL PROJECT (Northern Export Facility)

Waratah Coal
THE NEW ENERGY IN COAL

Mineralogy House, Level 7, 380 Queen Street, Brisbane Qld 4000, Australia

Source:	Mine Detail, Proposed Railway Line: Waratah Coal Pty. Ltd. 2012 EPC Boundaries: State of Queensland (Department of Natural Resources and Mines) 2012 Arterial Roads: Geoscience Australia 2012 Watercourses: Vegetation Management Act Queensland Regrowth Other Watercourses Version 2.1 (DERM 2012) Background Image: Satellite Image Geoscience Australia 2005, Shaded relief: ESRI Data & amp; Maps 2006
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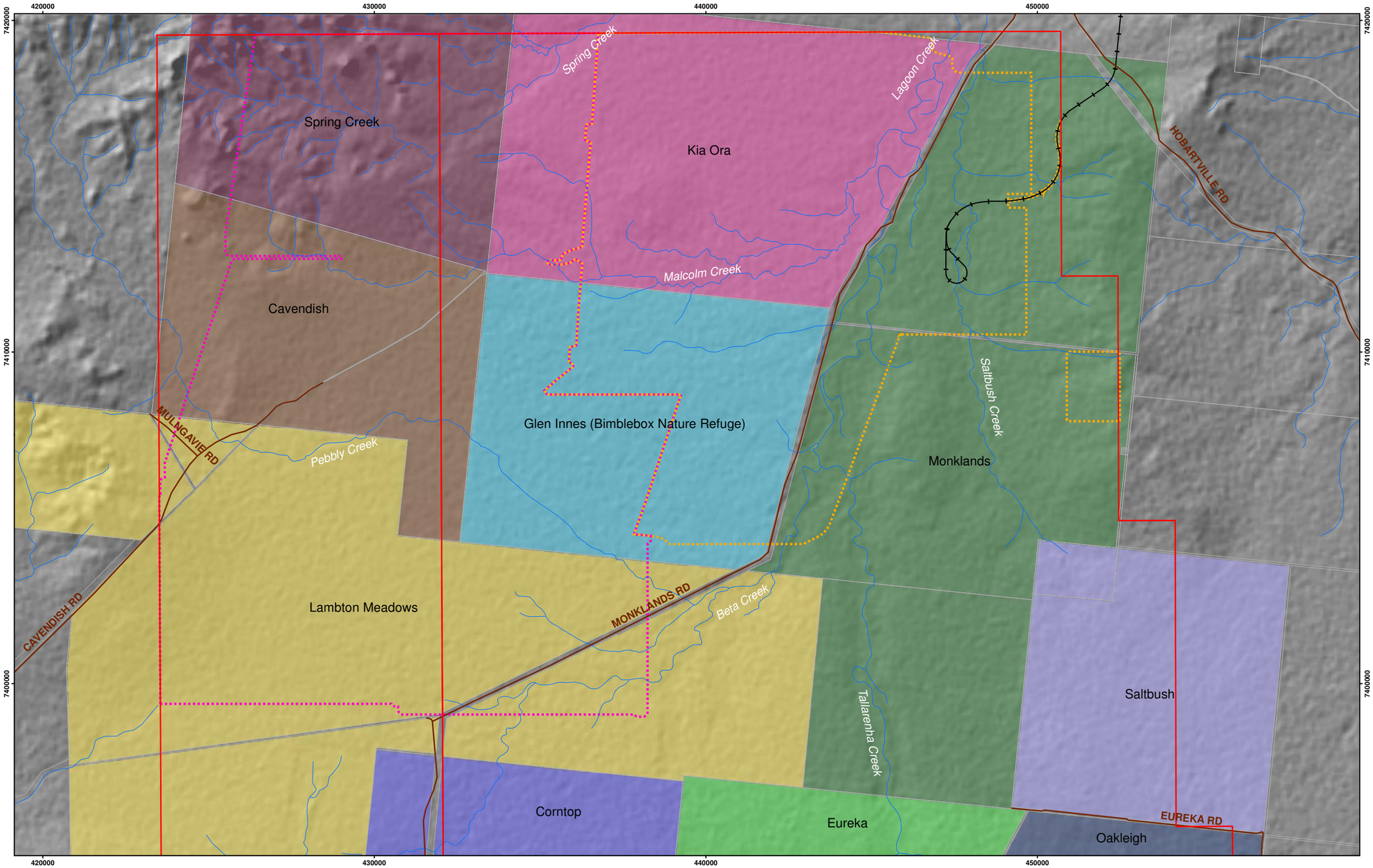
- EPC1040 & Part of EPC1079
- Cadastral Boundary
- Proposed Railway Line
- Arterial Road
- Watercourse
- Probable Clearing Footprint
- Subsidence Footprint

FIGURE 1:

MINE LOCATION



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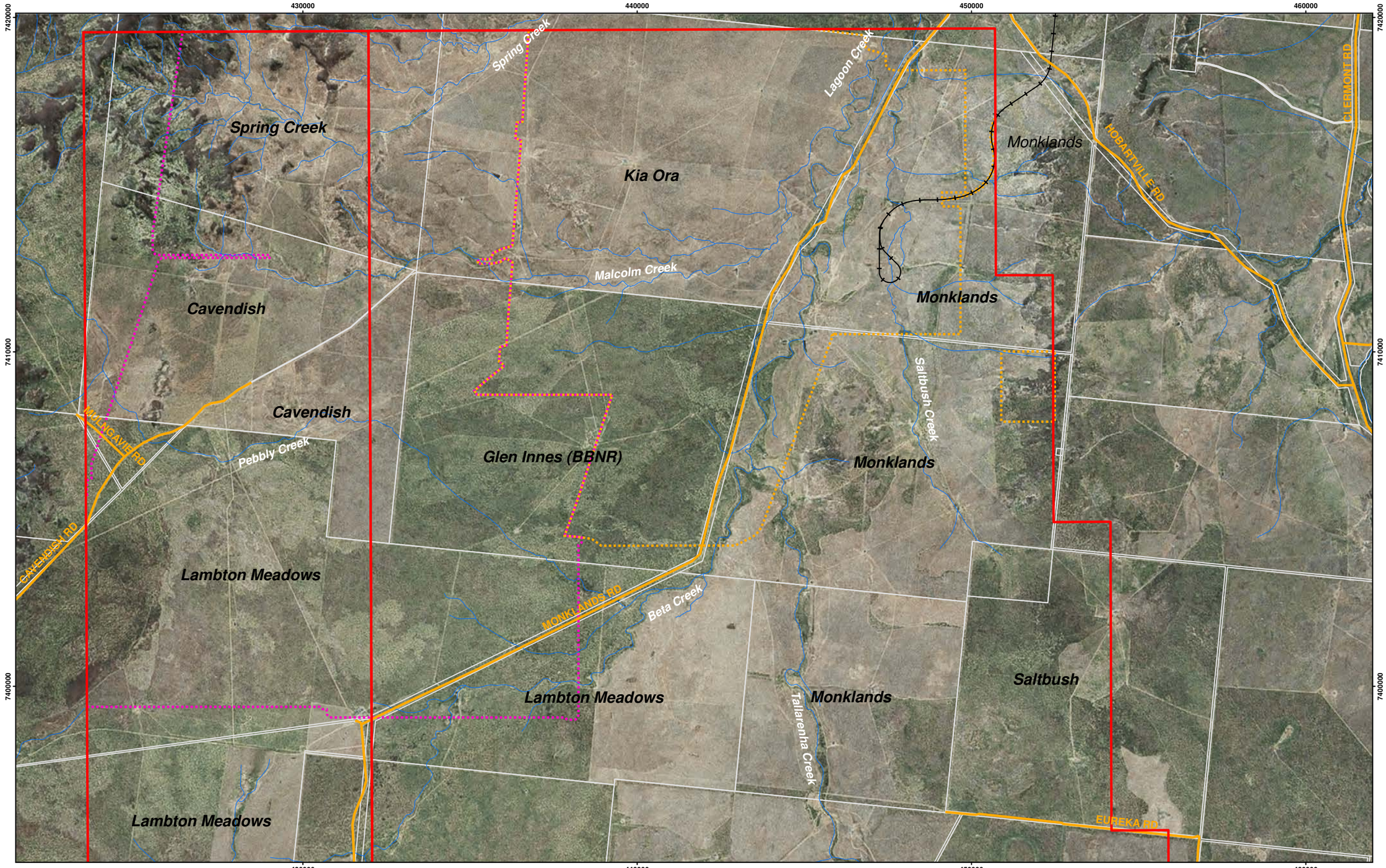
- EPC1040 & Part of EPC1079
- Proposed Railway Line
- Watercourse
- Cadastral Boundary
- Probable Clearing Footprint
- Subsidence Footprint

FIGURE 2:

MINE SITE



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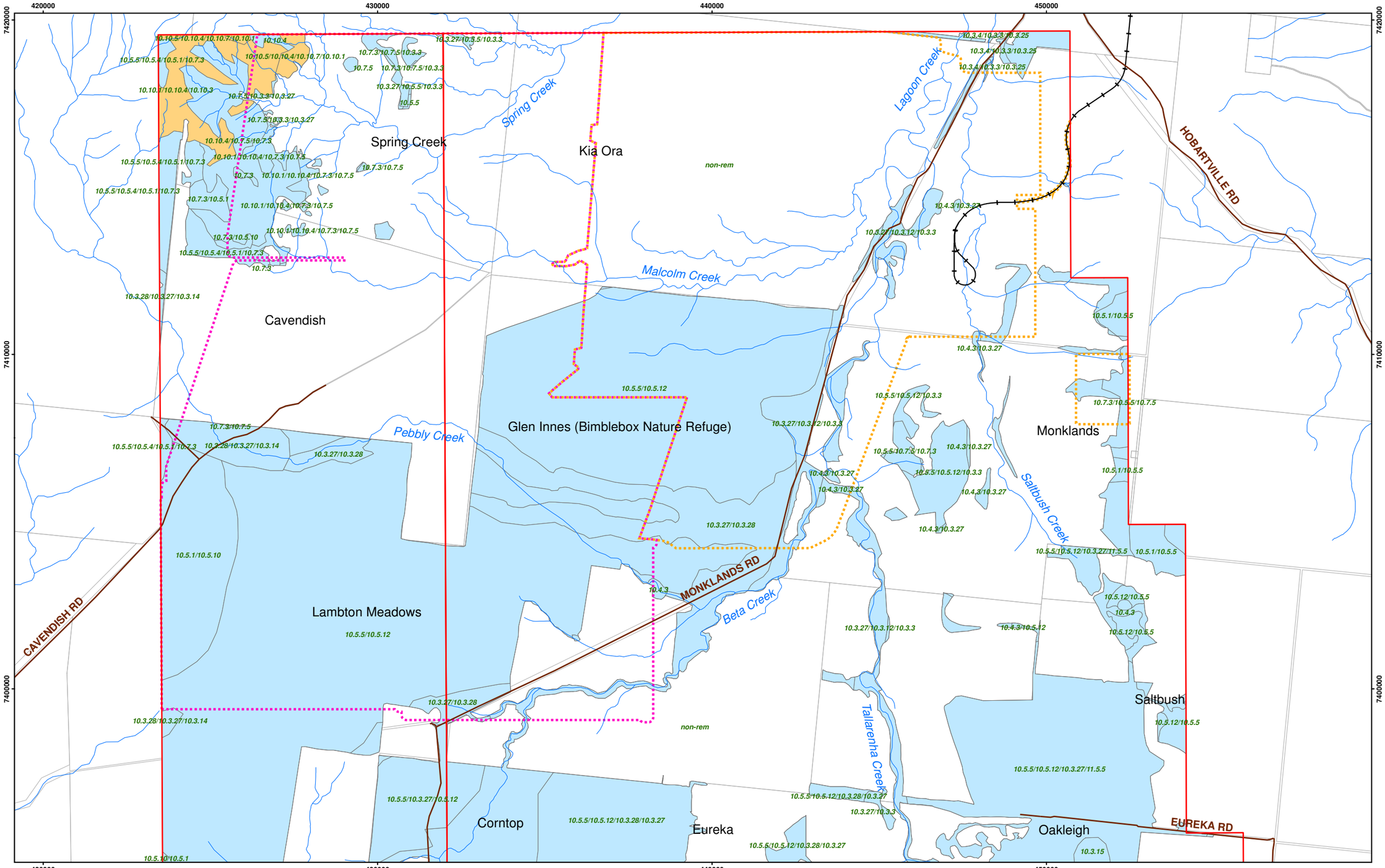
EPC1040 & Part of EPC1079
Proposed Railway Line
Watercourse
Probable Clearing Footprint
Subsidence Footprint
Cadastral Boundary

FIGURE 3:

AERIAL IMAGE



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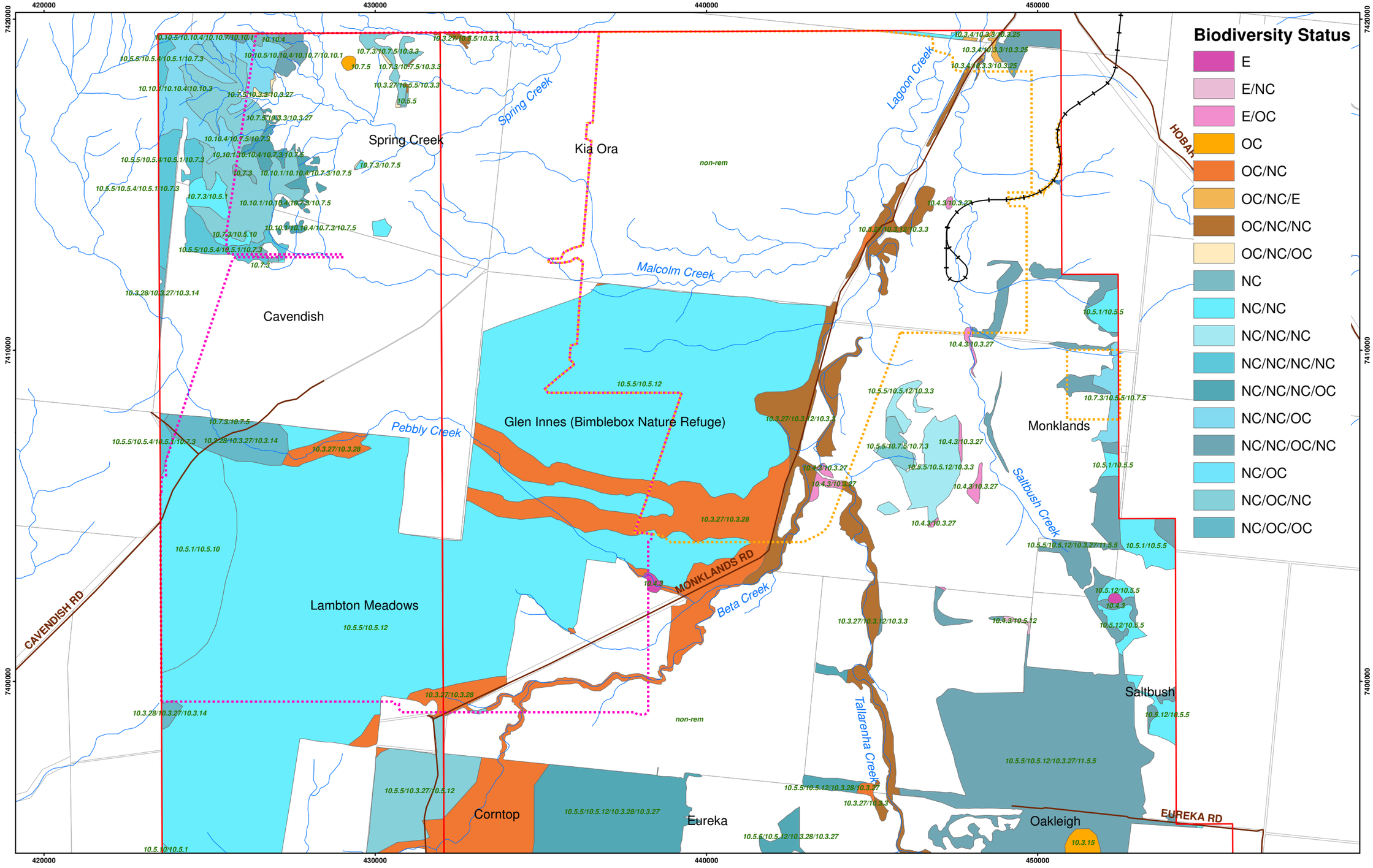
EPC1040 & Part of EPC1079
Proposed Railway Line
Watercourse
Probable Clearing Footprint
Subsidence Footprint
Cadastral Boundary

Regional Ecosystem (VMA Status)
Of Concern - Subdominant
Least Concern
Non-remnant

FIGURE 4:
REGIONAL ECOSYSTEMS (VMA STATUS)



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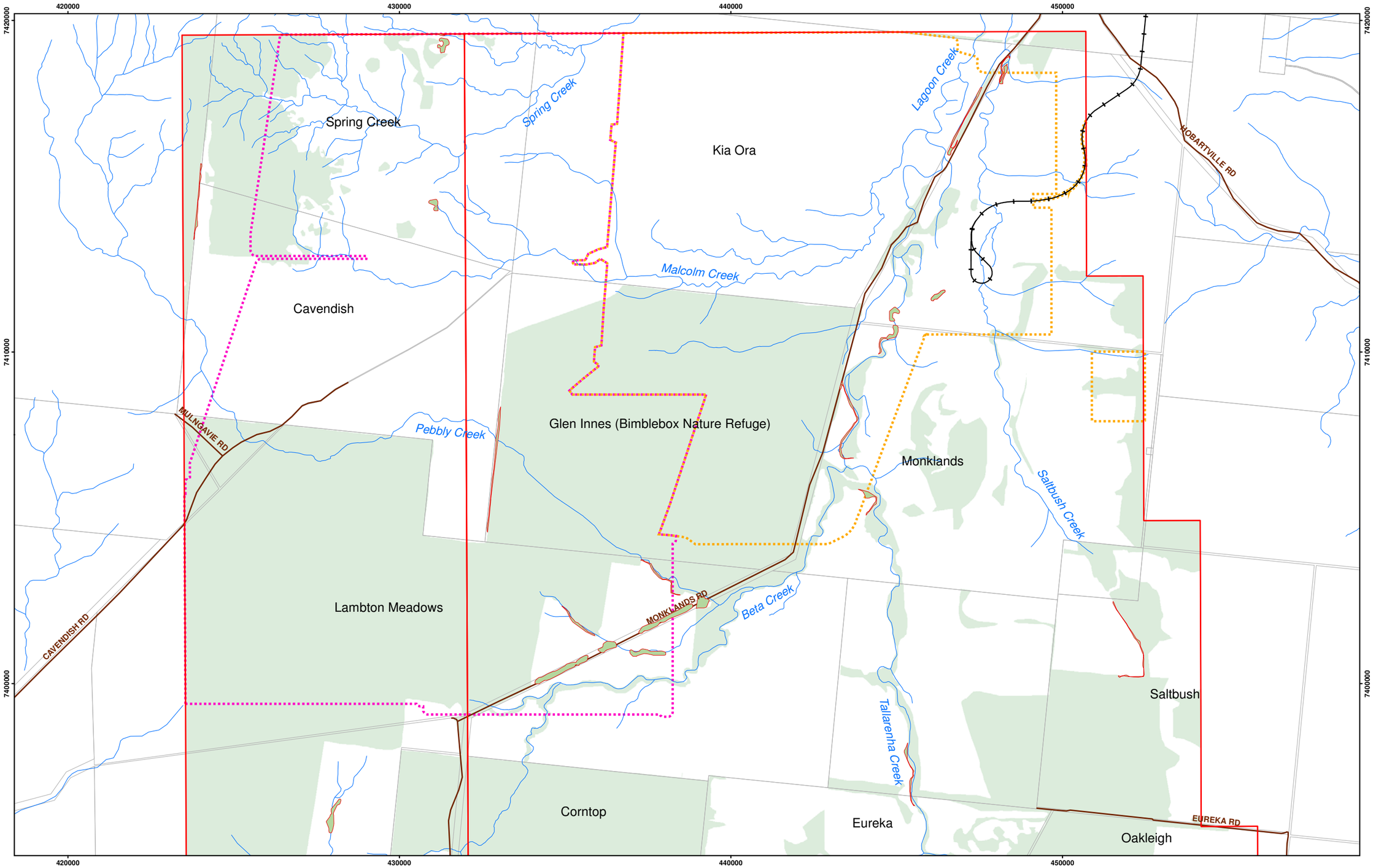
EPC1040 & Part of EPC1079
Proposed Railway Line
Watercourse
Probable Clearing Footprint
Subsidence Footprint
Cadastral Boundary

FIGURE 5:
REGIONAL ECOSYSTEMS (BIODIVERSITY STATUS)



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Metres

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Coordinate System: GDA 1994 MGA Zone 55 Projection: Transverse Mercator

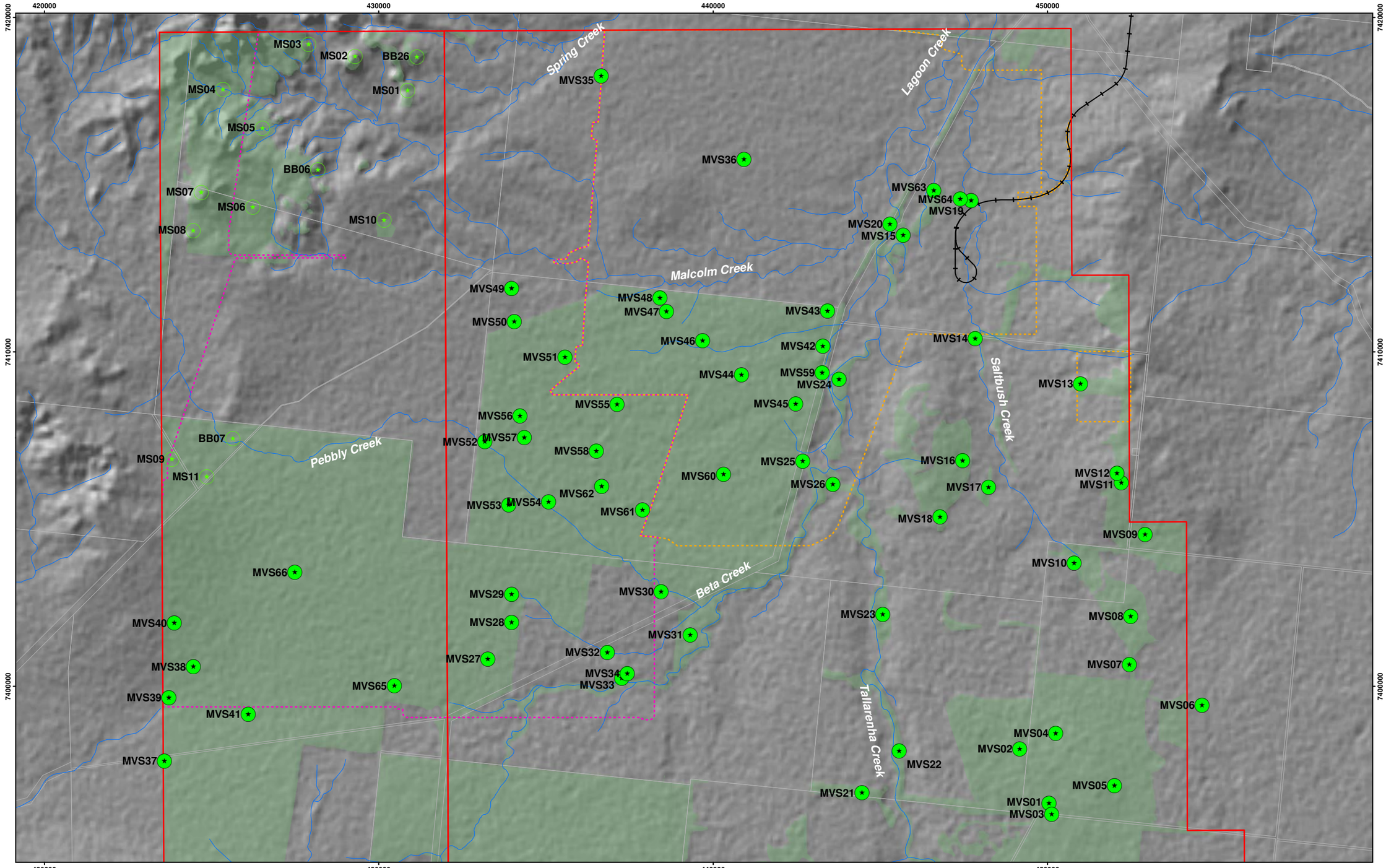
- EPC1040 & Part of EPC1079
- Proposed Railway Line
- Watercourse
- Probable Clearing Footprint
- Subsidence Footprint
- Cadastral Boundary
- Remnant Vegetation

High Value Regrowth

- Is a Least Concern regional ecosystem

FIGURE 6:

HIGH VALUE REGROWTH



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Source:	Cadastral Boundaries: DERM 2012 Mine Detail, Proposed Railway Line: Waratah Coal Pty. Ltd. 2012 Arterial Roads: Geoscience Australia 2012 Survey Points: Rob Friend & Associates Pty Ltd 2012 Remnant Vegetation: Vegetation Management Act Regional Ecosystems Vers 6.1 2012 Watercourses: Vegetation Management Act Queensland Regrowth Other Watercourses Version 2.1 Watercourses: VMA Queensland Regrowth Watercourses Version 2.1 9 (DERM 2012). Background Image: Shaded relief: ESRI Data & amp; Maps 2006
Disclaimer:	This plan is based on or contains data provided by others. Waratah Coal Pty. Ltd. gives no warranty in relation to the data (including accuracy, reliability, completness, currency or suiability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to and use of the data. Data must not be used for direct marketing or be used in breach of privacy laws.
File:	WAR20-26-SEIS0031a-FIG07a-FLORA-SURVEY-SITES-120910 Date: 10/09/2012

0 1,000 2,000 3,000 4,000 5,000
Metres

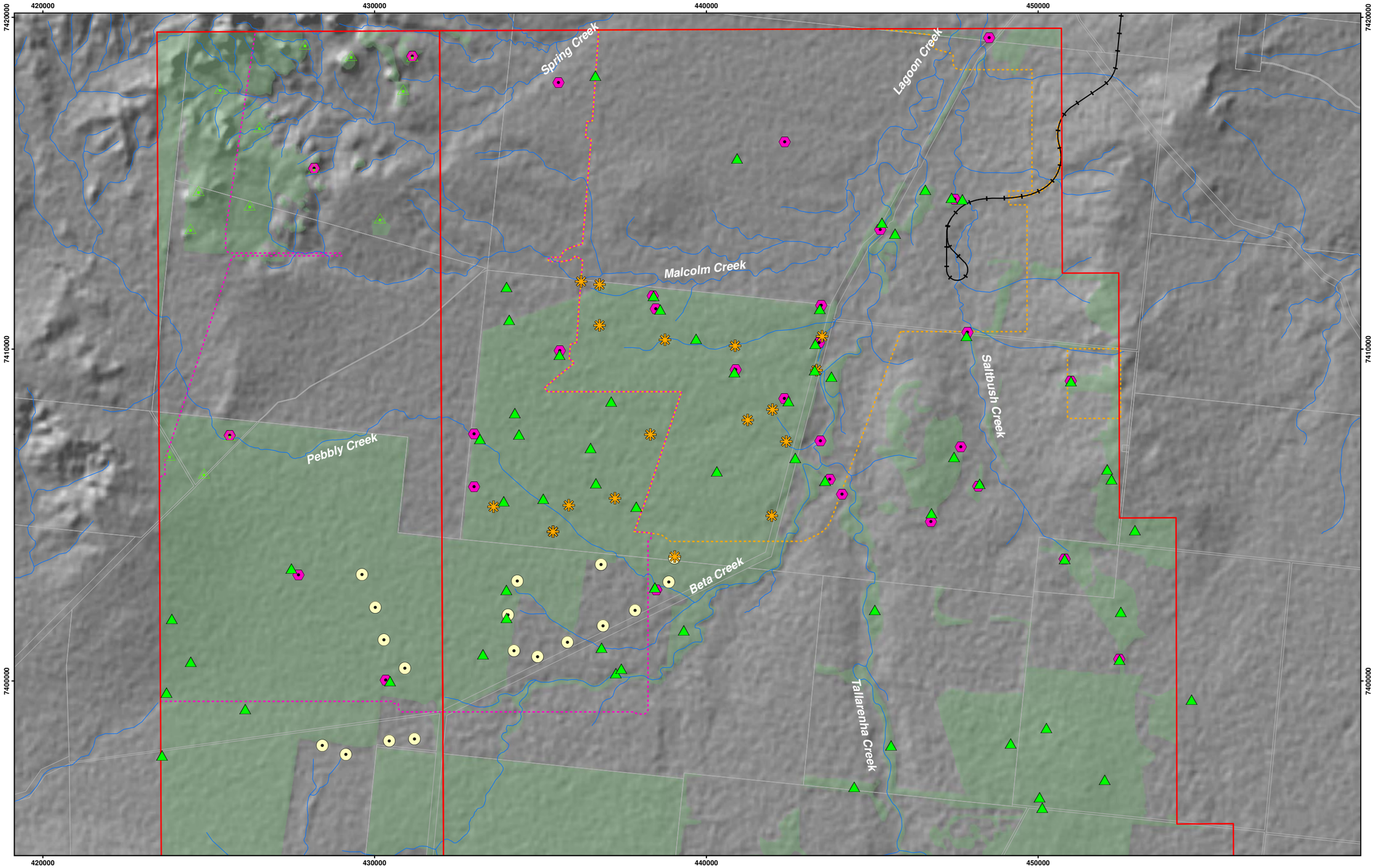
A3 Scale 1:100,000

Coordinate System: GDA 1994 MGA Zone 55 Projection: Transverse Mercator

EPC1040 & Part of EPC1079
Proposed Railway Line
Cadastral Boundary
Probable Clearing Footprint
Subsidence Footprint
Remnant Vegetation
Arterial Road
Watercourse
Flora Survey Location
Yet to visit as at 10.08.2012

FIGURE 7:

LOCATION OF SURVEY SITES



GALILEE COAL PROJECT (Northern Export Facility)

Waratah Coal
THE NEW ENERGY IN COAL

Mineralogy House, Level 7, 380 Queen Street, Brisbane Qld 4000, Australia

Source:	Cadastral Boundaries: DERM 2012 Mine Detail, Proposed Railway Line: Waratah Coal Pty. Ltd. 2012 Arterial Roads: Geoscience Australia 2012 Waratah Survey Program:Rob Friend & Associates Pty Ltd 2012 Flora Survey Programs: Unidel survey program (2009-2010) Queensland Environment Protection Agency survey program (2006), Worley Parsons survey program (2009) Remnant Vegetation: Vegetation Management Act Regional Ecosystems Vers 6.1 2012 Watercourses: Vegetation Management Act Queensland Regrowth Other Watercourses Version 2.1 (DERM 2012) Background Image: Shaded relief: ESRI Data & amp; Maps 2006
Disclaimer:	This plan is based on or contains data provided by others. Waratah Coal Pty. Ltd. gives no warranty in relation to the data (including accuracy, reliability, completness, currency or suiability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to and use of the data. Data must not be used for direct marketing or be used in breach of privacy laws.
File:	WAR20-26-SEIS0035a-FIG08a-FLORA-SURVEY-COMBINED-120910 Date: 10/09/2012

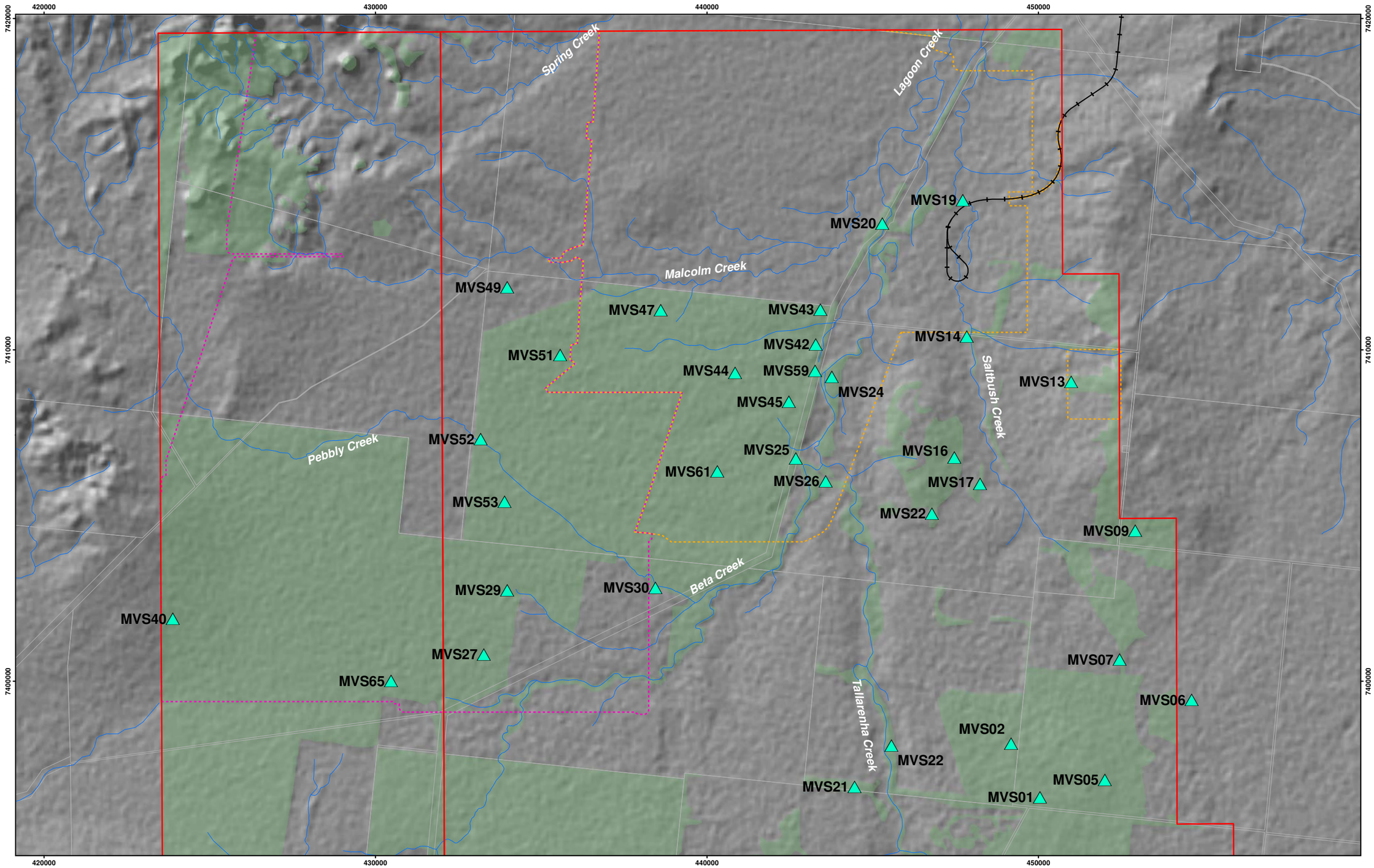
0 1,000 2,000 3,000 4,000 5,000
Metres

A3 Scale 1:100,000

Coordinate System: GDA 1994 MGA Zone 55 Projection: Transverse Mercator

- EPC1040 & Part of EPC1079
- Proposed Railway Line
- Cadastral Boundary
- Probable Clearing Footprint
- Subsidence Footprint
- Remnant Vegetation
- Watercourse
- Waratah Coal Pty. Ltd. Survey program (2012)
- Waratah yet to visit as as at 30.07.2012
- Worley Parsons survey program (2009)
- Queensland Environment Protection Agency survey program (2006)
- Unidel survey program (2009-2010)

FIGURE 8:
COMBINED VEGETATION SURVEY SITES



GALILEE COAL PROJECT (Northern Export Facility)

Waratah Coal
THE NEW ENERGY IN COAL

Mineralogy House, Level 7, 380 Queen Street, Brisbane Qld 4000, Australia

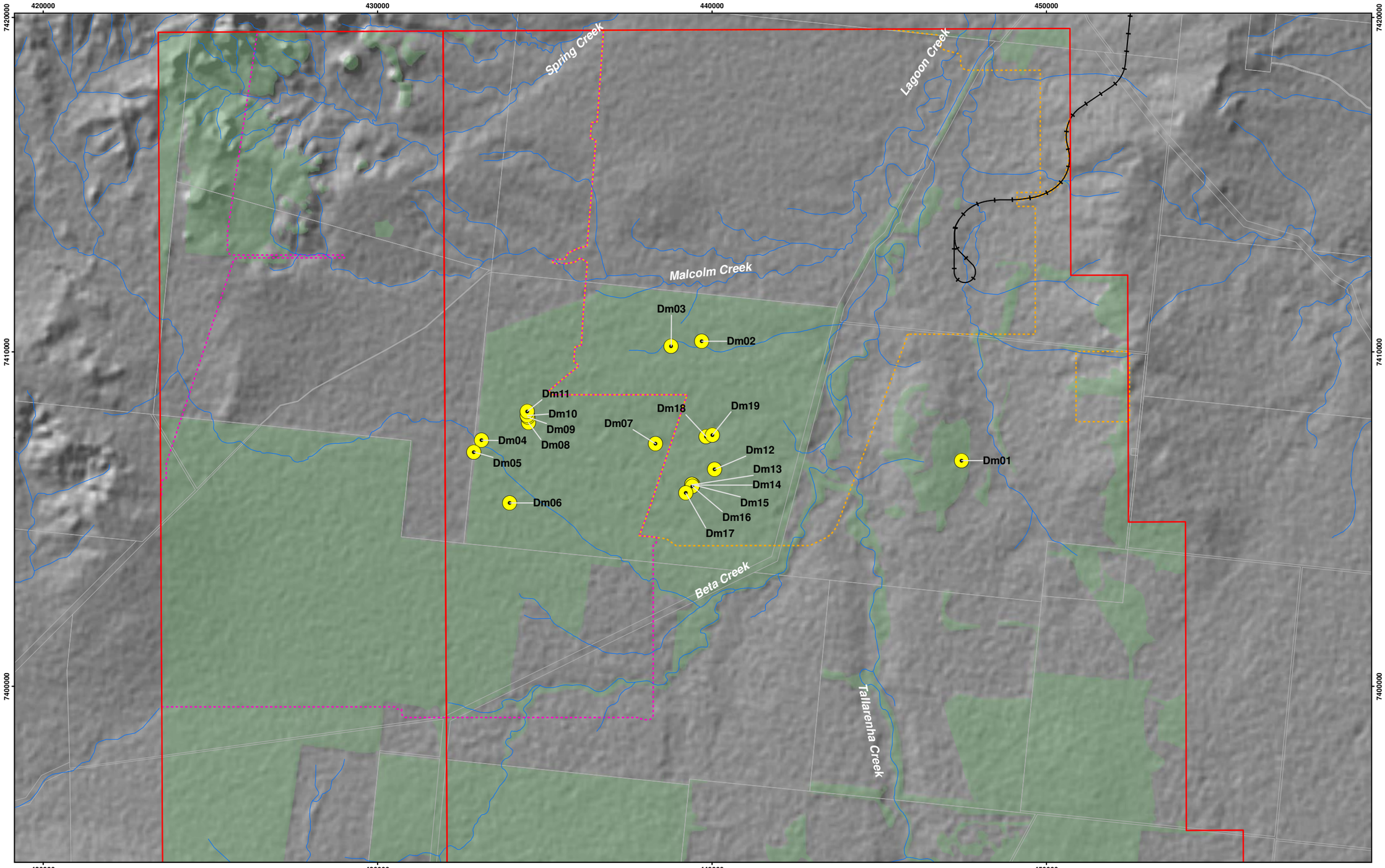
Source:	Cadastral Boundaries: DERM 2012 Mine Detail, Proposed Railway Line: Waratah Coal Pty. Ltd. 2012 Arterial Roads: Geoscience Australia 2012 Biocondition Sites: Rob Friend & Associates Pty Ltd 2012 Remnant Vegetation: Vegetation Management Act Regional Ecosystems Vers 6.1 2012 Watercourses: Vegetation Management Act Queensland Regrowth Other Watercourses Version 2.1 Watercourses: VMA Queensland Regrowth Watercourses Version 2.1 9 (DERM 2012) Background Image: Shaded relief: ESRI Data & amp; Maps 2006
Disclaimer:	This plan is based on or contains data provided by others. Waratah Coal Pty. Ltd. gives no warranty in relation to the data (including accuracy, reliability, completness, currency or suiability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to and use of the data. Data must not be used for direct marketing or be used in breach of privacy laws.
File:	WAR20-26-SEIS0043a-FIG09a-BIOCONDITION-SITES-120905 Date: 5/09/2012

0 1,000 2,000 3,000 4,000 5,000
Metres
A3 Scale 1:100,000
Coordinate System: GDA 1994 MGA Zone 55 Projection: Transverse Mercator

EPC1040 & Part of EPC1079
Proposed Railway Line
Cadastral Boundary
Probable Clearing Footprint
Subsidence Footprint
Remnant Vegetation
Arterial Road
Watercourse
Biocondition site

FIGURE 9:

LOCATION OF BIOCONDITION SITES



GALILEE COAL PROJECT (Northern Export Facility)

Waratah Coal
THE NEW ENERGY IN COAL

Mineralogy House, Level 7, 380 Queen Street, Brisbane Qld 4000, Australia

Source:	Cadastral Boundaries: DERM 2012 Mine Detail, Proposed Railway Line: Waratah Coal Pty. Ltd. 2012 Arterial Roads: Geoscience Australia 2012 EVNT Flora Species: Rob Friend 2012 Remnant Vegetation: Vegetation Management Act Regional Ecosystems Vers 6.1 2012 Watercourses: Vegetation Management Act Queensland Regrowth Other Watercourses Version 2.1 Watercourses: VMA Queensland Regrowth Watercourses Version 2.1 9 (DERM 2012) Background Image: Shaded relief: ESRI Data & amp; Maps 2006
Disclaimer:	This plan is based on or contains data provided by others. Waratah Coal Pty. Ltd. gives no warranty in relation to the data (including accuracy, reliability, completness, currency or suiability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to and use of the data. Data must not be used for direct marketing or be used in breach of privacy laws.
File:	WAR20-26-SEIS0032a-FIG10a-EVNT-FLORA-120910 Date: 10/09/2012

0 990 1,980 2,970 3,960 4,950
Metres

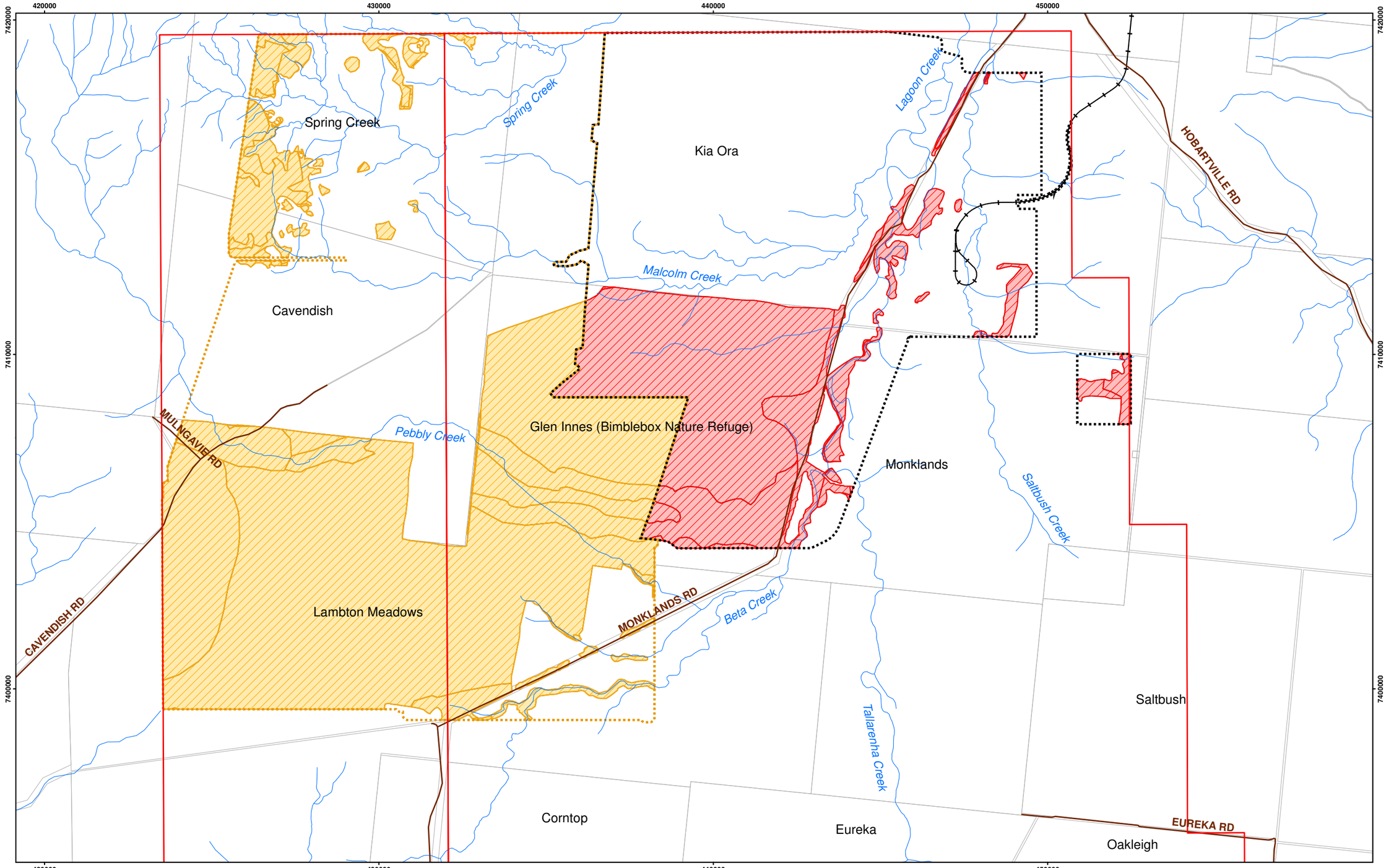
A3 Scale 1:100,000

Coordinate System: GDA 1994 MGA Zone 55 Projection: Transverse Mercator

- EPC1040 & Part of EPC1079
- Cadastral Boundary
- Probable Clearing Footprint
- Subsidence Footprint
- EVNT flora species *(Desmodium macrocarpum)*
- Proposed Railway Line
- Arterial Road
- Watercourse
- Remnant Vegetation

FIGURE 10:

LOCATION OF EVNT FLORA SPECIES



GALILEE COAL PROJECT (Northern Export Facility)

Waratah Coal
THE NEW ENERGY IN COAL

Mineralogy House, Level 7, 380 Queen Street, Brisbane Qld 4000, Australia

Source:	Cadastral Boundaries: DERM 2012 Mine Detail, Proposed Railway Line: Waratah Coal Pty. Ltd. 2012 Ownership: Waratah Coal 2012 EPC: State of Queensland (Department of Natural Resources and Mines) 2012 Roads: Geoscience Australia 2012 Watercourses: Vegetation Management Act Queensland Regrowth Other Watercourses Version 2.1 (DERM 2012) Vegetation loss: VMA Regional Ecosystems v6.1, VMA High Value Regrowth Vegetation Version 2.1: State of Queensland (DERM) 2011
Disclaimer:	This plan is based on or contains data provided by others. Waratah Coal Pty. Ltd. gives no warranty in relation to the data (including accuracy, reliability, completeness, currency or suiability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to and use of the data. Data must not be used for direct marketing or be used in breach of privacy laws.
File:	WAR20-26-SEIS0044a-FIG11a-VEGETATION-LOSS-120905 Date: 5/09/2012

N

0 1,000 2,000 3,000 4,000 5,000

Metres

A3 Scale 1:100,000

Coordinate System: GDA 1994 MGA Zone 55 Projection: Transverse Mercator

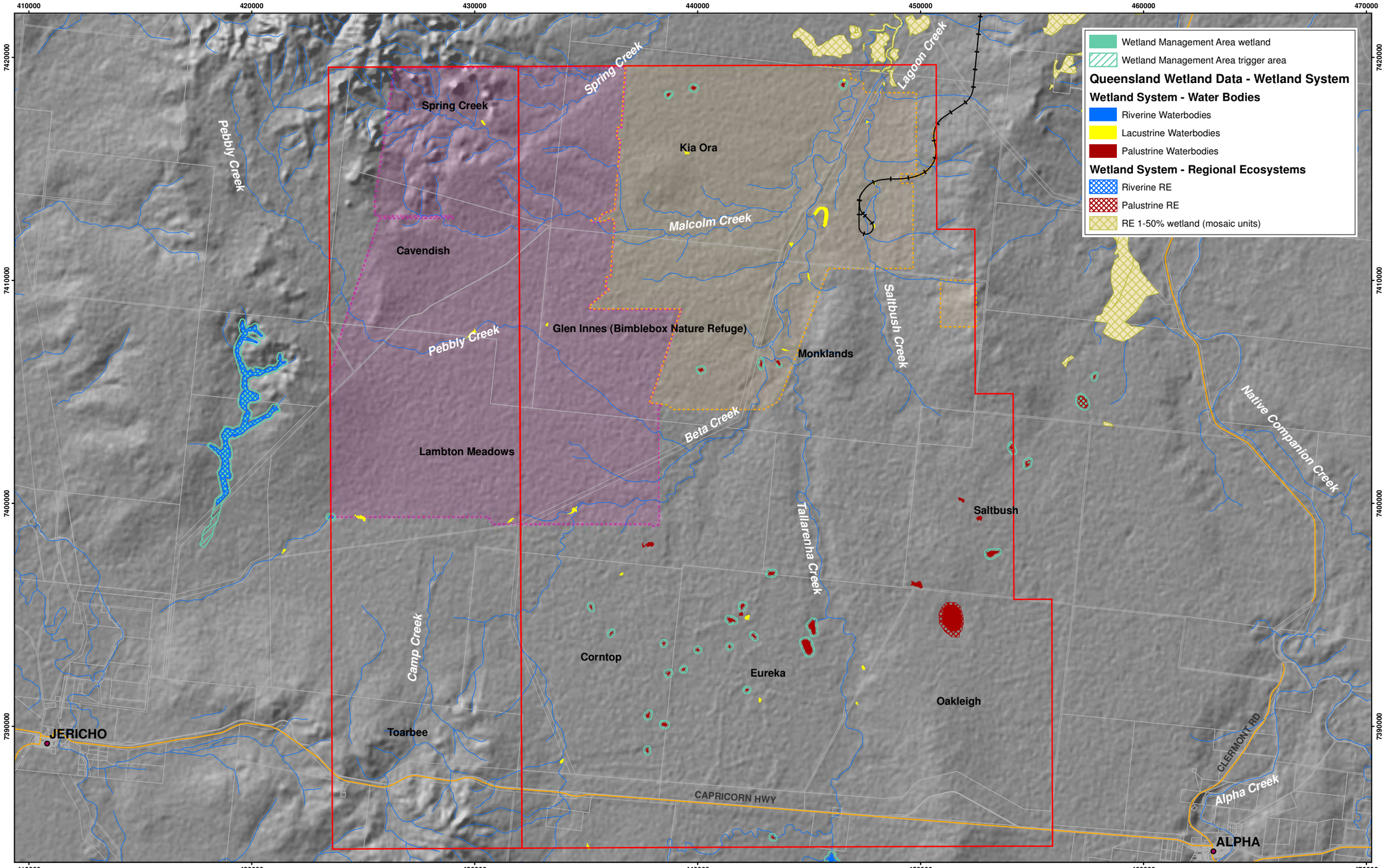
- EPC1040 & Part of EPC1079
- Proposed Railway Line
- Watercourse
- Cadastral Boundary
- Probable Clearing Footprint
- Subsidence Footprint

Clearing footprint
- Remnant Vegetation and High Value Regrowth - Direct loss area

Subsidence Area
- Remnant Vegetation and High Value Regrowth - Potential loss area

FIGURE 11:

VEGETATION LOSS



GALILEE COAL PROJECT (Northern Export Facility)

Waratah Coal
THE NEW ENERGY IN COAL

Mineralogy House, Level 7, 380 Queen Street, Brisbane Qld 4000, Australia

Source:	Cadastral Boundaries: DERM 2012 Mine Detail, Proposed Railway Line: Waratah Coal Pty. Ltd. 2012 Arterial Roads: Geoscience Australia 2012 Queensland Wetland Data - Wetland System, Wetland Management Area wetland, Wetland Management Area trigger area, Watercourses: VMA Queensland Regrowth Watercourses Version 2.1 9 (DERM 2012) Background Image: Shaded relief: ESRI Data & amp; Maps 2006
Disclaimer:	This plan is based on or contains data provided by others. Waratah Coal Pty. Ltd. gives no warranty in relation to the data (including accuracy, reliability, completness, currency or suiability) and accepts no liability (including without limitation, liability in negligence) for any loss, damage or costs (including consequential damage) relating to and use of the data. Data must not be used for direct marketing or be used in breach of privacy laws.
File:	WAR20-26-SEIS0051a-FIG12a-WETLANDS-120919 Date: 19/09/2012

N

0 2,000 4,000 6,000 8,000
Metres

A3 Scale 1:150,000

Coordinate System: GDA 1994 MGA Zone 55 Projection: Transverse Mercator

EPC1040 & Part of EPC1079
Arterial Road
Proposed Railway Line
Watercourse
Cadastral Boundary
Probable Clearing Footprint
Subsidence Footprint

FIGURE 12:

WETLANDS

12.2 Appendix II – Survey data

Site Survey Data – MVS01

Photo Plate MVS01-1 – Panorama view of transect from Point “a” (eastern end)

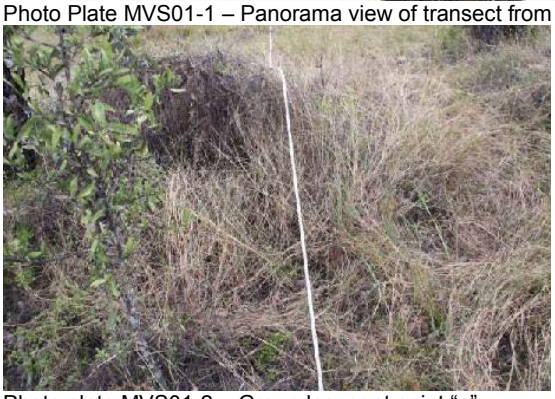


Photo plate MVS01-2 – Groundcover at point “a”

Photo plate MVS01-3 – Canopy cover at Point “a”

Photo Plate MVS01-4 – Panorama view of transect from Point “b” (western end)

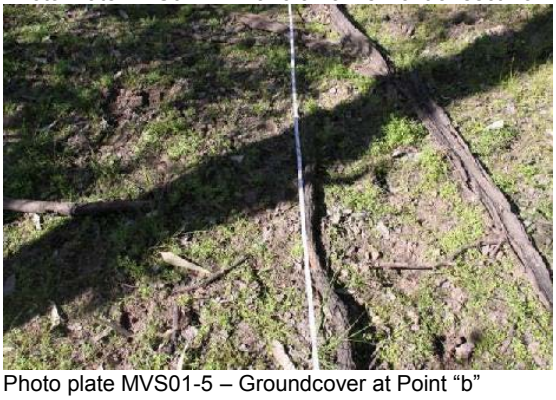


Photo plate MVS01-5 – Groundcover at Point “b”

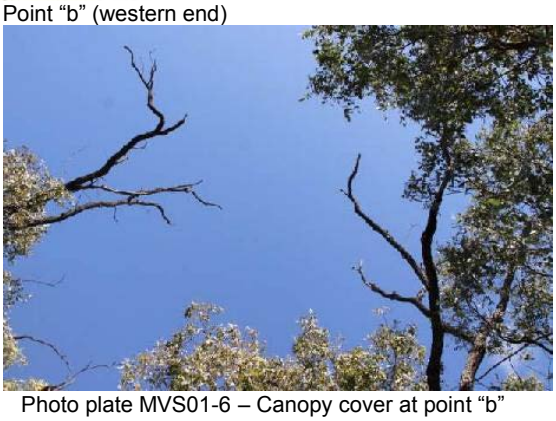


Photo plate MVS01-6 – Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS25
Site no.	MVS01
Date/Time:	18/05/2012; 1045 - 1130
Regional Ecosystem Profile	
Regional Ecosystem - mapped	10.3.13
Regional Ecosystem – data derived	
Bioregion:	10 – Desert uplands
EPBC Status:	NA
VMA Status:	Not of Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	150 – 300 m
Area of Community:	5 – 20 ha

Site Description			
Location:	Site on the southern portion of Saltbush Station immediately to the north of ephemeral wetland. Alpha 16.13 km @136^0; Jericho 41.71 km @ 261^0.		
Site Description:	Site on the northern edge of ephemeral wetland in Silver-leafed ironbark and River red gum woodland		
Orientation of Transect:	along contour	Elevation	367 m
Bearing:	320^0	Datum:	WGS84
Easting/Northing:	a) 55K 450049 7396502 b) 55K 449988 7396576	Latitude/Longitude	a) S23.54102 E146.51062 b) S23.54035 E146.51003

Structural Summary

Stratum	Med. Canopy Height (m)	Range in strata height (m)	Total crown cover (%)	Key species	Individual covers (%)
Tree 1	9	6-10	60	*Eucalyptus melanophloia*	60
Tree 2	4	3-5	30	*Eucalyptus camaldulensis*	30
Tree 3	3	2 -3	5	*Eucalyptus camaldulensis*	30
Shrub 1	1.5	1-2	20	*Psydrax oleifolia*	<5
	1.5	1-2		*Acacia sericophylla*	<5
	1.5	1-2		*Eucalyptus camaldulensis*	<20
	1.5	1-2		*Eremophila mitchellii*	<10
Shrub 2	<1	<1	<5	*Carissa lanceolata*	<5
Ground	0.5	<1	<5	*Cyperus sp.*	
				Centipeda cunninghamii	
				Panicum sp.	
				Cynodon dactylon	

%Rock	**0**	%Bare ground	**49**	%Leaf litter	**2**	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	1				*Eucalyptus melanophloia*		25						40				
					Eucalyptus camaldulensis				6	18	11				<5	<5	<5
					Eremophila mitchellii					1						<1	
					Psydrax oleifolia					2						<1	
					Acacia sericophylla					1						<1	

Ground layer only

Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Centipeda cunninghamii	30	15	40	20	40	45	25	45	25	45	37
Cyperus sp.	4	6	5	25		5	5	5	20		7
Paspalidium sp.	1										
Cynodon dactylon	1	1			30					20	4
Eragrostis sp.					1					1	1
Themeda triandra					3					5	1
Dead											
Litter										10	2
Rock											
Bare Ground						50	70	50	55	20	49
Cryptophytes											

Community Health and Condition			
Overall Health:	Low to moderate	Fire Height:	n/a
Potential EVR Flora Species Habitat:	nil	Fire Age:	n/a
EVR Flora Species Recorded:	nil	Fire Proportion:	n/a
Weed Species:	n/a	Logging:	None
Weed Cover (%):	0%	Ringbarking/thinning:	None
Disturbance:	Cattle, pigs	Feral Digging:	Yes
Disturbance cover (%):	100%	Flooding:	None
Grazing:	Present	Extensive Clearing:	None
Fire:	n/a	Remnant:	
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Dark grey
Altitude:	367 m	Soil Texture:	Loam
Relief:	Flat	Soil Description:	Dark grey to black loam, clay not evident, surface hard when dry
Slope:	Flat	Geology:	Map (reliability low)
Slope Class:	Plain (0°)	Rock/Sediment Type:	
Erosional Landform:	Nil		

BioCondition Site Data – MVS01

Photo plate MVS01-7 – View north

Photo plate MVS01-8 – View west

Photo plate MVS01-9 – View south

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: 0	**Non-Eucalypt Large tree DBH (from benchmark doc.): - Number of large non-eucalypt trees:**
Total Large trees: 0	
Tree canopy (EDL*) height:	**Tree sub-canopy and/or emergent height** (where relevant): **S:** **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment:	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Eucalyptus camaldulensis* *Acacia sericophylla*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Eremophila mitchellii* *Psydrax oleifolia*
Grass species richness: *Themeda triandra* *Paspalidium sp.* *Cynodon dactylon* *Eragrostis sp.*
Forbs and others (non grass ground) species richness: *Centipeda cunninghamii* Sedge #1 – *Cyperus sp*. Sedge #2 – *Cyperus sp*.
Non-native plant cover:

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	5	**2**	6	**3**	2	**4**	8	**5**	2	**6**	6
7	10	**8**	8	**9**	8	**10**	2	**11**	2	**12**	8
13	8										
Total: 75											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	1				30	6
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	50	30	50	45	50	45
Native shrubs (<1m height)						
Non-native grass						
Non-native forbs and shrubs						
Litter*					10	2
Rock						
Bare ground	50	70	50	55	20	49
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	Distance (m)	Total	Tree or tree group* (C or S or E)	Distance (m)	Total	Tree or tree group* (C or S or E)	Distance (m)	Total
C	0.50 – 6.50	6.0	C	92.8 – 95.8	3.0			
C	15.1 – 20.7	5.6	C	98.9 – 100	1.1			
C	26.6 – 27.4	0.8						
C	37.5 – 41.1	3.6						
C	42.6 – 45.1	2.5						
C	45.1 – 49.0	3.9						
C	54.6 – 59.6	5.0						
C	59.6 – 64.6	5.0						
C	70.5 – 75.1	4.6						
C	78.1 – 79.6	1.6						
C	83.3 – 86.3	3.0						
C	90.0 – 92.8	2.8						
Total C: 48.5% Total S: 0.0% Total E: 0.0%								

Survey Site Data – MVS02

Photo Plate MVS02-1 – panorama view along transect from point “a”

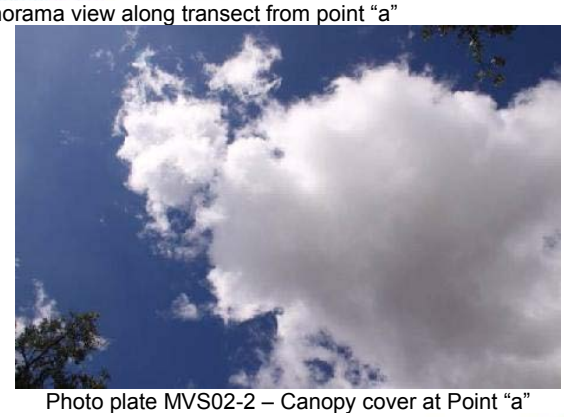
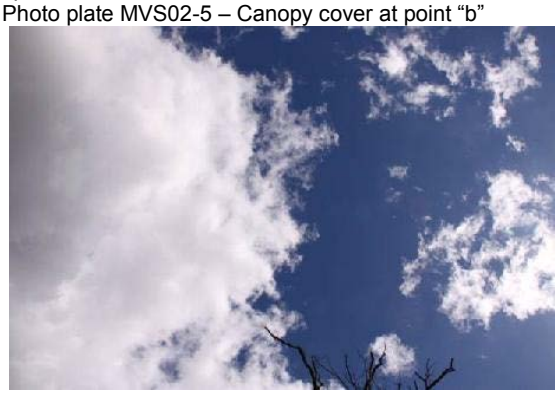


Photo plate MVS02-2 – Canopy cover at Point “a”

Photo plate MVS02-3 – panorama view along transect from point “b”

Photo plate MVS02-4 – Groundcover at point “B”

Photo plate MVS02-5 – Canopy cover at point “b”



Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS 24
Site no.	MVS 02
Date/Time:	18/05/2012, 1300 - 1402
Regional Ecosystem Profile	
Regional Ecosystem Type:	10.5.5
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No Concern at present
Mapped:	yes
Width of Community:	F: - not linear
Area of Community:	F: >50ha

Site Description			
Location:	South-eastern portion of Monklands Station some 250 metres from the Saltbush boundary. Alpha 29.48 km at 148^0; Jericho 42.13 km at 241^0.		
Site Description:	*Eucalyptus melanophloia* woodland to low woodland to 10 metres with a grassy understorey. Occasional shrub present particularly around base of tree species. The area is grazed and has evidence of previous fires.		
Orientation of Transect:	North – south (9 degrees)	Elevation	368 m
Coordinates (UTM)	a) 55k 449176 739824 b) 55k 449168 7398079	Latitude/Longitude	a) S23.52635 E146.50211 b) S23.52675 E146.50204

Structural Summary											
Stratum	**Med. Canopy Height (m)**		**Range in strata height (m)**		**Total crown cover**	**Key species**		**Individual covers**			
Tree 1	9		8 - 10		10%	*Eucalyptus melanophloia*		20%			
Tree 2	6		5 - 8		1%	*Eucalyptus melanophloia*		<2%			
	6		5 - 8			*Eremophila mitchellii*		<1%			
	6		5 - 8			*Acacia sericophylla*		<1%			
Tree 3	3		2 - 4		<1%	*Eremophila mitchellii*		<1%			
Shrub 1			0.5 - 2		<5%	*Carissa lanceolata*		<5%			
						Breynia oblongifolia		<1%			
Ground					24%	*Pennisetum ciliare*[#]					
						Themeda triandra					
						Aristida leptopoda					
%Rock	0	%Bare ground	26	%Leaf litter	28	%Cryptogram					

Abundance Measures																	
Basal Area (0.5mx1cm gap)						**Species**	**Stem Count** (500m^2)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**			**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
	5	4				*Eucalyptus melanophloia*		15		3				20	<2			
						Eremophila mitchellii			1	1					<1	<1		
						Acacia sericophylla				2						<1	<1	
						Breynia oblongifolia					2						<1	

Ground layer

Species	Stem Count (1m^2)					Cover (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Aristida leptopoda	1			1		10				5	3
Paspalidium gracile	3					5				5	2
Themeda triandra	1				5	5			5		2
Enteropogon ramosus	1					5					1
Pennisetum ciliare[#]		1		5			50	50	5		21
A grass			6							10	2
Wahlenbergia gracilis			1		1	5	5	5			3
Buchnera sp.			2					5			1
Brachyscome ciliaris	2	30	1	3	2	10	20	5	6	5	27
Herb #2				1	1				5	5	2
Dead											
Litter						10	25	30	5	70	28
Rock											
Bare Ground						50		5	75		26
Cryptophytes											

Community Health and Condition			
Overall Health:	Fair	Fire Height:	5 years
Potential EVR Flora Species Habitat:	no	Fire Age:	1 – 5%
EVR Flora Species Recorded:	nil	Fire Proportion:	
Weed Species:	n/a	Logging:	None
Weed Cover (%):	20%	Ringbarking/thinning:	None
Disturbance:	Grazing	Feral Digging:	None
Disturbance cover (%):	100%	Flooding:	None
Grazing:	Present	Extensive Clearing:	Yes
Fire:	Yes	Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	F
Landform Pattern	PAC	Soil Colour:	Grey brown
Altitude:	368m	Soil Texture:	Loam fine grain clay
Relief:	LE - level	Soil description:	Grey brown to brow, fine grain loam, clay below
Slope:	Flat	Geology:	Map (reliability low)
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	None		

BioCondition Data – MVS02

Photo Plate MVS02-6 – View north from "a"

Photo Plate MVS02-7 – View south from "a"

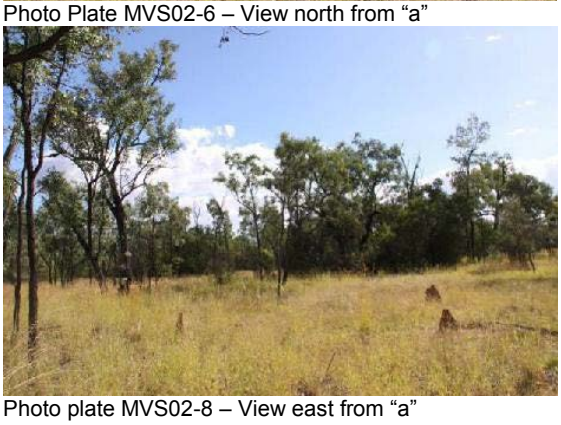


Photo plate MVS02-8 – View east from "a"

Photo Plate MVS02-9 – View west from "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 0	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 0	
Tree canopy (EDL*) height: 8 – 10	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 5 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness** (all tree species in the 100 x 50m (not just EDL species))**:**	
Eucalyptus melanophloia *Acacia excelsa*	*Acacia sericophylla* *Eremophila mitchellii*

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia sericophylla* *Breynia oblongifolia*	
Grass species richness: *Themeda triandra* A grass	*Aristida leptopoda* *Paspalidium gracile*
Forbs and others (non grass ground) species richness: *Buchnera sp.* *Wahlenbergia gracilis* A Flat weed Herb	
Non-native plant cover: *Pennisetum ciliare*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	7										
Total: - 7											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	30			5	20	11
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	10	25	15	11	10	14.2
Native shrubs (<1m height)						
Non-native grass		50	50	5		21
Non-native forbs and shrubs						
Litter*	10	25	30	5	70	28
Rock						
Bare ground	50		5	75		26
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group*** (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group*** (C or S or E)	**Distance (m)**	**Total**
C	5.0 – 7.5	2.5	C	63.0 – 65.2	2.2			
C	20.0 – 29.0	9.0	S	68.5 – 71.6	3.1			
C	54.0 – 55.4	1.4	C	71.5 – 75.3	3.8			
S	57.6 – 58.5	0.9	C	89.2 – 92.0	2.8			
S	60.0 – 61.7	1.7						
Total C: 21.7% Total S: 5.7% Total E: 0.0%								

Site Survey Data – MVS03

Photo plate MVS03 -1 – Panorama view of the area around MVS03

Project: Waratah Coal – Mine Site Vegetation Survey		**Site Location**: Saltbush Station. On southern boundary	
Date: 18 May 2012	**Photos -** 5797 - 5804		**Field survey site:** Q2 **Site no.:** MVS03
Survey plot location (GPS - UTM): 55k 0450128 7396177	**Land Zone:** 3	**Soil type:** Dark loamy clay	**Canopy height (m)** **Range: -** 5-9 m **Average: -** 8
Vegetation description – Regrowth area with *Eucalyptus camaldulensis* and *E. melanophloia* with no shrubs or understorey		**Regional Ecosystem:** - Non- remnant	**FPC (%)** – 30%

Species: (E/T1)			Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus camaldulensis*	a					*Paspalidium caespitosum*	
2	*Eucalyptus melanophloia*	a					*Setaria sp.*	

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Wetland area appears to be artificial due to presence of larger stags within the wetland and single aged stand of *Eucalyptus camaldulensis* around the edge influenced by the water table.
- Surrounding area dominated by *Eucalyptus melanophloia* with a predominant grassy understorey with acacia species including *Acacia sericophylla, Acacia excelsa* and *Eremophila mitchellii*.
- Numerous logs on the ground.

Site Survey Data – MVS04

No photos of this site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Saltbush Station NW of the Council gravel quarry, 368 m elevation. Alpha 18.74 km @135^0; Jericho 39.86 km @ 258^0.	
Date: 18 May 2012; 1604	**Photos:**		**Field Survey No**. Q02 **Site No**. – MVS04
Survey plot location (GPS - UTM): 55 K 449878 7398379	**Land Zone:** 5	**Soil type:** Hard red soil	**Canopy height** (m) Range: - 8 Average: - 8
Vegetation description: open *E. melanophloia* woodland with *Petalostigma pubescens* and *Acacia sericophylla* as an understorey	**Regional Ecosystem**: 10.5.5		**FPC** (%) <10%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	f	*Eucalyptus melanophloia*	a	*Petalostigma pubescens*	a	*Pennisetum ciliare**	a
2	*Corymbia erythrophloia*	f	*Corymbia erythrophloia*	f	*Acacia sericophylla*	f	*Aristida latifolia*	f
3			*Petalostigma pubescens*	a			*Aristida leptopoda*	f
4			*Acacia sericophylla*	f			*Aristida sp.*	o
5							*Themeda triandra*	f
6							*Astrebla sp.*	o
7							*Melinis repens**	o
8							*Schizachyrium fragile*	f

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Area contains a very open woodland to 8 m

Site Survey Data – MVS05

Photo Plate MVS05-1 – panorama view of transect from point “a”

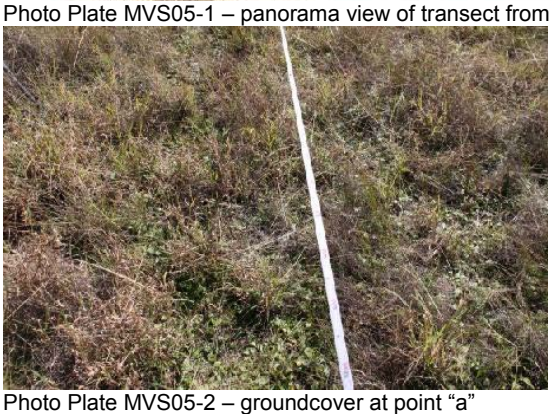


Photo Plate MVS05-2 – groundcover at point “a”

Photo Plate MVS05-3 –canopy cover at point “a”

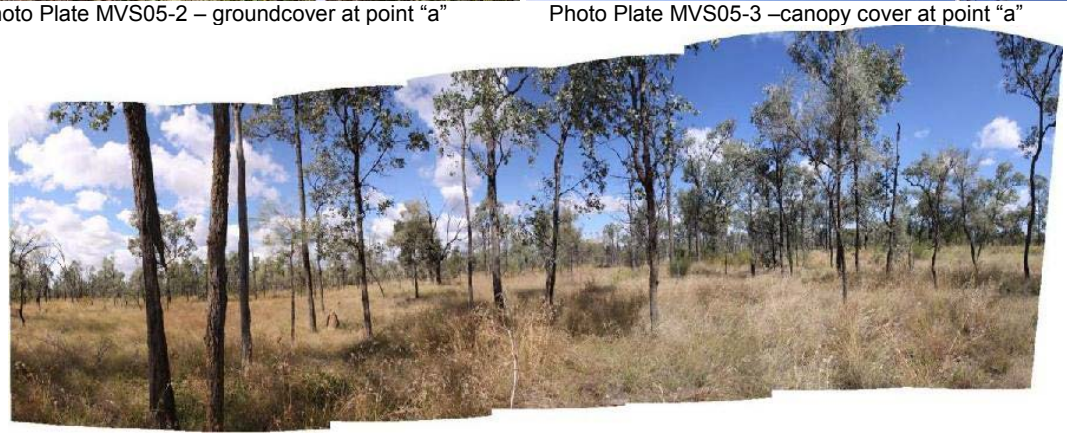


Photo Plate MVS05-4 –panorama of transect from point “b”

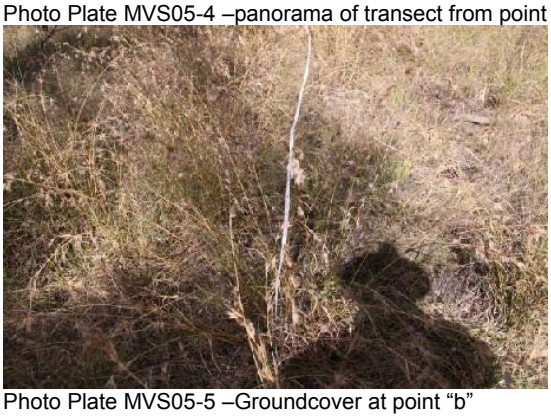


Photo Plate MVS05-5 –Groundcover at point “b”

Photo Plate MVS05-6 – Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS27
Site no.	MVS05
Date/Time:	19/05/2012; 1100 - 1144
Regional Ecosystem Profile	
Regional Ecosystem Type:	10.5.5 - *Eucalyptus melanophloia* open woodland on sand plains
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	None linear
Area of Community:	>50 ha

Site Description			
Location:	South of gravel quarry on Saltbush NW of Alpha		
Site Description:	Open woodland to 14m with *E. melanophloia* and *E. populnea* limited shrub layer, understorey consisting of grassy understorey. Good grass cover.		
Orientation of Transect:	Across landscape		
Bearing:	354^0	Datum:	WGS84
Easting/Northing:	a) 55K 452007; 7397026 b) 55K 452002; 7397073	Latitude/Longitude:	a) S21.53635; E146.52982 b) S21.53592; E146.52978

Structural Summary											
Stratum	**Med. Canopy Height (m)**		**Range in strata height (m)**		**Total crown cover**	**Key species**					**Individual covers**
Tree 1	10		8 – 12		10	*Eucalyptus melanophloia*					10%
Tree 3	5		4 - 6		5	*Acacia sericophylla*					5%
Shrub 1	2		2		>5	*Carissa lanceolata*					5%
	1		1			*Carissa ovata*					5%
Ground						*Themeda triandra*					
						Aristida leptopoda					
						Panicum sp.					
						*Melinis repens**					
						Eragrostis sp.					
%Rock	0	%Bare ground	14	%Leaf litter	3	%Cryptogram					

Abundance Measures																	
Basal Area (0.5mx1cm gap)						**Species**	**Stem Count** ($500m^2$)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**			**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
						Acacia sericophylla			7	3	4				10	2		
						Eucalyptus melanophloia		4	7									
						Carissa lanceolata						<1						3
						Carissa ovata												1
						Petalostigma pubescens					<1						1	

Ground layer only

Species	Stem Count ($500m^2$)						Cover (%)					
	G1	**G**	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Eragrostis sp.	4		2	14	2	8	10	5	10	45	10	16
*Pennisetum ciliare**	1		4		1		5	20		5		6
Acacia sericophylla	1						5					1
Herb	50		20	10	50	20	70	50	50		40	43
Lomandra leucocephala			2					5		30		7
*Melinis repens**			2					5				1
Cheilanthes sieberi			2		5					5		1
Desmodium varians			3					5				1
Chrysocephalum apiculatum			2					5				1
Goodenia hirsuta			6					5				1
Panicum sp#1				1					5			1
Herb #2				1					5			1
Themeda triandra					1					5		1
Aristida personata						2					10	2
Panicum sp#2						2					5	
Dead												
Litter							5	0	0	5	5	3
Rock												
Bare Ground							5	0	30	5	30	14
Cryptophytes												

Community Health and Condition			
Overall Health:	Area appears in good health	Fire:	n/a
Potential EVR Flora Species Habitat:		Fire Height:	n/a
EVR Flora Species Recorded:		Fire Age:	n/a
Weed Species:	*Pennisetum ciliare, Melinis repens*	Fire Proportion:	n/a
Weed Cover (%):	?	Logging:	None
Disturbance:	nil	Ringbarking/thinning:	None
Disturbance cover (%):		Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
Topography and Landform			
Landform Situation:	A	Soils:	
Landform Pattern	PAC	Soil Colour:	Tan brown
Altitude:	375m	Soil Texture:	Loam
Relief:		Soil description:	Loam tan in colour, hard to kick
Slope:	Flat	Geology:	Map (reliability low)
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	None		

BioCondition Site Data – MVS05

Photo plate MVS05-7 – View north

Photo plate MVS05-8 – View south

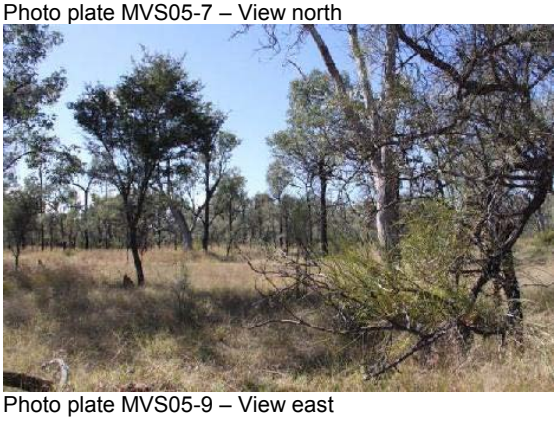


Photo plate MVS05-9 – View east

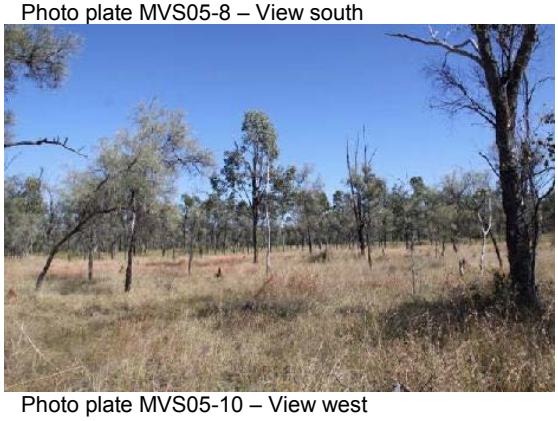


Photo plate MVS05-10 – View west

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 0	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 0	
Tree canopy (EDL*) height: 10	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 7 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Acacia sericophylla*	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**	
Acacia sericophylla	*Carissa lanceolata*
Carissa ovata	
Grass species richness:	
Themeda triandra	*Aristida personata*
Schizachyrium fragile	*Panicum spp.*
Forbs and others (non grass ground) species richness:	
Buchnera sp.	*Chrysocephalum apiculatum*
Asteraceae (flat weed)	*Cheilanthes sieberi*
Goodenia hirsuta	*Lomandra leucocephala*
Non-native plant cover:	
*Pennisetum ciliare**	*Melinis repens**
*Sida cornifolia**	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	2	**3**	2	**4**	1	**5**	3	**6**	4
Total: - 16											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	10	65	65	30	25	39
Native other grass cover (if relevant)*		5				
Native forbs and other species (non-grass)	75	10	5	60	40	38
Native shrubs (<1m height)						
Non-native grass	5	20				5
Non-native forbs and shrubs						
Litter*	5	0	0	5	5	3
Rock						
Bare ground	5	0	30	5	30	15
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect – Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)

Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	100 – 99.8	0.2	S	88.3 – 80.9	7.4	S	80.7 – 79.8	0.9
C	66.8 – 62.4	4.4	S	40.0 – 38.4	1.6	C	32.4 – 30.6	1.8
S	28.1 – 27.7	0.4	C	8.5 – 4.6	3.9			
Total C: 10.1% Total S: 10.5% Total E: 0.0%								

Site Survey Data – MVS06

Photo plate MVS06-1 – Panorama view of transect from point “a”

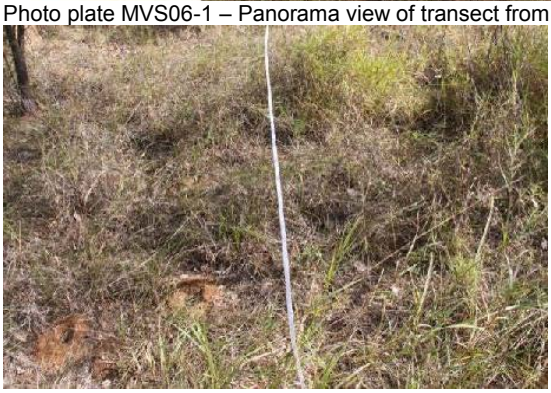


Photo plate MVS06-2 – groundcover at “a”

Photo plate MVS06-3 – Canopy cover at “a”

Photo plate MVS06-4 – Panorama of transect from point “b”

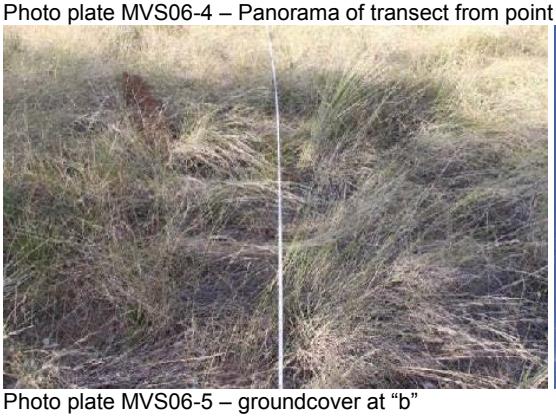


Photo plate MVS06-5 – groundcover at “b”

Photo plate MVS06-6 – Canopy cover at “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS28
Site No.	MVS06
Date/Time:	19/05/2012; 1423-1541
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion	10 – Desert uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No Concern at present
Mapped:	Yes
Width of Community:	F – not linear
Area of Community:	F - >50ha

Site Description			
Location:	Saltbush Station South of homestead, Alpha 36.44 km @128^0; Jericho 29.12 km @ 234^0		
Site Description:	Woodland with *E. Populnea* and *E. melanophloia* with a shrubby to grassy understorey.		
Orientation of Transect:	along contour		
Bearing:	52^0	Elevation:	364 m
Easting/Northing:	a) 55k 454629; 7399434 b) 55 K 454667 7399462	Latitude/Longitude	a) S23.51467 E146.55558 b) S23.51442 E146.55595

Structural Summary							
Stratum	**Med. Canopy Height (m)**		**Range in strata height (m)**	**Total crown cover**	**Key species**		**Individual covers**
Tree 1	18		14-20		*Eucalyptus melanophloia*		10
	20		16-22		*Eucalyptus populnea*		20
Tree 2	5		4-6	<5	*Acacia salicina*		<5
	6		4-8		*Eucalyptus melanophloia*		<5
	6		4-8		*Eucalyptus populnea*		<5
	5		4-6		*Eremophila mitchellii*		<2
	5		4-6		*Petalostigma pubescens*		<2
Shrub 1	2		1-3	<5	*Carissa lanceolata*		<5
	2		1-3		*Acacia salicina*		<5
Shrub 2	1		1	<1	*Acacia salicina*		<1
Ground				70	*Pennisetum ciliare*		
					Themeda triandra		
					Aristida leptopoda		
					Aristida latifolia		
					Triodia pungens		
%Rock	0	%Bare ground	16	%Leaf litter	13	%Cryptogram	0

Basal Area (0.5mx1cm gap)					**Species**	**Stem count**						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
					Eremophila mitchellii			5	11	3	1			<5	<5	<1	<1
					Eucalyptus melanophloia			1	1					<1	<1		
					Acacia salicina		1	9	5	1	1			5	<5	<1	
					Carissa lanceolata					23	3					15	
	5				*Eucalyptus populnea*		14	14	1				40	20	<1		
					Chrysocephalum apiculatum												
					Acacia personata					1						2	
			1		*Acacia latifolia*												
					Corymbia erythrophloia				1								
					Psydrax oleifolia					1						<1	

Ground layer only

Species	**Stem Count** (500m^2)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Pennisetum ciliare	5			3		85			70		31
Triodia pungens		4	10				50	70			28
Themeda triandra		2					20				4
Aristida personata		1			4		20			10	6
Aristida latifolia			5					20	20		8
Sida cordifolia										5	1
Bothriochloa ewartiana.										5	1
Dead											
Litter						5	10	5	5	30	13
Rock											
Bare Ground						10	0	5	5	50	16
Cryptophytes											

Community Health and Condition			
Overall Health:	Appeared in relatively good health	Fire:	n/a
Potential EVR Flora Species Habitat:	Moderate	Fire Height:	n/a
EVR Flora Species Recorded:	none	Fire Age:	n/a
Weed Species:	*Pennisetum ciliare, Sida cordifolia*	Fire Proportion:	n/a
Weed Cover (%):	30%	Logging:	None
Disturbance:	Cattle	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Tan brown
Altitude:	367 m	Soil Texture:	Loamy
Relief:		Soil Description:	Tan brown, loamy clay
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	None		

BioCondition Site Data – VS06

Photo plate MVS06-7- view from "a" to northeast

Photo plate – MVS06-8- view from "a" to southeast

Photo plate MVS06-9- view from "a" to southwest

Photo plate MVS06-10- view from "a" to northwest

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 7	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 7	
Tree canopy (EDL*) height: 18	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment:	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Acacia salicina* *Eremophila mitchellii* *Petalostigma pubescens* *Eucalyptus populnea* *Acacia personata* *Corymbia erythrophloia*	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia excelsa* *Carissa lanceolata* *Psydrax oleifolia.*	
Grass species richness: *Themeda triandra* *Aristida personata* *Panicum sp.* *Bothriochloa sp.* *Triodia pungens* *Enteropogon ramosus* *Setaria surgens*	
Forbs and others (non grass ground) species richness: Herb (Asteraceae)	
Non-native plant cover: *Pennisetum ciliare*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	3	**2**	7	**3**	3	**4**	3	**5**	2	**6**	8
7	2	**8**	3	**9**	3	**10**	8				
Total: 42											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	0	90	90	20	15	43
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)						
Native shrubs (<1m height)						
Non-native grass	85	0	0	70	0	32
Non-native forbs and shrubs					5	1
Litter*	5	10	5	5	30	11
Rock	0	0	0	0	0	
Bare ground	10	0	5	5	50	14
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	100 – 98.8	0.2	C	81.6 – 75.0	6.6	C	78.0 – 73.4	4.6
C	57.0 – 50.8	6.2	S	42.2 – 40.9	1.3	C	18.9 -13.1	5.8
S	17.7 – 16.8	0.9	S	10.0 – 0.0	10			
Total C: 23.2% Total S: 12.4% Total E: 0.0%								

Site Survey Data – MVS07

Photo plate MVS07-1- Panorama view of transect from Point “a”

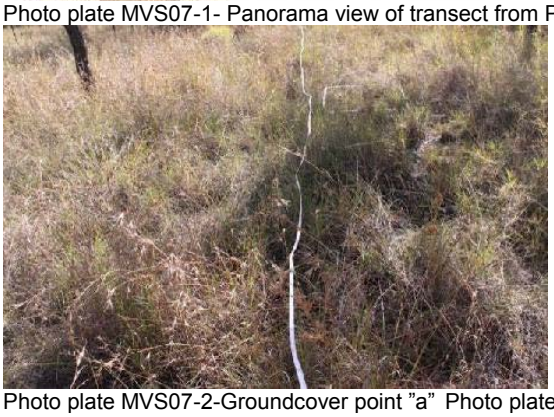


Photo plate MVS07-2-Groundcover point ”a”

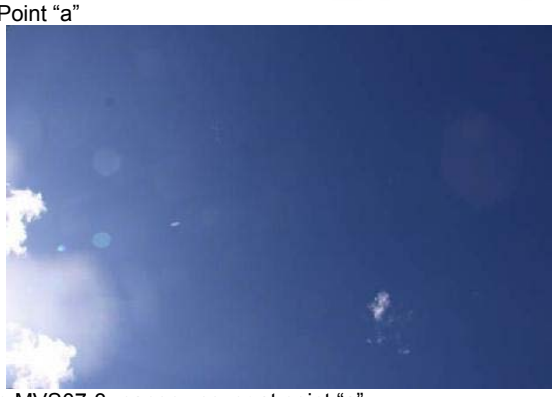


Photo plate MVS07-3- canopy cover at point “a”

Photo plate MVS07-4- Panorama view of transect from point “b”

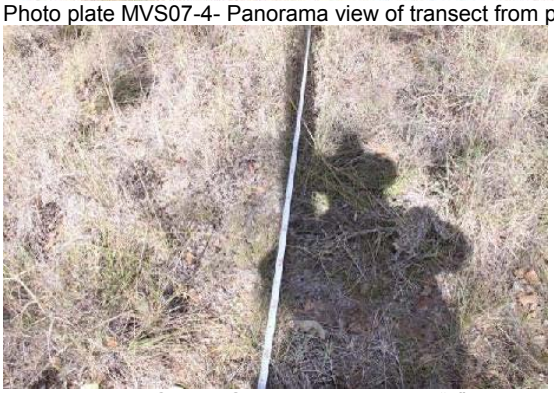


Photo plate MVS07-5- Groundcover at point “b”

Photo plate MVS07-6- Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB18RF
Site Number:	MVS07
Date/Time:	30/05/2012
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	75 - <150 m
Area of Community:	>50 ha

Site Description			
Location:	Saltbush Station, linear corridor of remnant vegetation along a fence line. Alpha 1.28km @15^0; Jericho 52.48 km @ 277^0		
Site Description:	Linear area of woodland containing *E. Populnea* dominating the upper stratum.		
Orientation of Transect:	Long landform		
Bearing:	350	Datum:	WGS84
Easting/Northing:	a) 55K 452454 7400648 b) 55K 452458 7400549	Latitude/Longitude	a) S23.50364 E146.53431 b) S23.50454 E146.53435

Structural Summary

Stratum	Med. Canopy Height (m)	Range in strata height (m)	Total crown cover	Key species	Individual covers
Tree 1	15	11 – 18	10	*Eucalyptus populnea*	10
	12	10 - 14		*Corymbia dallachiana*	5
Tree 3	5	4 – 6	<5	*Archidendropsis basaltica*	<5
Shrub 1	2	1 – 3	10	*Carissa lanceolata*	5
	4	2 – 5		*Geijera parviflora*	<5
	3	2 - 4		*Psydrax oleifolia*	<2
	3	2 – 5		*Petalostigma pubescens*	<5
Shrub 2	1	1	<5	Carissa ovata	<5
Ground				*Themeda triandra*	
				Pennisetum ciliare	
				Triodia pungens	

%Rock	0	%Bare ground	50	%Leaf litter	2	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	6				*Eucalyptus populnea*		15	3	3	1			10				
					Carissa ovata						7						<5
					Carissa lanceolata					34	1					10	
					Eremophila mitchellii			1	1	2							
					Geijera parviflora			2	5	1					<5		
					Psydrax oleifolia					1						<1	
	1				*Brachychiton populnea*		1				1						<1
					Acacia sericophylla			2	1					<1			
					Petalostigma pubescens					2						<1	
	2	1			*Corymbia dallachiana*		2	1	1								

Ground layer only

Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Triodia pungens	3		10	4		30		20	25		8
Themeda triandra	3	5	1	2	1	20	15	30	20	20	8
Aristida leptopoda	2					5	1	15			1
Dichanthium queenslandicum	1	2					5				1
Panicum sp.		2			2		10			5	1
Herb #1 – *Asteraceae*	1	1				5	15				2
Herb – *Asteraceae*				1					5		1
Desmodium sp.					2					10	1
Dead											
Litter						10	5	15	40	40	22
Rock											
Bare Ground						30	55	20	10	25	28
Cryptophytes											

Community Health and Condition			
Overall Health:	Relative good health	Fire Height:	n/a
Potential EVR Flora Species Habitat:	Moderate – *Desmodium macrocarpum*	Fire Age:	n/a
EVR Flora Species Recorded:	None	Fire Proportion:	n/a
Weed Species:	*Pennisetum ciliare*	Logging:	None
Weed Cover (%):	<5%	Ringbarking/thinning:	Potentially has occurred
Disturbance:	Cattle, Tree clearing/thinning	Feral Digging:	None
Disturbance cover (%):	100%	Flooding:	None
Grazing:	Present	Extensive Clearing:	Extensive clearing nearby.
Fire:	n/a	Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Light brown/tan brown
Altitude:	365m	Soil Texture:	Loam
Relief:		Soil Description:	Light brown/tan brown loam
Slope:	Flat	Geology:	Map (reliability low). No obvious geology.
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	Minor erosion, no landform type.		

BioCondition Site Data – MVS07

Photo plate MVS07-7- North at point "a"

Photo plate MVS07-8- South from point "a"

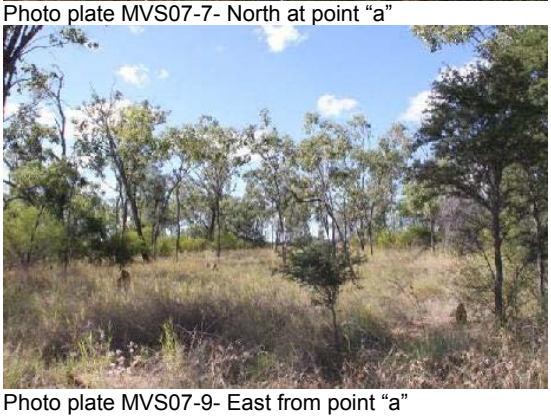


Photo plate MVS07-9- East from point "a"

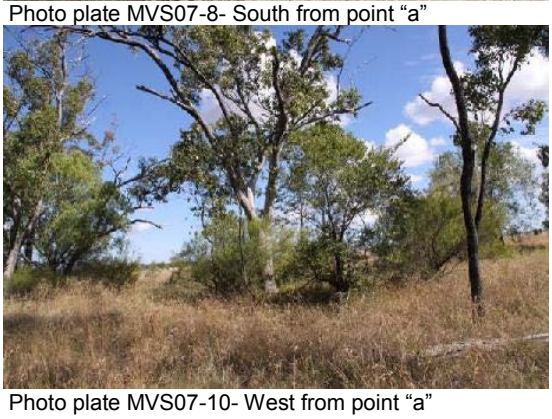


Photo plate MVS07-10- West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 12	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 12	
Tree canopy (EDL*) height: 16.5 – 18	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 12 – 18 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Acacia sericophylla* *Corymbia dallachiana* *Eremophila mitchellii* *Petalostigma pubescens* *Eucalyptus populnea* *Brachychiton populnea* *Geijera parviflora* *Psydrax oleifolia.*	
Other observations: - Hollows present in old Popular box trees (6)	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia sericophylla* *Carissa lanceolata* *Carissa ovata* *Petalostigma pubescens* *Archidendropsis basaltica*	
Grass species richness: *Themeda triandra* *Pennisetum ciliare* *Aristida latifolia* *Triodia pungens*	
Forbs and others (non grass ground) species richness: Asteraceae (flat weed) *Desmodium varians*	
Non-native plant cover: *Pennisetum ciliare*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	2	**3**	5	**4**	6	**5**	6	**6**	3
7	6	**8**	2	**9**	4	**10**	1	**11**	2	**12**	4
13	1	**14**	5								
Total: 48											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	60	40	65	45	25	47
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)				5	10	3
Native shrubs (<1m height)						
Non-native grass						
Non-native forbs and shrubs						
Litter*	10	5	15	40	40	22
Rock						
Bare ground	30	55	20	10	25	28
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	5.0 – 7.4	2.4	S	81.5 – 84.5	3.0			
S	20.6 – 21.2	0.6	S	84.4 – 87.2	2.8			
S	20.5 – 22.3	1.8	S	83.0 – 86.3	3.3			
S	20.8 – 21.6	0.8	C	80 – 86.8	6.8			
C	23.1 – 30.1	7.0						
S	23.1 – 25.6	2.5						
S	23.1 – 24.6	1.5						
S	22.2 – 24.1	1.9						
S	25.8 – 28.2	2.4						
C	29.2 – 33.2	4.0						
S	32.9 – 33.4	0.5						
S	57.3 – 59.3	2.0						
Total C: 20.2 % Total S: 23.1 % Total E: 0.0%								

Site Survey Data – MVS08

Photo plate MVS08-1 – Panorama view of the vegetation at the quaternary survey site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Saltbush Station. Alpha 19.15KM @ 148^0; Jericho 43.53km @ 255^0.	
Date: 20/05/2012	**Photos**		**Survey plot No**. MVS29/Q3 **Site no.:** MVS08
Survey plot location (GPS - UTM): 55 K 452932 7401404	**Land zone**: 5	**Soil type**: Light brown/tan brown sandy loam	**Canopy height** (m) Range: 14 - 20 Average: 16

Vegetation description *Eucalyptus populnea* woodland.	**Regional Ecosystem**: 12.5.12	**FPC** (%) 15%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus populnea*	a	*Geijera parviflora*	f	*Psydrax oleifolia*	f	*Pennisetum ciliare**	a
2	*Corymbia dallachiana*	o	*Carissa lanceolata*	f	*Eremophila mitchellii*	a	*Aristida leptopoda*	f
3	*Lysiphyllum carronii*	o	*Acacia salicina*	o	*Carissa ovata*	a	*Dichanthium sp.*	o
4			*Archidendropsis basaltica*	f			*Entolasia sororia*	o

Codes: - A = abundant; F = frequent; O = occasional

Notes: -

- Woodland to 20 metres. T1 cover 15%, sub stratum 40 – 50% (8m): *Carissa ovata, Archidendropsis basaltica*
- Numerous logs on ground
- Hollows and potential hollows in *E. populnea*
- Good grass, sword consistent with BB18RF including *Entolasia spp*.
- Area appears to be in good health and is fenced off.

Site Survey Data - MVS09

Photo plate MVS09-1 - Panorama view of transect from point “a”

Photo plate MVS09-2 - Groundcover at point “a”

Photo plate MVS09-3 - Groundcover at point “b”

Photo plate MVS09-4 - Panorama view of transect from point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS30
Site No.	MVS09
Date/Time:	21/05/2012; 1039 - 1158
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	150 – 300 m
Area of Community:	>50 ha

Site Description			
Location:	Site located on Cadwell station, north of Saltbush station, Alpha 21.86 km @ 152$^{0;}$ Jericho 44.43 km @ 251^{0}		
Site Description:	Area of low, open woodland; dominated by *E. melanophloia*. Appears to be regrowth, evidence of fire. Termite mounds.		
Orientation of Transect:	Along contour	Elevation:	365 m
Bearing:	208	Datum:	WGS84
Easting/Northing:	a) 55k 452922; 7404540 b) 55k 452879; 7404455	Latitude/Longitude	a) S23.46850 E146.53901 b) S23.46927 E146.53860

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover**	**Key species**	**Individual covers**
Tree 1	9	8 – 10	<5%	*Eucalyptus melanophloia*	24%
	8.5	8-9	<1%	*Acacia sericophylla*	<1%
Tree 2	5	3 – 8	<4%	*Petalostigma pubescens*	2%
				Acacia sericophylla	2%
				Eucalyptus melanophloia	2%
Shrub 1	2	1 – 3	>12%	*Eucalyptus melanophloia*	2%
				Acacia sericophylla	5%
				Petalostigma pubescens	5%
				Corymbia dallachiana	<1%
				Alphitonia excelsa	<1%
Ground		<0.6	68%	*Themeda triandra*	40
				Schizachyrium fragile	30
				Pennisetum ciliare	2
				Triodia pungens.	30
				Chrysocephalum apiculatum	2%

%Rock	0	%Bare ground	23	%Leaf litter	18	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					**Species**	**Stem Count** (500m^2)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
					Eucalyptus melanophloia		1	11	12	4	1		10				
					Petalostigma pubescens			1	8	15				10	5	5	
					Acacia sericophylla			4	3	2	2				5	1	1
					Low shrub						2						1

Ground layer only

Species	**Stem Count** (500m^2)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Eucalyptus melanophloia		1					5				1
Themeda triandra	10	4				30	20				10
Schizachyrium fragile	20		10	30		30	0	20	90	10	30
Triodia pungens			3			10	0	30	0	40	16
Chrysocephalum apiculatum		4				20					4
Pennisetum ciliare		2					5				1
Cyperus sp.										10	2
Asteraceae (weed)		1					5				1
Paspalidium sp.		2					5				1
Panicum sp.		2					5				1
Aristida latifolia		2					5				1
Dead								5		5	2
Litter						**5**	45	5	5	5	13
Rock											0
Bare Ground						**5**	5	40	5	30	17
Cryptophytes											

Community Health and Condition			
Overall Health:	Moderate	Fire:	Yes
Potential EVR Flora Species Habitat:	Low	Fire Height:	1 – 6 m
EVR Flora Species Recorded:	None	Fire Age:	5 – 10 years
Weed Species:	No observed	Fire Proportion:	1 – 5 %
Weed Cover (%):	*Pennisetum ciliare*	Logging:	None
Disturbance:	Yes - cattle	Ringbarking/thinning:	Possibly in the past >20 years
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	yes	Flooding:	None
		Extensive Clearing:	Possibly >20 years
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Light brown
Altitude:	365m	Soil Texture:	Loam sand
Relief:	flat	Soil Description:	Light brown loamy sand. Slight rise to the north-east <1%
Slope:	Flat	Geology:	Map (reliability low). No obvious geology
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	Minor erosion. No landform present.		

BioCondition Site Data – MVS09

Photo plate MVS09-5 - North from point "a"

Photo plate MVS09-5 - South from point "a"

Photo plate MVS09-5 - East from point "a"

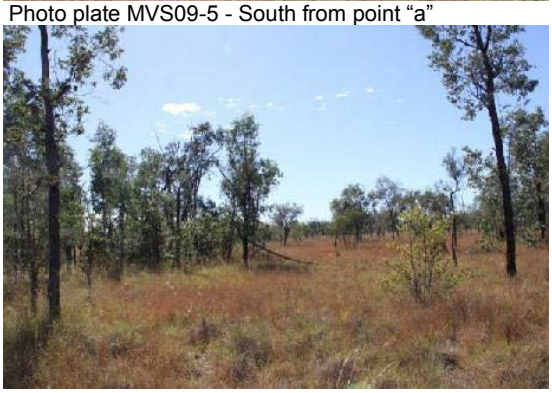


Photo plate MVS09-5 - West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 0	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees: 1	
Tree canopy (EDL*) height: 9	**Tree sub canopy and/or emergent height** (where relevant): **S:** 5 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Petalostigma pubescens*	 *Acacia sericophylla* *Acacia leptocarpa*

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia sericophylla* *Corymbia dallachiana*	 *Petalostigma pubescens*
Grass species richness: *Themeda triandra* *Triodia pungens* *Aristida* latifolia	 *Heteropogon contortus* *Schizachyrium fragile*
Forbs and others (non grass ground) species richness: *Chrysocephalum apiculatum*	
Non-native plant cover: *Pennisetum ciliare*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	1	**3**	2	**4**	1	**5**	1	**6**	2
7	1	**8**	2	**9**	4	**10**	1	**11**	2		
Total:											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	80	45	50	90	50	63
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	10	5			10	5
Native shrubs (<1m height)						
Non-native grass						
Non-native forbs and shrubs						
Litter*	5	45	10	5	1	13
Rock						
Bare ground	5	5	40	5	40	19
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)

Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	6.2 – 8.5	2.3	S	7.8 – 10.9	3.1	S	16.4 – 23.2	6.8
S	20.0 – 21.0	1.0	C	23.1 – 26.7	3.6	C	23.9 – 27.2	3.3
S	24.3 – 25.1	0.8	C	24.9 – 27.1	2.2	S	27.2 – 27.9	0.5
S	23.0 – 33.6	10.6	C	62.9 – 65.0	2.1	C	89.7 – 92.2	2.5

Total C: 13.7%
Total S: 25.1%
Total E: 0.0%

Site Survey Data– MVS10

No photos of this site.

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Saltbush Station at the approximate location of the Unidel site BB19. Elevation 355 m,	
Date: 21-05-2012; 1320	**Photos**		**Survey plot No**. Q04/BB19 **Site No.:** - MVS10
Survey plot location (GPS - UTM): 55K 0450725 7403917	**Land Zone**: 5/3	**Soil type**: Sandy loan, grey to light brown	**Canopy height** (m) Range: - 6 m Average:

Vegetation description Could not locate exact position of Unidel survey transect.	**Regional Ecosystem**: Non remnant	**FPC** (%) 0%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1			*Eucalyptus melanophloia*	f			*Pennisetum ciliare*	a
2			*Eucalyptus populnea*	o			*Themeda triandra*	f
3			*Corymbia dallachiana*	o			*Heteropogon contortus*	f
							Triodia pungens	f
							Aristida leptopoda	o

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Area has been pulled. Unidel Report (2009) indicates that it had been pulled when they visited the site in 2009.
- Area considered to be non-remnant
- Numerous immature canopy species regenerating
- Grass sword dense dominated by *Pennisetum ciliare*
- Numerous logs on ground as the result of vegetation being pulled.

Site Survey Data – MVS11

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Monklands Station of track to mobile phone relay tower near Monklands eastern property boundary	
Date: 21 May 2012	**Photos**		**Survey plot No**. Q05 **Site No**. MVS11
Survey plot location (GPS - UTM): 55K 0452214 7406086	**Land Zone**: 5	**Soil type**: Light grey to brown sandy loam	**Canopy height** (m) Range:- 8- 14 m Average: - 12
Vegetation description *Eucalyptus melanophloia* woodland with *Corymbia dallachiana* and *Petalostigma pubescens* dominating the understorey		**Regional Ecosystem**: 10.5.5	**FPC** (%) <10%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	f	*Petalostigma pubescens*	f	*Petalostigma pubescens*	f	*Themeda triandra*	a
2	*Corymbia dallachiana*	o	*Acacia sericophylla*	f	*Carissa ovata*	f	*Aristida latifolia*	f
3			*Psydrax oleifolia*	o			*Pennisetum ciliare*	a
4							*Panicum sp.*	o
5							*Chrysocephalum apiculatum*	o
6							*Enteropogon ramosus*	o
7							*Paspalidium sp.*	o

Codes: -a = abundant; f = frequent; O = occasional

- 93 -

Site Survey Data– MVS12

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Monklands Station, eastern portion south of track to telecommunications tower on the western boundary.	
Date: 21 May 2012; 1448	**Photos**		**Survey site No**. - Q06 **Site No**. – MVS12
Survey plot location (GPS - UTM): 55K 0452086 7406370	**Land Zone**: 3	**Soil type**: Sand with organic material in A profile	**Canopy height** (m) Range: - 6 - 8 Average: - 7
Vegetation description A narrow stand of low open forest dominated by *Melaleuca tamariscina* surrounded by *Eucalyptus melanophloia* woodland		**Regional Ecosystem**: 10.5.1g	**FPC** (%) 30%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	f	*Melaleuca tamariscina*	a	*Melaleuca tamariscina*	f	*Panicum sp.*	o
2			*Acacia sericophylla*	f			*Chrysocephalum apiculatum*	f
3			*Psydrax oleifolia*	o			*Aristida leptopoda*	f
4			*Petalostigma pubescens*	a			*Triodia pungens*	f
5			*Acacia leptostachya*	f			*Schizachyrium fragile*	f
6			*Acacia excelsa*	f			*Pennisetum ciliare**	f
7							*Themeda triandra*	f

Codes: -a = abundant; f = frequent; O = occasional; * weed species

Site Survey Data – MVS13

Photo plate MVS13-1 – Panorama view along transect at point “a”

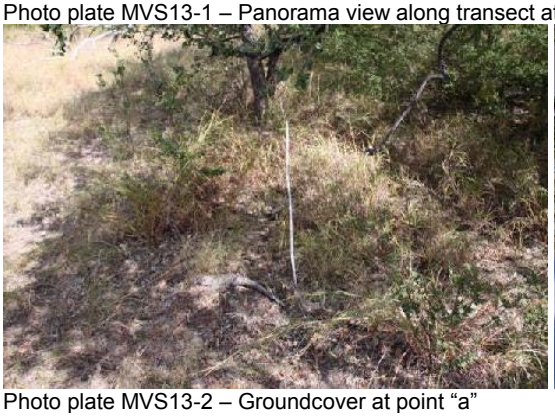


Photo plate MVS13-2 – Groundcover at point “a”

Photo plate MVS13-3 – Canopy cover at point “a”

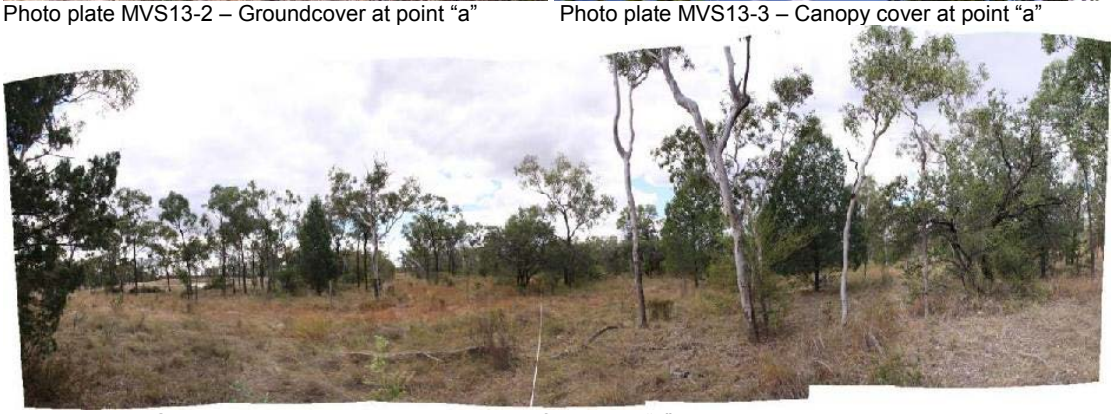


Photo plate MVS13-4 – Panorama view along transect from point “b”

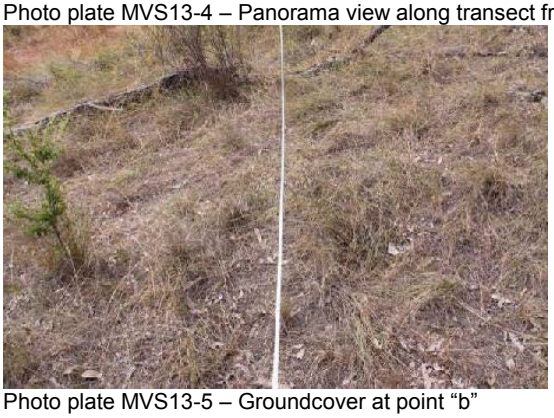


Photo plate MVS13-5 – Groundcover at point “b”

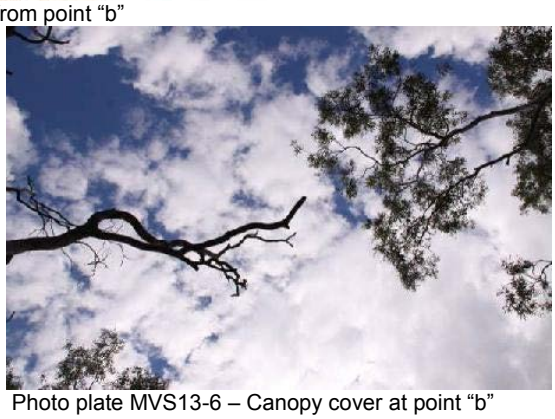


Photo plate MVS13-6 – Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB20RF
Site No.	MVS13
Date/Time:	22/05/2012; 1229-1340
Regional Ecosystem Profile	
RE/Landtype:	10.5.5 - *Eucalyptus melanophloia* open woodland on sand plains
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	150 – 300 m
Area of Community:	>50 ha

Site Description			
Location:	Site on Monkland Station, Approximately 26.78 kilometres NW of Alpha. A farm dam is located 100+ metres to the west of the transect		
Site Description:	Disturbed and degraded woodland containing *E. melanophloia, C. dallachiana* and *C.* clarksoniana with the understorey dominated by *P. pubescens*. Numerous stags present indicating historic land management practice.		
Orientation of Transect:	Along contour	Elevation	370 m
Bearing:	30 (100 transect)	Datum:	WGS84
Easting/Northing:	a) 55 K 450993 7409035 b) 55 K 451055 7409112	Latitude/Longitude	a) S23.42784 E146.52027 b) S23.42716 E146.52089

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover**	**Key species**	**Individual covers**
Tree 1	12	10 – 13		*Eucalyptus melanophloia*	<5
	11	8 – 13		*Corymbia dallachiana*	<5
	9	8 – 10		*Corymbia clarksoniana*	
Tree 2	6.5	5 – 8	<5	*Eucalyptus melanophloia*	<1
				Corymbia dallachiana	<1
				Corymbia clarksoniana	<1
				Petalostigma pubescens	3
Shrub 1	2	1-3	20	*Petalostigma pubescens*	10
	1.5	1-2		*Carissa lanceolata*	10
Shrub 2	1	1	10	*Carissa ovata*	10
Ground			40	*Sida rhombifolia*	
				Themeda triandra	
				Pennisetum ciliare	
				Schizachyrium fragile	
				Aristida personata	
				Aristida ramosa	

%Rock	0	%Bare ground	50	%Leaf litter	10	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					**Species**	**Stem Count** (500m^2)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
					Petalostigma pubescens			2	5	35	3				5		
					Corymbia clarksoniana		1	3	3		3		2				
					Carissa lanceolata					11	1					5	
					Sida rhombifolia												2
					Eucalyptus melanophloia		3	3					<1	<1			
					Carissa ovata				1	5						<1	
					Acacia leptostachya			1							<1		
					Desmodium varians						5						
					Acacia personata				1						<1		
					Corymbia dallachiana		2		1	2	1		<5				
					Callitris glaucophylla			2						<1			

Ground layer only

Species	**Stem Count** (500m^2)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Sida cordifolia	1					5				20	5
Chrysocephalum apiculatum	4		1	2		15		5	10		6
Pennisetum ciliare	7	3				30	15				7
Themeda triandra	1					5					1
Aristida personata		6		4			30		30		12
Schizachyrium fragile			5	1	9			15	5	35	11
Herb (Asteraceae)		1					5				
Dead						0	5	5	5	10	5
Litter						5	5	15	15	5	9
Rock											
Bare Ground						40	40	60	35	30	41
Cryptophytes											

Community Health and Condition			
Overall Health:	Area is a degraded state	Fire:	No
Potential EVR Flora Species Habitat:	Low	Fire Height:	Na
EVR Flora Species Recorded:	None	Fire Age:	Na
Weed Species:	Pasture grasses – *Pennisetum ciliare, Melinis repens*	Fire Proportion:	Na
Weed Cover (%):	30%	Logging:	?
Disturbance:	Cattle, vegetation removal, pigs	Ringbarking/thinning:	Possible, pulling
Disturbance cover (%):	100%	Feral Digging:	Yes
Grazing:	Yes	Flooding:	
		Extensive Clearing:	Partial
		Remnant:	no
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Grey/brown
Altitude:	370	Soil Texture:	Sandy
Relief:		Soil Description:	Sandy grey to grey brown soil
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	-		

BioCondition Site Survey Data – MVS13

Photo plate MVS13-7 – view north from point "a"

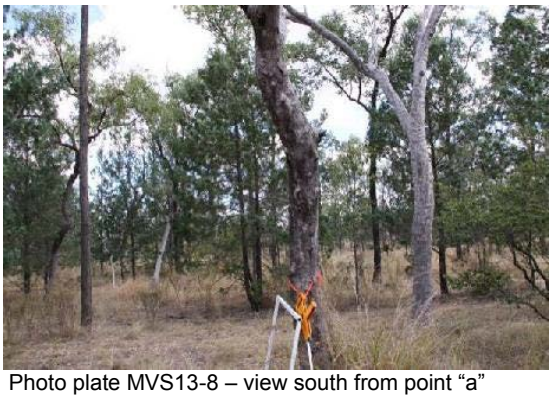


Photo plate MVS13-8 – view south from point "a"

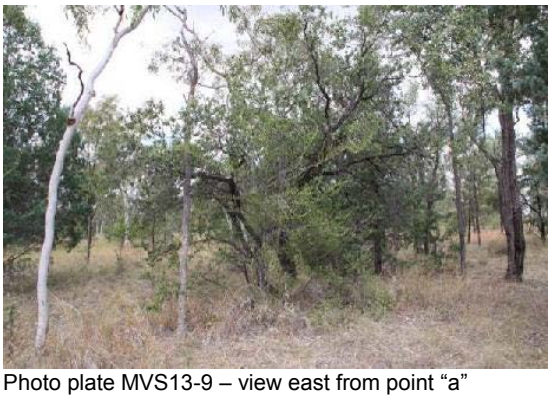


Photo plate MVS13-9 – view east from point "a"

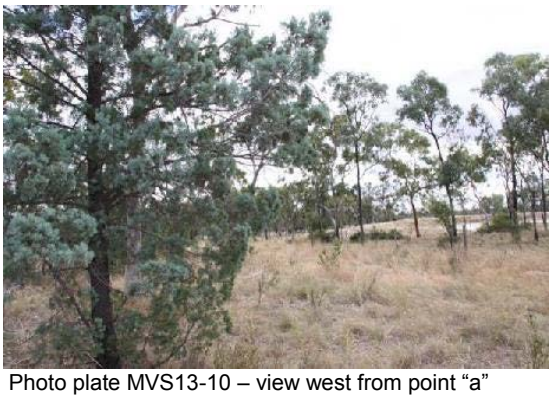


Photo plate MVS13-10 – view west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 11	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees: 2	
Tree canopy (EDL*) height: 13	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 5 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 0%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus melanophloia *Corymbia clarksoniana*	*Corymbia dallachiana* *Petalostigma pubescens*

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Carissa lanceolata* *Carissa ovata*	
Grass species richness: *Themeda triandra* *Aristida ramosa*) *Heteropogon contortus*	 *Aristida personata* *Schizachyrium fragile*
Forbs and others (non grass ground) species richness: Trifoliate *Fabaceae* *Lomandra leucocephala*	
Non-native plant cover: *Pennisetum ciliare* *Melinis repens*	 *Sida cordifolia*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	12	**2**	1	**3**	1	**4**	4	**5**	8	**6**	8
7	2	**8**	4	**9**	1	**10**	2	**11**	4	**12**	8
13	5	**14**	5	**15**	5	**16**	6				
Total: 74											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	5	30	15	35	30	24
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	15	5	5	10	0	7
Native shrubs (<1m height)						
Non-native grass	30	15	0	0	0	9
Non-native forbs and shrubs	5	0	0	0	20	5
Litter*	5	10	20	20	15	14
Rock						
Bare ground	40	40	60	35	30	41
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	0.0 – 2.8	2.8	S	2.4 – 5.3	2.9	S	4.7 – 13.1	8.4
S	16.8 – 17.7	0.9	S	20.2 – 21.2	1.0	S	41.8 – 43.9	2.1
C	43.0 – 51.8	8.8	C	73.2 – 77.2	4.0	S	74.5 – 75.2	0.7
S	75.3 – 88.8	13.5	C	90.4 – 94.2	3.8			
Total C: 16.6% Total S: 32.3% Total E: 0.0%								

Site Survey Data – MVS14

Photo plate MVS14-1 – View of transect from point “a”

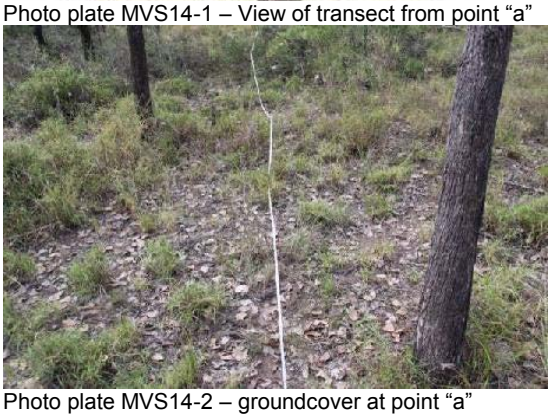


Photo plate MVS14-2 – groundcover at point “a”

Photo plate MVS14-3 – canopy cover at point “a”

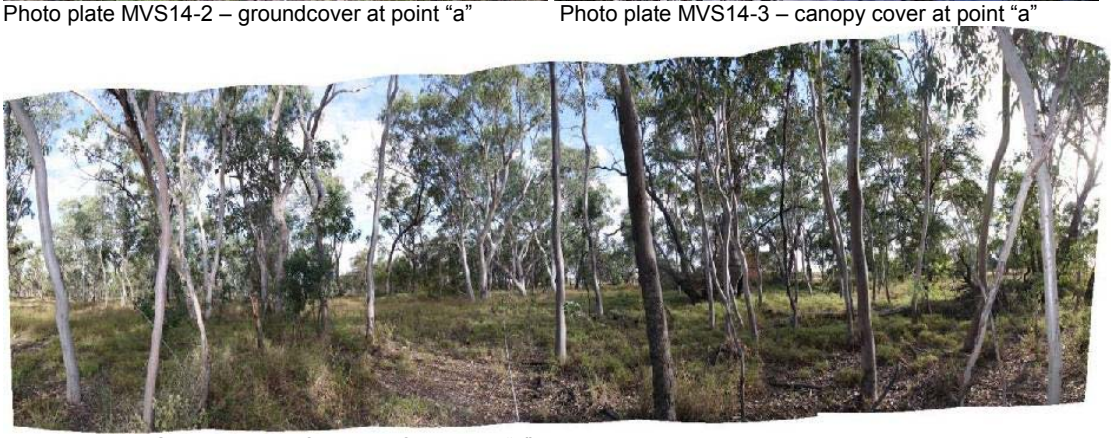


Photo plate MVS14-4 – View of transect from point “b”

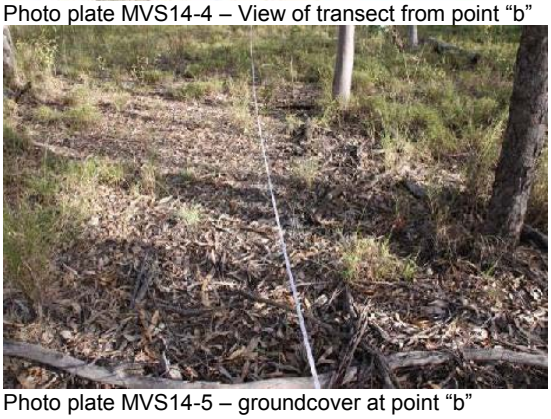


Photo plate MVS14-5 – groundcover at point “b”

Photo plate MVS14-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB24RF
Site No.	MVS14
Date/Time:	22/05/2012; 1442-1544
Regional Ecosystem Profile	
RE/Landtype:	10.3.14b - *Eucalyptus camaldulensis* and/or *E. coolabah* open woodland along channels and on floodplains
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No Concern at Present
Mapped:	Yes
Width of Community:	75 - <150 m
Area of Community:	20 - <50 ha

Site Description			
Location:	Site on Monklands Station approximately 3 km to the east of the homestead and 28.48 km NW of Alpha		
Site Description:	The site is located on a minor waterway and over the flat flood plain. Area has some substantial trees including *E. camaldulensis* and *E. populnea.*		
Orientation of Transect:	Across waterway	Elevation	331 m
Bearing:	345^0	Datum:	WGS84
Easting/Northing:	a) 55 K 447842 7410397 b) 55 K 447847 7410493	Latitude / Longitude	a) S23.41544 E146.48948 b) S23.41457 E146.48953

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover**	**Key species**	**Individual covers**
Tree 1	22	20 – 25	60	*Eucalyptus camaldulensis*	10
	20	20 – 22		*Eucalyptus populnea*	50
Tree 2	10	8-12	>15	*Lysiphyllum carronii*	<5
	11	9-12		*Eucalyptus populnea*	15
Tree 3	7	5-8	>10	*Acacia salicina*	<5
	5	4-6		*Eremophila mitchellii*	10
Shrub 1	1	.5-1.5	<30	*Carissa ovata*	15
	1.5	1-2		*Carissa lanceolata*	10
	1.5	1.2		*Geijera parviflora*	<5
Ground				*Pennisetum ciliare*	20
				Enteropogon ramosus	<5
				Aristida leptopoda	<5
				Cyperus sp.#1	<1
				Cyperus sp.#2	<1

%Rock	0	%Bare ground	60	%Leaf litter	10	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					**Species**	**Stem Count** ($500m^2$)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
	16				*Eucalyptus populnea*		14	21	4	4	1						
					Eremophila mitchellii				3	1							
					Acacia salicina				6		1						
					Carissa ovata				14	8	22						
					Geijera parviflora					3	1						
					Psydrax oleifolia				1								
					Eucalyptus camaldulensis		3	7	8	2							
					Acacia harpophylla				1								
					Low shrub (Malvaceae)					4							<1

Ground layer only											
Species	**Stem Count** ($500m^2$)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Carissa ovata		3					30				6
*Pennisetum ciliare**	5	10	8			20	60	40			24
Aristida leptopoda	3			1		10			5		3
Desmodium varians											
Enteropogon ramosus.			1		2			10		5	3
Eragrostis sororia				5							
Cyperus sp. #1				2					5		1
Cyperus sp. #2				1							
Dead											
Litter						20	10	40	5	95	34
Rock											
Bare Ground						50	0	10	85	0	29
Cryptophytes											

Community Health and Condition			
Overall Health:	Relative good health	Fire:	n/a
Potential EVR Flora Species Habitat:	Low	Fire Height:	n/a
EVR Flora Species Recorded:	None	Fire Age:	n/a
Weed Species:	Yes	Fire Proportion:	n/a
Weed Cover (%):	80	Logging:	None
Disturbance:	Cattle	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	-
		Extensive Clearing:	No
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observations
Landform Pattern	PAC	Soil Colour:	Grey
Altitude:	331m	Soil Texture:	Loamy sand – fine grain
Relief:	Flat	Soil Description:	Variety of sand present white and heavy in the waterway, loamy fine on the flood plain
Slope:	Flat	Geology:	Map (reliability high). Land zone 3.
Slope Class:	0°	Rock/Sediment Type:	Alluvial
Erosional Landform:	None		

BioCondition Site Survey Data – MVS14

Photo plate MVS14-7 – View north from point "a"

Photo plate MVS14-8 – View south from point "a"

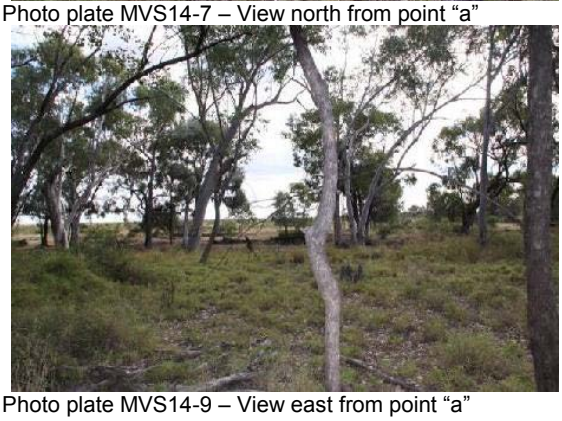


Photo plate MVS14-9 – View east from point "a"

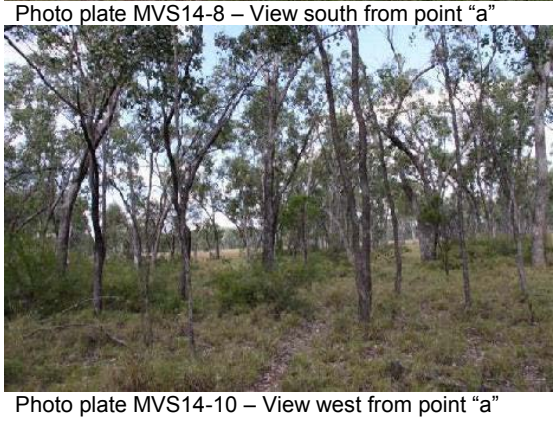


Photo plate MVS14-10 – View west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 29	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees: 29	
Tree canopy (EDL*) height: 22	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 10 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus camaldulensis* *Eucalyptus populnea* *Acacia salicina* *Eremophila mitchellii*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Carissa lanceolata* *Carissa ovate*
Grass species richness: *Aristida leptopoda* *Aristida personata* *Enteropogon ramosus*
Forbs and others (non grass ground) species richness: *Chrysocephalum apiculatum*
Non-native plant cover: *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	5	**9**	2	**17**	2	**25**	3				
2	5	**10**	2	**18**	2	**26**	1				
3	5	**11**	1	**19**	3						
4	4	**12**	2	**20**	5						
5	6	**13**	4	**21**	4						
6	8	**14**	3	**22**	3						
7	4	**15**	7	**23**	2						
8	4	**16**	7	**24**	5					**Total: 99**	

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	10	0	10	5	5	6
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)				5		7
Native shrubs (<1m height)		30				
Non-native grass	20	60	40	0	0	24
Non-native forbs and shrubs						
Litter*	20	10	40	5	95	34
Rock						
Bare ground	50	0	10	85	0	29
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	0.0 – 0.7	0.7	C	35.6 – 36.0	0.4	S	98.6 – 100	1.4
C	1.6 – 6.4	4.8	S	36.8 – 38.8	2.0	S	99.2 – 100	0.8
C	2.4 – 7.0	4.6	C	37.6 – 42.0	4.4			
C	3.2 – 5.1	1.9	S	44.2 – 46.9	2.7			
C	6.6 – 9.1	2.5	C	46.0 – 51.9	5.9			
C	17.1 – 24.3	7.2	C	55.0 – 60.0	5.0			
S	22.1 – 26.4	4.3	C	59.4 – 69.6	10.2			
C	25.3 – 29.2	3.9	C	68.5 – 72.7	4.2			
S	28.4 – 29.4	1.0	C	69.0 – 83.9	4.9			
C	29.8 – 34.9	5.1	S	89.1 – 91.5	2.4			
C	31.6 – 35.6	4.0	S	91.1 – 93.7	2.6			
S	32.2 – 34.1	1.9	S	95.0 – 98.0	3.0			
Total C: 69.7% Total S: 22.1% Total E: 0%								

Site Survey Data – MVS15

Photo plate MVS15-1 – View north

Photo plate MVS15-2 – View south

Photo plate MVS15-2 – View east

Photo plate MVS15-3 – View west

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Monklands Station, south and east of Monklands Rd in an open area	
Date: 25 May 2012; 1646	**Photos**		**Survey plot No** MVS32/Q07 **Site No.** MVS15.
Survey plot location (GPS - UTM): 55K 0445443 741394	**Land Zone**: 3	**Soil type:** Dark grey sandy loam	**Canopy height** (m) Range: Average:
Vegetation description Grassland with a mix of native and exotic grasses		**Regional Ecosystem:** Non-remnant	**FPC** (%) -

Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
				Eucalyptus camaldulensis	o	*Heteropogon contortus*	a
				Corymbia tessellaris	o	*Aristida personata*	a
				Eucalyptus populnea	o	*Melinis repens*	o
						Pennisetum ciliare	f
						Desmodium sp.	o

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Open grassland dominates
- Waterway located to south and west
- Approximately 200m south of Monklands Rd.

Site Survey Data – MVS16

Photo late MVS16-1 – View of transect from point “a”

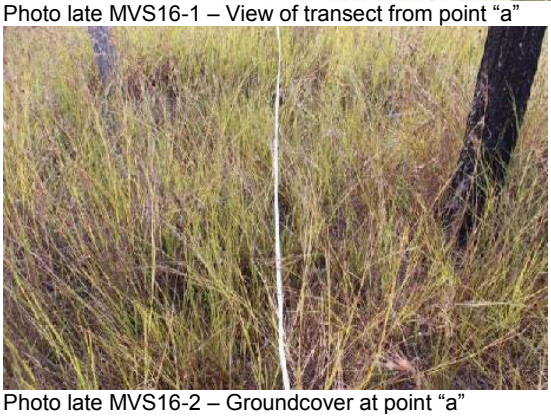


Photo late MVS16-2 – Groundcover at point “a”

Photo late MVS16-3 – Canopy cover at point “a”

Photo late MVS16-4 – View of transect from point “b”

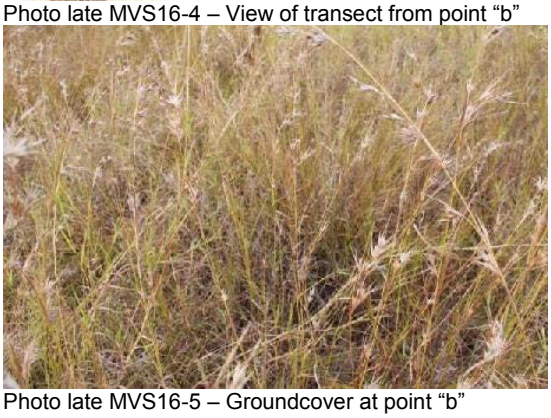


Photo late MVS16-5 – Groundcover at point “b”

Photo late MVS16-6 – Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB21RF
Site no.	MVS16
Date/Time:	23/05/2012; 1200 - 1318
Regional Ecosystem Profile	
RE/Landtype:	10.5.5 – incorrectly mapped – should be mapped as non-remnant
Bioregion:	10 – Desert uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	F
Area of Community:	F

Site Description			
Location:	Monklands Station, Alpha, 26.786 km @ 154^0; Jericho 40.47 km @ 246^0		
Site Description:	Site located in disturbed woodland with regenerating *E. melanophloia*. Area has been burnt however area was <20 year old regrowth. Possible result of a pulling exercise in the late 1980's.		
Orientation of Transect:	Along contour	Elevation:	359m
Bearing:	40^0	Datum:	WGS84
Easting/Northing:	a) 55 K 447466 7406750 b) 55 K 447525 7406839	Latitude/Longitude	a) S23.44838 E146.48567 b) S23.44757 E146.48625

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover**	**Key species**	**Individual covers**
Tree 1	12	10-14	5	*Eucalyptus melanophloia*	5
Tree 2	10	8–10	<10	*Eucalyptus melanophloia*	5
				Acacia sericophylla	
				Acacia harpophylla	
Shrub 1	2	1 -2	5	*Carissa lanceolata*	<5
		1-3		*Acacia sericophylla*	<2
		1-3		*Petalostigma pubescens*	<2
Shrub 2	1	0.5-1	<10	*Cissus ovata*	<5
		0.5-1		*Carissa lanceolata*	<5
Ground			65	*Themeda triandra*	
				Heteropogon contortus	
				Sida rhombifolia	
				Desmodium varians	
				Aristida latifolia	
				Aristida contorta	
				Schizachyrium fragile	

%Rock	0	%Bare ground	20	%Leaf litter	14	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count ($500m^2$)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
					Eucalyptus melanophloia		8	13	18	18	17		2	10	5	2	
					Sida cornifolia						12						<5
					Cissus ovata					6	16					<5	15
					Carissa lanceolata					1						<5	
					Petalostigma pubescens						1						<5

Ground layer only

Species	Stem Count ($500m^2$)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Themeda triandra	2		4	4		5		20	15		8
Schizachyrium fragile	10					10					2
Aristida latifolia	2	3		4		5	5		10		4
Heteropogon contortus		19	2	3	10		70	25	20	50	33
Aristida contorta		5		7	9		5		10	20	7
Panicum sp.			4		4			10		10	4
Desmodium varians			3					5			1
Eragrostis sororia					5					5	1
Chrysocephalum apiculatum	5					5					1
Wahlenbergia gracilis	4		10			5		5			2
Dead						10	5				3
Litter						10	10	25	15	10	14
Rock											
Bare Ground						50	5	10	30	5	20
Cryptophytes											

Community Health and Condition			
Overall Health:	Poor	Fire:	Yes
Potential EVR Flora Species Habitat:	nil	Fire Height:	6 – 12 m
EVR Flora Species Recorded:		Fire Age:	> 3 years
Weed Species:	None found	Fire Proportion:	100 %
Weed Cover (%):		Logging:	None
Disturbance:	yes	Ringbarking/thinning:	Possible historic
Disturbance cover (%):	100	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	Yes
		Remnant:	No
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Grey
Altitude:	353m	Soil Texture:	Loamy sand
Relief:		Soil Description:	Sandy loam
Slope:	Easterly flat	Geology:	Map (reliability low)
Slope Class:	<2°	Rock/Sediment Type:	
Erosional Landform:	Minor. No landform.		

BioCondition Site Survey Data – MVS16

Photo late MVS16-7 – North from point "a"

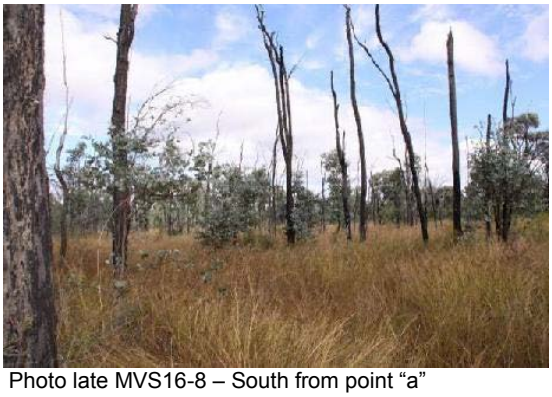


Photo late MVS16-8 – South from point "a"

Photo late MVS16-9 – East from point "a"

Photo late MVS16-10 West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 0	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** -
Total Large trees: 0	
Tree canopy (EDL*) height: 10	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 4 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus melanophloia	*Acacia harpophylla*
Acacia sericophylla	*Corymbia dallachiana*

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**	
Carissa lanceolata	*Petalostigma pubescens*
Carissa ovata	
Grass species richness:	
Themeda triandra	*Aristida latifolia*
Heteropogon contortus	*Aristida contorta*
Schizachyrium fragile	*Panicum sp.*
Forbs and others (non grass ground) species richness:	
Chrysocephalum apiculatum	*Desmodium varians*
Wahlenbergia gracilis	
Non-native plant cover:	
Sida cornifolia	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	2	**3**	5	**4**	1	**5**	1	**6**	2
7	1	**8**	2	**9**	2	**10**	2	**11**	2	**12**	1
13	2	**14**	3	**15**	2						
Total: 32											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	20	80	55	55	80	58
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	10	0	10	0	5	5
Native shrubs (<1m height)						
Non-native grass						
Non-native forbs and shrubs						
Litter*	20	15	25	15	10	17
Rock						
Bare ground	50	5	10	30	5	20
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	37.9 – 40.8	2.9	S	54.9 – 55.9	1.0	C	55.6 – 57.6	2.0
S	59.3 – 60.0	0.7						
Total C: 4.9% Total S: 1.7% Total E: 0.0%								

Site Survey Data – MVS17

Photo plate MVS17-1 – panorama view north along BioCondition transect

NOTE: - *Unidel (2010) tertiary transect located and only BioCondition survey undertaken along the transect. Groundcover data collected for analysis by fauna consultant.*

Field Site No.: BB23RF **Site No.:** MVS17	**RE/Landtype:** 10.5.5 (degraded)	**Bioregion:** 10	**Property:** Monklands Station
Date: 22/05/12	**Photos:** N, S, E & W		
Datum: WGS84	**0m mark: Zone:** 55k **100m mark: Zone:** 55k	**AMGE:** 0448241 **AMGE:** 0448198	**AMGN:** 7045948 **AMGN:** 7405859
Elevation: 348 m	**Plot bearing:** 190^0	**Recorders:** Rob Friend	
General description: Area located in a degraded, regenerating area of vegetation surrounded by pulled/non-remnant areas. Numerous stag trees from 5m to 14m with some trees to 9m re shooting.			

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): - Number of large eucalypt trees: 4	**Non-Eucalypt Large tree DBH (from benchmark doc.): Number of large non-eucalypt trees:**
Total Large trees: 4	
Tree canopy (EDL*) height: 14	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment:	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Acacia excelsa	*Acacia salicina*
Corymbia dallachiana	*Psydrax oleifolia*
Eremophila mitchellii	*Eucalyptus melanophloia*
Eucalyptus populnea	*Geijera parviflora*
Grevillea striata	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**	
Carissa Lanceolata	*Carissa ovata*
Flindersia dissosperma	*Geijera parviflora*
Grass species richness:	
Aristida personata	*Eragrostis sp.*
Heteropogon contortus	*Eragrostis fallax*
Panicum sp.	*Themeda triandra*
Triodia pungens	
Forbs and others (non grass ground) species richness:	
Brachyscome ciliaris	
Desmodium varians	
Non-native plant cover:	
Pennisetum ciliare	*Melinis repens*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	2	**2**	4	**3**	2	**4**	1	**5**	4	**6**	4
7	2										
Total: 19											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	30	20	60	85	50	49
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)						
Native shrubs (<1m height)						
Non-native grass	40	10	10	0	40	20
Non-native forbs and shrubs						
Litter*	5	10	10	5	5	7
Rock						
Bare ground	25	60	20	10	5	24
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)

Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	32.0 – 33.2	1.2	S	36.4 – 37.5	1.1	C	43.6 – 44.2	0.6
C	46.9 – 47.9	1.0	C	48.6 – 50.9	2.3	C	51.8 – 55.9	4.1
C	68.2 – 70.6	2.4						

Total C: 10.4%
Total S: 2.3%
Total E: 0%

Abundance Measures											
Ground layer only											
Species	**Stem Count** (500m^2)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Aristida leptopoda	4	1	10		3	20	5	40		30	19
Pennisetum ciliare	3	2			3	25	15			35	15
A Grass		8	3				10	15			5
Eucalyptus populnea				1					10		2
Triodia pungens	2					10					2
Herb#1 (Asteraceae)		1					5	5			2
Panicum contortus			1					5			1
Paspalidium sp.			1		2			5		20	5
Chrysocephalum apiculatum				1					5		1
Herb #2 (Asteraceae)				1					5		1
Aristida contorta				10					65		13
Wahlenbergia gracilis				1					5		1
Desmodium varians					1					5	1

Site Survey Data – MVS18

Photo plate MVS18-1 – View of transect from Point "a"

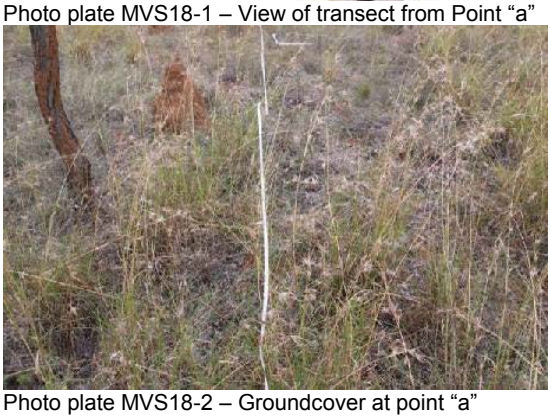


Photo plate MVS18-2 – Groundcover at point "a"

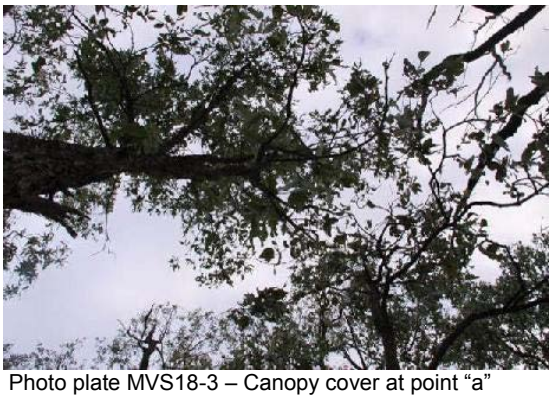


Photo plate MVS18-3 – Canopy cover at point "a"

No photos of point B due to poor light

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB22RF
Site no.	MVS18
Date/Time:	23/05/2012; 1612-1643
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	C

Site Description			
Location:	Monklands Station approx. south of homestead. Alpha 21.86 km @ 126^0; Jericho 35.56 KM @ 257^0.		
Site Description:	Residual area of remnant in an area of pulled country dominated by *E. melanophloia* with *C. clarksoniana/C. plena*		
Orientation of Transect:	Along contour	Elevation:	358 m
Bearing:	185	Datum:	WGS84
Easting/Northing:	a) 55 k446790; 7405058 b) 55k 446775; 7004961	Latitude/Longitude	a) S23.46362; E146.47899 b) S23.465451; E146.47885

Structural Summary

Stratum	Med. Canopy Height (m)	Range in strata height (m)	Total crown cover	Key species	Individual covers
Tree 1	16	12-18	15	*Eucalyptus melanophloia*	<5
	14	12-16		*Corymbia clarksoniana*	<2
	14	12-16		*Eucalyptus populnea*	<2
Tree 2	8	6-10	<5	*Eucalyptus populnea*	5
		6-10		*Eucalyptus melanophloia*	5
		6-10		*Corymbia dallachiana*	<5
		6-10		*Corymbia clarksoniana*	<3
	7	6-8		*Archidendropsis basaltica*	<1
Tree 3	5	4-6	<1	*Acacia sericophylla*	<1
	5	4-6		*Geijera parviflora*	
Shrub 1	3	2-4	3	*Acacia sericophylla*	<1
		2-4		*Carissa Lanceolata*	3
		2-4		*Carissa ovata*	2
Ground				*Desmodium varians*	
				Triodia pungens	
				Pennisetum ciliare	
				Aristida leptopoda	

%Rock	0	%Bare ground	70	%Leaf litter	10	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
					Eucalyptus melanophloia		21	8	1				20	15			
					Acacia sericophylla				2	3					<2		
					Carissa lanceolata					3	2						
					Geijera parviflora					1	1						
					Eucalyptus populnea		1	7					5	5	2		
					Brachychiton populneus			1						<1			
					Archidendropsis basaltica				3						<1		
					Corymbia dallachiana			1						<1			

Ground layer only

Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Aristida Leptopoda	6	5	3	20		30	25	15	90		31
Themeda triandra	4	1				10	5				3
Pennisetum ciliare	1	1	6		10	5	5	40		90	28
Brachyscome ciliaris							5				1
Triodia pungens			2		1			5		5	2
Paspalidium sp.			2					5			1
Dead						5					1
Litter						10	30	20	5	5	14
Rock											
Bare Ground						40	30	15	5	0	18
Cryptophytes											

Community Health and Condition			
Overall Health:	Moderate	Fire:	None
Potential EVR Flora Species Habitat:	Low	Fire Height:	
EVR Flora Species Recorded:	None	Fire Age:	
Weed Species:	Yes – *Pennisetum Ciliare*	Fire Proportion:	
Weed Cover (%):	30	Logging:	No
Disturbance:	Cattle	Ringbarking/thinning:	No
Disturbance cover (%):	100%	Feral Digging:	No
Grazing:	Yes	Flooding:	No
		Extensive Clearing:	No
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Red
Altitude:	358m	Soil Texture:	Clay loam, hard
Relief:		Soil Description:	Red/orange hard loam/clay
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:			

BioCondition Site Survey Data – MVS18

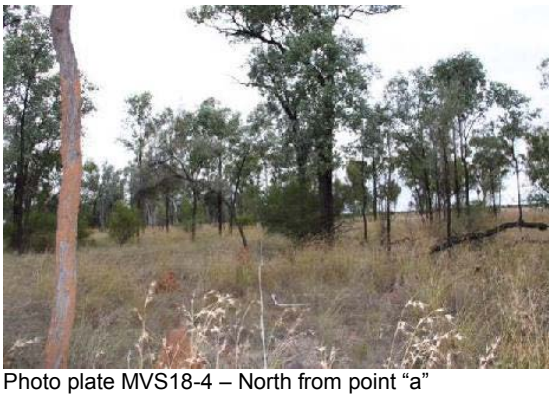


Photo plate MVS18-4 – North from point "a"

Photo plate MVS18-5 – South from point "a"

Photo plate MVS18-6 – East from point "a"

Photo plate MVS18-7 – West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:**	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees: 20	
Tree canopy (EDL*) height: 16	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 50%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus melanophloia	*Eucalyptus populnea*
Acacia sericophylla	*Corymbia dallachiana*
Corymbia clarksoniana	*Archidendropsis basaltica*

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Carissa lanceolata* *Carissa ovata*
Grass species richness: *Themeda triandra* *Aristida personata* *Paspalidium sp.* *Triodia pungens*
Forbs and others (non grass ground) species richness: *Brachyscome ciliaris* Herb (Fabaceae)
Non-native plant cover: *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	5	**2**	6	**3**	2	**4**	5	**5**	2	**6**	1
7	2	**8**	4	**9**	8	**10**	6	**11**	6	**12**	3
13	3	**14**	2	**15**	1						
Total: 56											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	50	30	25	90	5	40
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)		5				1
Native shrubs (<1m height)						
Non-native grass	0	5	40	0	90	27
Non-native forbs and shrubs						
Litter*	10	30	20	5	5	14
Rock						
Bare ground	40	30	15	5	0	18
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	37.9 – 40.8	2.9	C	55.6 – 57.6	2.0	S	59.3 – 60.0	0.7
S	54.9 – 55.9	1.0						
Total C: 4.9% Total S: 1.7% Total E: 0.0%								

Site Survey Data – MVS19

Photo plate MVS19-1 – View of transect from point “a”

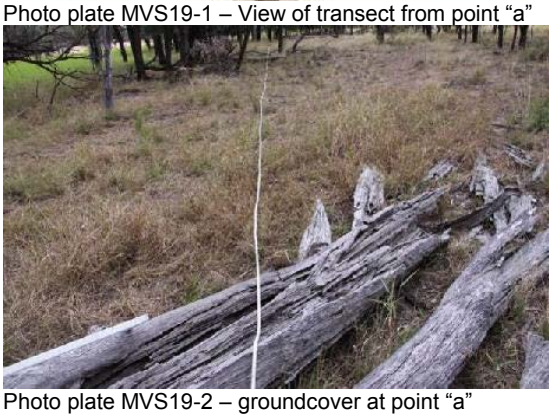


Photo plate MVS19-2 – groundcover at point “a”

Photo plate MVS19-3 – Canopy cover at point “a”

Photo plate MVS19-4 – View of transect from point “b”

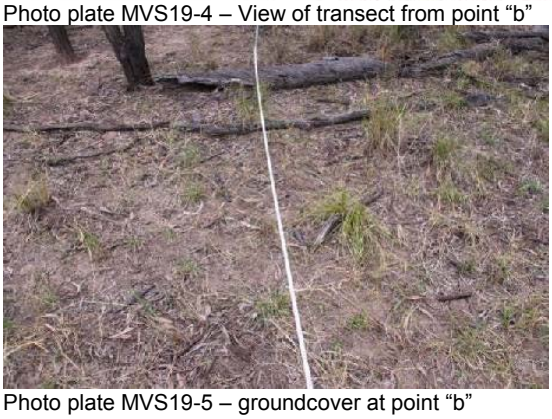


Photo plate MVS19-5 – groundcover at point “b”

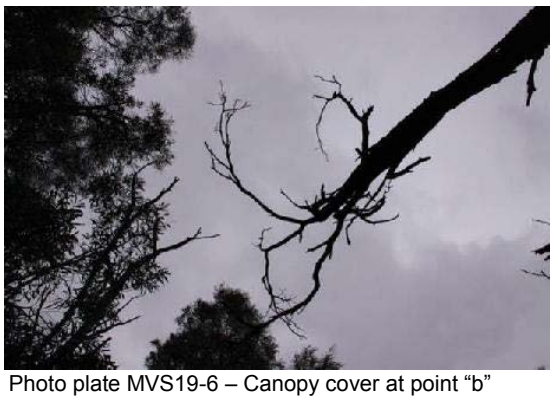


Photo plate MVS19-6 – Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB25RF
Site No.	MVS19
Date/Time:	30/05/2012; 1413-1505
Regional Ecosystem Profile	
RE/Landtype:	Non remnant
Bioregion:	10 –Desert Uplands
EPBC Status:	NA
VMA Status:	Non remnant
EPA Status:	NA
Mapped:	yes
Width of Community:	35 - <75 m
Area of Community:	5 - <20 ha

Site Description			
Location:	Northern part of Monklands station 33.12 NW of Alpha. South of the powerline easement.		
Site Description:	In a small stand of Brigalow with *E. cambageana*. The stand is degraded with no observable recruitment due to high cattle usage as the stand is close to a watering point.		
Orientation of Transect:	Along contour	Elevation	331 m
Bearing	260	Datum:	WGS84
Easting/Northing:	55K 447718; 7414513 55K 447620; 7414506	Latitude/longitude	S23.37826 E146.48840 S23.37832 E146.48744

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover**	**Key species**	**Individual covers**
Emergent	18	16 – 19	>40	*Eucalyptus cambageana*	<5
Tree 1	12	12 – 14		*Acacia harpophylla*	40
	13	12 – 14		*Eucalyptus cambageana*	<5
Tree 2	8	5 - 9	<10	*Acacia harpophylla*	<10%
Tree 3	3	2-5	<1	*Eremophila mitchellii*	<1
Shrub 2	1	0.5 – 2	<5	*Carissa ovata*	<5%
Ground				*Pennisetum ciliare*	
				Aristida personata	
				Panicum sp.	
				Cyperus sp.	
				Eragrostis sp.	
%Rock	0	%Bare ground	50	%Leaf litter	5	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
2					*Eucalyptus cambageana*	3						<5					
	10	2			*Acacia harpophylla*		19	15					40	10			
					Carissa ovate					3						<1	
					Eremophila mitchellii				1						<1		

Ground layer only

Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Pennisetum ciliare	4	6		2		40	10		5		11
Aristida personata	1		2			1		5			1
Panicum sp.			1	1				5	5		2
Aristida latifolia			4					25			5
Lomandra leucocephala		1					<1				
Cyperus sp.			4	1				20	10		6
Dead						5	5	10		0	4
Litter						5	5	30	2	0	8
Rock											
Bare Ground						50	80	5	80	100	63
Cryptophytes											

Community Health and Condition

Overall Health:	poor	Fire:	n/a
Potential EVR Flora Species Habitat:	low	Fire Height:	n/a
EVR Flora Species Recorded:	none	Fire Age:	n/a
Weed Species:	Pennisetum ciliare	Fire Proportion:	n/a
Weed Cover (%):	80	Logging:	None
Disturbance:	yes	Ringbarking/thinning:	Yes
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	No
		Remnant:	no

Topography and Landform

Landform Situation	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Grey/brown
Altitude:	331m	Soil Texture:	Sand
Relief:		Soil Description:	Sandy grey/brown soils
Slope:	Flat	Geology:	Map (reliability medium)
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:			

BioCondition Site Survey Data- MVS19

Photo plate MVS19-7 – North from point "a"

Photo plate MVS19-8 – South from point "a"

Photo plate MVS19-9 – East from point "a"

Photo plate MVS19-10 – West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 5	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 6 (*Acacia harpophylla*)
Total Large trees: 11	
Tree canopy (EDL*) height: 14	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:** 19
Proportion of dominant canopy (EDL) species with evidence of recruitment:	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus cambageana* *Acacia harpophylla* *Eremophila mitchellii* *Eucalyptus populnea* (occurring on the margins)	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Carissa ovate*
Grass species richness: *Aristida personata* *Panicum sp.* *Eragrostis sp.*
Forbs and others (non grass ground) species richness: *Cyperus sp.*
Non-native plant cover: *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	10	**9**	10	**17**	3	**25**	1	**33**	6	**41**	2
2	8	**10**	6	**18**	4	**26**	1	**34**	2	**42**	1
3	2	**11**	1	**19**	2	**27**	1	**35**	1	**43**	1
4	2	**12**	2	**20**	2	**28**	1	**36**	1	**44**	1
5	3	**13**	1	**21**	3	**29**	4	**37**	2		
6	4	**14**	4	**22**	4	**30**	5	**38**	3		
7	8	**15**	2	**23**	2	**31**	2	**39**	5		
8	8	**16**	5	**24**	2	**32**	2	**40**	2	**Total:142**	

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*			35	5	0	8
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)			20			4
Native shrubs (<1m height)						
Non-native grass	40	10				10
Non-native forbs and shrubs				5		1
Litter*	10	10	40	2	0	14
Rock						
Bare ground	50	80	5	80	100	63
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	14.8 – 17.3	2.5	C	70.7 – 75.3	4.6			
C	15.4 – 21.1	5.7	C	73.3 – 79.2	5.9			
E	19.0 – 26.0	7.0	C	84.4 – 89.1	4.7			
C	26.6 – 31.7	5.1	C	88.0 – 93.4	5.4			
C	43.7 – 48.0	4.3	C	91.2 – 94.5	3.3			
C	45.8 – 48.0	2.2	S	93.7 – 97.2	3.5			
C	49.5 – 51.1	1.6						
C	55.6 – 56.0	0.4						
S	57.1 – 59.0	1.9						
S	58.4 – 61.5	3.1						
C	61.3 – 63.3	2.0						
E	67.9 – 75.8	7.9						
Total C: 47.7% Total S: 1.2% Total E: 14.9%								

Site Survey Data – MVS20

Photo plate MVS20-1 – panorama view of transect from point "a"

Photo plate MVS20-1 – panorama view of transect from point "b"

NOTE: - *Unidel tertiary transect located and only BioCondition survey undertaken along the transect.*

Field Site No.: BB30 **Site No.:** MVS20	**RE/Landtype:** 10.3	**Bioregion:** 10	**Property:** Monklands Road, road reserve
Date: 30/05/12; 1542-1611		**Photos:** N, S, E & W	
Datum: WGS84	**0m mark: Zone:** 55k **100m mark: Zone:** 55k	**AMGE:** 0445295 **AMGE:** 445229	**AMGN:** 7413811 **AMGN:** 7413739
Elevation: 330 m	**Plot bearing:** 200	**Recorders:** Rob Friend	
General description: Survey site located to the east of Monklands Rd in an *E. camaldulensis* woodland on the Lagoon Creek flood plain			

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 14	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees: 10	
Tree canopy (EDL*) height: 22	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 5 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus populnea* *Dolichandrone heterophylla* *Corymbia tessellaris* *Corymbia erythrophloia* *Acacia salicina* *Eucalyptus camaldulensis* *Eucalyptus cambageana*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Carissa ovata* *Acacia salicina* *Grewia laniflora*
Grass species richness: *Aristida latifolia* *Heteropogon contortus* *Themeda triandra* *Panicum sp.*
Forbs and others (non grass ground) species richness: *Chrysocephalum apiculatum*
Non-native plant cover: *Melinis repens* *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	8	**2**	8	**3**	3	**4**	3	**5**	4	**6**	3
7	4	**8**	2	**9**	4	**10**	5	**11**	3	**12**	2
13	2	**14**	2	**15**	1	**16**	2	**17**	2	**18**	1
19	1	**20**	1	**21**	2	**22**	3	**23**	5	**24**	2
25	1	**26**	1								
Total: 77											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	60	40	20	30	25	35
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)		15				3
Native shrubs (<1m height)						
Non-native grass	5	15	25	20	5	14
Non-native forbs and shrubs				10	15	5
Litter*	35	20	40	30	50	35
Rock						
Bare ground	0	10	15	10	5	8
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	0.8 – 2.4	1.6	E	58.1 – 61.5	3.4	C	87.1 – 90.0	2.9
S	4.2 – 5.5	1.3	S	61.7 – 66.5	4.8	S	89.6 – 90.8	1.2
C	3.3 – 7.9	4.6	C	62.5 – 69.1	6.6	C	93.6 – 96.7	3.1
C	6.9 – 9.4	2.5	S	66.3 – 67.1	0.8	C	97.1 – 98.4	1.3
C	7.3 – 11.5	4.2	E	68.7 – 72.1	3.4	C	85.1 – 86.8	1.7
S	10.6 – 13.5	2.9	S	68.3 – 70.1	1.8	C	52.7 – 57.7	5.0
S	12.2 – 17.0	4.8	S	70.6 – 71.3	0.7	S	81.0 – 82.5	1.5
C	16.0 – 17.0	1.0	C	75.2 – 80.2	5.0	C	40.3 – 50.6	10.3
C	28.4 – 34.0	5.6	S	78.7 – 80.2	1.5	C	80.6 – 84.7	4.1
C	35.5 – 41.2	5.7						
Total C: 101.4% Total S: 26.30% Total E: 6.800%								

Site Survey Data – MVS21

Photo plate MVS21-1 – View of transect from point “a”

Photo plate MVS21-2 – groundcover at point “a”

Photo plate MVS21-3 – canopy at point “a”

Photo plate MVS21-4 – View of transect from point “b”

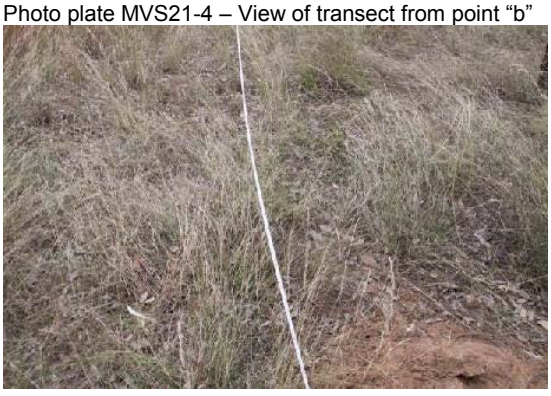


Photo plate MVS21-5 – groundcover at point “b”

Photo plate MVS21-6 – canopy at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS21
Site No.	MVS21
Date/Time:	31/05/2012; 1128-1226
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10
EPBC Status:	NA
VMA Status:	Lease Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	150 – 300 m
Area of Community:	20 - <50 ha

Site Description			
Location:	Southern boundary of Monklands and the study area. Alpha 22.07 km @ 122^0; Jericho 34.24 km @ 259^3.		
Site Description:	Linear belt of remnant woodland dominated by *E. populnea, E. melanophloia* with *C. plena*		
Orientation of Transect:	Along contour	Elevation:	367 m
Bearing:	100	Datum:	WGS84
Easting/Northing:	a) 55K 444457 7396807 b) 55K 444550 7396785	Latitude/Longitude:	S23.53808 E146.45585 S23.53829 E146.45675

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover**	**Key species**	**Individual covers**
Tree 1	13	12–14	10	*Eucalyptus populnea*	10
	13	12–14		*Eucalyptus melanophloia*	5
	10	8-12		*Corymbia dallachiana*	<1
	13	12–14		*Corymbia plena*	<1
Tree 2	6	4–8	<5	*Acacia sericophylla*	<5
				Eucalyptus melanophloia	<5
Tree 3	3	2-4	<5	*Acacia sericophylla*	<5
				Eucalyptus melanophloia	<5
Shrub 1	1.5	1-2	<5	*Carissa lanceolata.*	<5
				Acacia sericophylla	<5
Shrub 2	<1	<1	<5	*Acacia sericophylla*	<1
				Carissa ovata	<5
Ground			90	Herb - Fabaceae	
				Herb - Asteraceae	
				Schizachyrium fragile	
				Aristida latifolia	
				Themeda triandra	
				Heteropogon contortus	
				Panicum sp.	
				Aristida contorta	
				Eragrostis sp.	
				Desmodium varians	

%Rock	0	%Bare ground	10	%Leaf litter	10	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					**Species**	**Stem Count** (500m^2)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
	2				*Eucalyptus melanophloia*		12	11	4								
	1				*Corymbia plena*		1										
					Acacia sericophylla			10	5	5							
					Eucalyptus populnea		1										
					Carissa lanceolata					1							
					Corymbia dallachiana		1	1									

Ground layer only											
Species	**Stem Count** (500m^2)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Schizachyrium fragile	10					20					4
Themeda triandra	2		4			5		20			5
Wahlenbergia gracilis						5		10			3
Aristida latifolia	2			4		5	5		10		4
Heteropogon contortus		19	2	3	10		70	25	20	70	37
Aristida contorta		5		7	9		5	10	35		10
Panicum sp.			4					10		10	4
Desmodium varians			3					5			
Eragrostis sp.					1					5	
Dead						10	5				3
Litter						10	10	20	5	15	12
Rock											
Bare Ground						45	5	5	30	5	18
Cryptophytes											

Community Health and Condition			
Overall Health:		Fire:	n/a
Potential EVR Flora Species Habitat:		Fire Height:	n/a
EVR Flora Species Recorded:		Fire Age:	n/a
Weed Species:		Fire Proportion:	n/a
Weed Cover (%):	5	Logging:	None
Disturbance:		Ringbarking/thinning:	?
Disturbance cover (%):		Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	No
Topography and Landform			
Landform Situation:	A	Soils:	Surface observations
Landform Pattern	PAC	Soil Colour:	Dark grey/brown
Altitude:	367 m	Soil Texture:	Sandy loam
Relief:		Soil Description:	Sandy loam dark grey/brown
Slope:	Flat	Geology:	Map (medium reliability)
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	None		

BioCondition Site Survey Data – MVS21

Photo plate MVS21-7 – View north from Point "a"

Photo plate MVS21-8 – View south from Point "a"

Photo plate MVS21-9 – View east from Point "a"

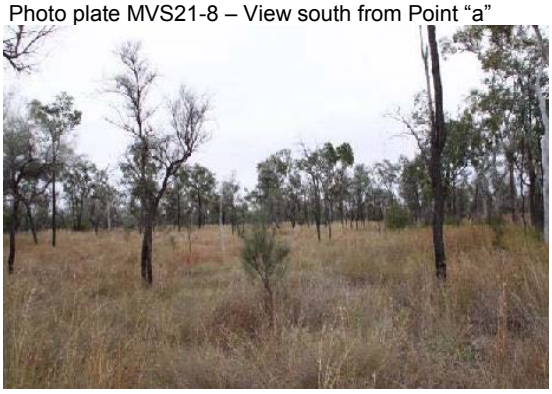


Photo plate MVS21-10 – View west from Point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: 0	**Non-Eucalypt Large tree DBH (from benchmark doc.): - Number of large non-eucalypt trees:** 0
Total Large trees: 0	
Tree canopy (EDL*) height: 12	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 6 **E:** -
Proportion of dominant canopy (EDL) species with evidence of recruitment: 50%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus melanophloia	*Eucalyptus populnea*
Acacia sericophylla	*Corymbia plena*
Corymbia dallachiana	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**	
Carissa ovata	
Acacia sericophylla	
Grass species richness:	
Themeda triandra	*Schizachyrium fragile*
Aristida contorta	*Aristida* latifolia
Panicum sp.	*Eragrostis Sp.*
Forbs and others (non grass ground) species richness: termite mounds present	
Wahlenbergia gracilis	Herb - Asteraceae
Herb - Fabaceae	
Non-native plant cover:	
Pennisetum ciliare	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	3	**2**	1	**3**	3	**4**	5	**5**	3	**6**	1
7	1	**8**	1	**9**	2	**10**	1	**11**	2		
Total: 23											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	50	80	80	60	85	71
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	10	5				3
Native shrubs (<1m height)						
Non-native grass						
Non-native forbs and shrubs						
Litter*	10	10	10	5	10	9
Rock						
Bare ground	50	0	5	30	5	18
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	0.0 – 2.3	2.3	C	17. 8 – 19.3	1.5	C	36.6 – 39.4	2.8
C	13.4 – 18.6	5.2	C	42.0 – 45.6	3.6	S	45.6 – 46.7	1.1
C	80.1 – 82.9	2.8	C	80.4 – 82.6	2.2	C	83.3 – 89.3	6.0
Total C: 26.4% Total S: 1.10% Total E: 0.00%								

Site Survey data – MVS22

Photo plate MVS22-1 – panorama view of transect from point “a”

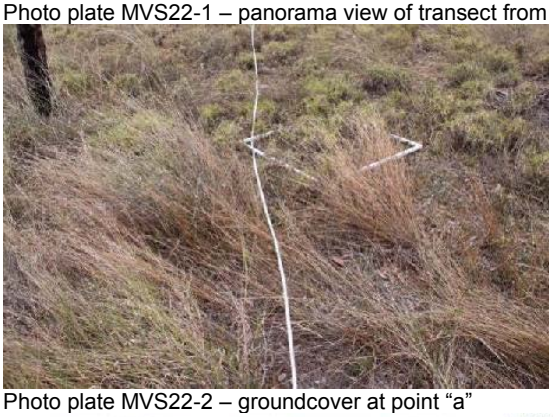


Photo plate MVS22-2 – groundcover at point “a”

Photo plate MVS22-3 – Canopy cover at point “a”

Photo plate MVS22-4 – panorama view of transect from point “b”

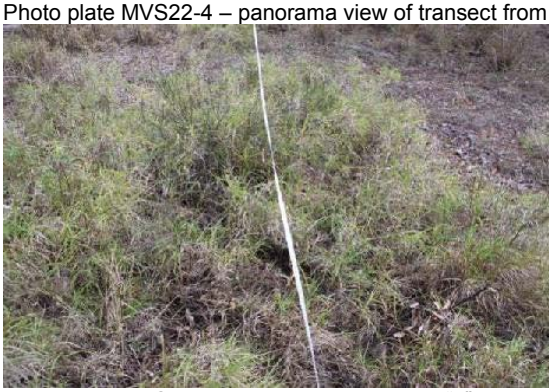


Photo plate MVS22-5 – groundcover at point “b”

Photo plate MVS22-6 – Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS22
Site No.	MVS22
Date/Time:	31/05/2012; 1313-1400
Regional Ecosystem Profile	
RE/landtype:	10.3.14
Bioregion:	10
EPBC Status:	NA
VMA Status:	Least concern
EPA Status:	Of Concern
Mapped:	Yes
Width of Community:	150 – 300 m
Area of Community:	20 - <50 ha

Site Description			
Location:	Site located on Monklands Station, 21.84 km NW of Alpha		
Site Description:	Site in *Eucalyptus populnea, E. melanophloia* woodland to 14m with *Corymbia erythrophloia* and *Cyprus glaucophylla*. *E. camaldulensis* also present. An old flood plain.		
Orientation of Transect:	Along contour	Datum:	WGS84
Bearing:	20	Elevation	359 m
Easting/Northing:	a) 55K 445570; 7398062 b) 55 K 445560 7398161	Latitude/Longitude	a) S23.52679 E146.46680 b) S23.52589 E146.46670

Structural Summary

Stratum	Med. Canopy Height (m)	Range in strata height (m)	Total crown cover (%)	Key species	Individual covers
Tree 1	14	12-16	35	*Eucalyptus populnea*	20
	10	9-12		*Acacia salicina*	10
	17	15-19		*Corymbia erythrophloia*	5
	18	16-20		*Eucalyptus camaldulensis*	2
Tree 2	7	6-8	30	*Corymbia erythrophloia*	<5
	8	6-9		*Eucalyptus populnea*	10
	8	6-9		*Eucalyptus camaldulensis*	<5
		5-8		*Acacia salicina*	<5
Tree 3	5	3-6	20	*Callitris glaucophylla*	10
	5	3-6		*Eucalyptus melanophloia*	5
	5	3-6		*Eucalyptus camaldulensis*	<5
	5	3-6		*Eucalyptus populnea*	<5
Shrub 2	<1	<1	<5	*Acacia sericophylla*	<5
Ground			85	*Pennisetum ciliare*	
				Schizachyrium fragile	
				Melinis grass	
				Aristida latifolia	
				Heteropogon contortus	
%Rock	0	%Bare ground 5	%Leaf litter	10	%Cryptogram

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count ($500m^2$)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
		1			*Acacia salicina*		2	1					<5	<5			
	1				*Eucalyptus populnea*		8	13	1				20	10	<5		
					Corymbia erythrophloia		3	1					<5	<5			
					Eucalyptus camaldulensis		2	5	2				<5	<5	<5		
					Callitris glaucophylla				4					<5	10		
					Eucalyptus melanophloia				1						5		
					Acacia sericophylla						1						<5

Ground layer only

Species	Stem Count ($500m^2$)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Pennisetum ciliare	6	9	2	2	4	50	50	10	10	35	32
Schizachyrium fragile	4					5					1
Aristida personata			8					40			8
Eragrostis sp.			1		1			<5		5	1
Herb (Fabaceae)	6							10			2
Heteropogon contortus				1					15		2
Desmodium varians			6					5			1
Dead											
Litter						15	40	25	60	20	31
Rock											
Bare Ground						30	10	10	15	40	21
Cryptophytes											

Community Health and Condition			
Overall Health:	Average	Fire:	None
Potential EVR Flora Species Habitat:	Low	Fire Height:	NA
EVR Flora Species Recorded:	None	Fire Age:	NA
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	NA
Weed Cover (%):	30%	Logging:	Nil
Disturbance:	Yes	Ringbarking/thinning:	Nil
Disturbance cover (%):	100%	Feral Digging:	Nil
Grazing:	Yes	Flooding:	NA
		Extensive Clearing:	Nil
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Red brown/tan
Altitude:	359m	Soil Texture:	Sandy loam
Relief:		Soil Description:	Red brown/tan sandy loam
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:			

BioCondition Site Survey Data – MVS22

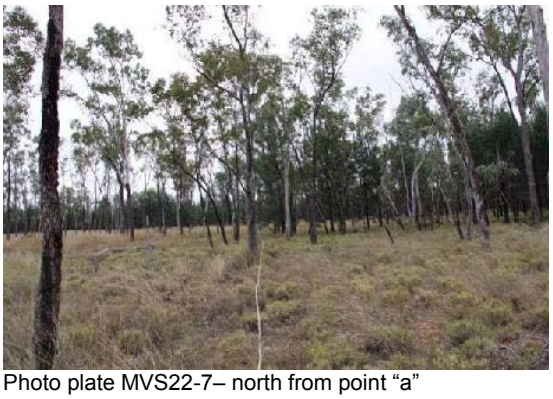


Photo plate MVS22-7– north from point "a"

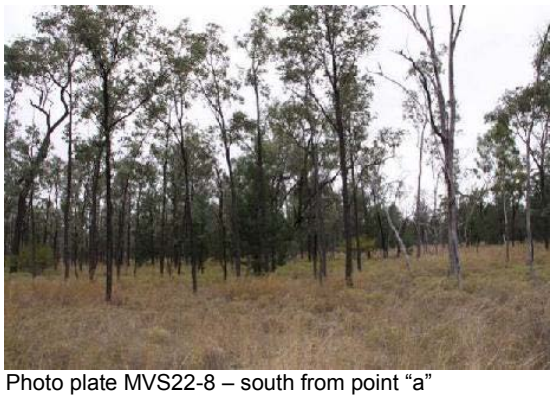


Photo plate MVS22-8 – south from point "a"

Photo plate MVS22-9 – East from point "a"

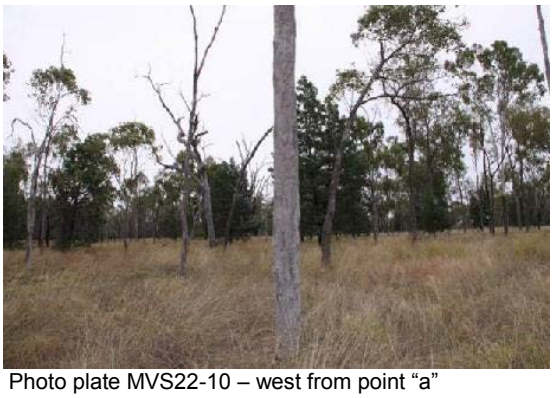


Photo plate MVS22-10 – west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 3	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees: 3	
Tree canopy (EDL*) height: 14	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:** 16
Proportion of dominant canopy (EDL) species with evidence of recruitment:	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus melanophloia	*Eucalyptus populnea*
Corymbia dallachiana	*Corymbia erythrophloia*
Eucalyptus camaldulensis	*Acacia salicina*
Callitris glaucophylla	*Corymbia tessellaris*

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Callitris glaucophylla*
Grass species richness: *Schizachyrium fragile* *Aristida latifolia* *Heteropogon contortus*
Forbs and others (non grass ground) species richness:
Non-native plant cover: *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	3	**2**	4	**3**	4	**4**	3	**5**	2	**6**	2
7	1	**8**	1	**9**	1	**10**	2	**11**	4	**12**	3
13	3	**14**	4	**15**	2	**16**	1	**17**	1	**18**	8
19	2	**20**	4	**21**	1						
Total: 56											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	5	0	50	15	0	14
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	0	0	10	0	5	3
Native shrubs (<1m height)						
Non-native grass	50	50	10	10	35	31
Non-native forbs and shrubs						
Litter*	15	40	24	60	20	31
Rock						
Bare ground	30	10	10	15	40	21
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	13.6 – 16.8	3.2	S	16.4 – 19.3	2.9	C	20.9 – 23.4	2.5
C	29.0 – 32.2	3.2	S	32.9 – 36.4	3.5	C	36.1 – 38.9	2.8
C	39.6 – 45.6	6.0	C	46.4 – 48.0	2.4	C	53.4 – 58.3	4.9
C	63.3 – 70.4	7.1	E	69.3 – 73.7	4.4	C	76.3 – 80.7	4.4
C	82.6 – 87.3	4.7	C	97.4 – 100	2.6			
Total C: 43.8% Total S: 6.4% Total E: 4.4%								

Site Survey Data – MVS23

Photo plate MVS23-1 0 View north

Photo pate MVS23-2 – View south

Photo plate MVS23-3 0 View east

Photo pate MVS23-4 – View west

Project: Waratah Coal Mine Site Vegetation Survey	**Site Location:** central southern portion of Monklands Station along Tallerenha Creek. 24.82km NW Alpha; 30.19km ENE Jericho. Elevation 352m		
Date: 31st May 2012; 1500	**Photos:** 6419 - 6426	**Field Survey No.** - MVS23/Q08 **Site No. –** MVS23	
Survey plot location (GPS - UTM): 55K 0445042 2402112	**Land Zone:** 3	**Soil type:** Light brown/grey-brown sand to sandy loan	**Canopy height** (m): Range: 12-16 m Average: - 14 m
Vegetation description: Tall woodland dominated by *Eucalyptus melanophloia* and *E. populnea* with *Corymbia dallachiana*		**Regional Ecosystem:** 12.3.27a/12.3.28a	**FPC** (%): 30%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	a	*Acacia sericophylla*	f	*Carissa lanceolata*	f	*Chrysocephalum apiculatum*	o
2	*Eucalyptus populnea*	a	*Eremophila mitchellii*	a	*Eremophila mitchellii*	f	*Pennisetum ciliare*	a
3	*Corymbia dallachiana*	o	*Acacia salicina*	f	*Carissa ovata*	f	*Chrysopogon fallax*	o
4			*Lysiphyllum carronii*	o	*Opuntia sp.*	o	*Aristida caput-medusae*	o
5			*Geijera parviflora*	o			*Themeda triandra*	o
							Heteropogon contortus	f
							Eragrostis sp.	f
							A grass	o

Notes: -

- Numerous logs on the ground
- Groundcover dominated by *Pennisetum ciliare*
- Grass cover (native & Buffel grass) approx. 50%

Codes: -a = abundant; f = frequent; O = occasional

Survey Site Data – MVS24

Photo plates MVS24-1 – panorama view of transect from point “a”

Photo plates MVS24-2 – Ground cover at point “a”

Photo plate MVS24-3 – Canopy cover at point “a”

Photo plates MVS24-4 – panorama view of transect from point “b”

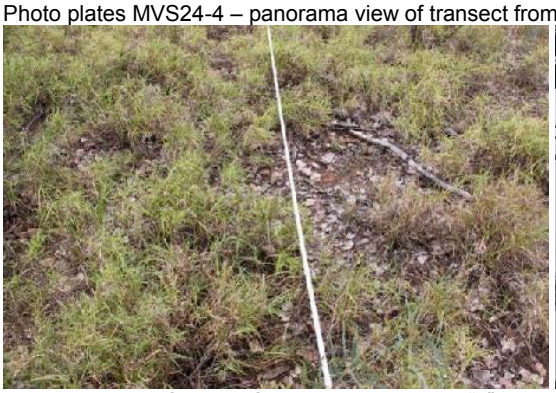


Photo plates MVS24-5 – Ground cover at point “b”

Photo plate MVS24-6 – Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS33
Site No.	MVS24
Date/Time:	01/06/2012; 1037-1139
Regional Ecosystem Profile	
RE/Land type:	10.3.14d
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	Of Concern
Mapped:	Yes
Width of Community:	150 – 300 m
Area of Community:	>50ha

Site Description			
Location:	Monklands Station approximately 300 m east of Monklands Rd. and 30.85 km NW of Alpha and 37.97 NE of Jericho in an area of remnant vegetation on Lagoon Creek flood plain.		
Site Description:	Popular box and Silver leaf Ironbark with River red gum woodland over minor drainage line.		
Orientation of Transect:	Across minor drainage channel	Elevation	337 m
Bearing:	290^0	Datum:	WGS84
Easting/Northing:	a) 55K 443772; 7409179 b) 55K 443684; 7409226	Latitude/Longitude	a) S23.42631 E146.44959 b) S23.42588 E146.44874

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	18	16–20	25%	*Eucalyptus populnea*	<5
	16	14 - 18		*Corymbia clarksoniana*	<5
	12	8 – 14		*Eucalyptus camaldulensis*	10
	20	8 – 22		*Corymbia tessellaris*	<5
Tree 2	7	6–8	15%	*Lysiphyllum carronii*	<5
				Eucalyptus camaldulensis	10
				Acacia salicina	<5
Tree 3	4	3–6	<5	*Petalostigma pubescens*	<5
				Acacia salicina	<5
Shrub 1	2	1-3	<10	*Carissa lanceolata*	<5
		1-3		*Psydrax oleifolia*	<58
		1-2		*Acacia salicina*	<5
		1-3		*Eucalyptus camaldulensis*	<5
		1-3		*Corymbia clarksoniana*	<5
Shrub 2	<1	<1	<5	*Carissa ovata*	<5
		<1		*Sida cordifolia*	<5
		<1		*Acacia excelsa*	<5
		<1		*Malvastrum sp.*	<5
Ground				*Aristida latifolia*	
				Pennisetum ciliare	
				Melinis repens	
				Aristida contorta	

%Rock	0	%Bare ground	20	%Leaf litter	5	%Cryptogram	75

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
					Eucalyptus populnea		6	2					5				
					Eucalyptus camaldulensis		1	10	6	3	13		16				
					Acacia salicina			2	6		16			<5	<5	<5	
					Lysiphyllum carronii			1						1			
					Petalostigma pubescens				1						<5		
					Malvastrum sp.						2						1
					Carissa lanceolata					10						<5	

Ground layer only

Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Aristida contorta	3			2		20			5		5
Pennisetum ciliare			3	5	7	5		10	40	70	25
Melinis repens	4					30					6
Desmodium varians	4	3			3	4				5	2
Brachyscome ciliaris	4		12	2		10		30	5		9
Eragrostis fallax		4					75				15
Cyperus sp.			3					20			4
Cynodon dactylon			6					20			4
Wahlenbergia gracilis			1					<1			
Acacia salicina		1					5				
Dead									5		1
Litter						20	15	15	20	15	18
Rock											
Bare Ground						10	5	5	25	10	11
Cryptophytes											

Community Health and Condition			
Overall Health:	Good health	Fire:	n/a
Potential EVR Flora Species Habitat:	Low	Fire Height:	n/a
EVR Flora Species Recorded:	None	Fire Age:	n/a
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	n/a
Weed Cover (%):	70	Logging:	None
Disturbance:	Yes - cattle	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Orange/tan
Altitude:	337m	Soil Texture:	Sandy
Relief:		Soil Description:	Tan/brown sandy to sandy loam on minor waterway flood plain
Slope:	Flat	Geology:	
Slope Class:	<5°	Rock/Sediment Type:	
Erosional Landform:	None		

BioCondition Site Survey Data – MVS24

Photo plates MVS24-7 – north from point "a"

Photo plate MVS24-8 – south from point "a"

Photo plates MVS24-9 – east from point "a"

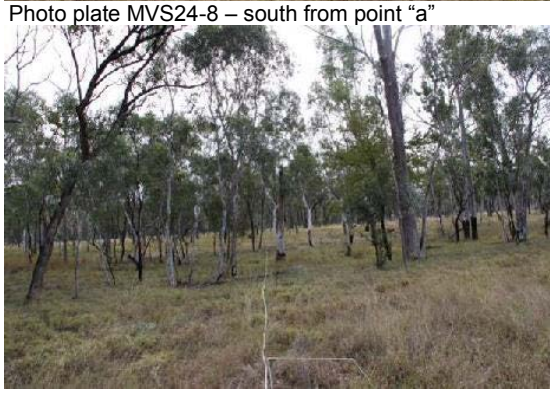


Photo plate MVS24-10 – west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 15	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** -
Total Large trees: 15	
Tree canopy (EDL*) height: 16	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:** 22
Proportion of dominant canopy (EDL) species with evidence of recruitment: 50%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus populnea	*Lysiphyllum carronii*
Eucalyptus camaldulensis	*Psydrax oleifolia*
Acacia salicina	*Petalostigma pubescens*
Corymbia tessellaris	*Corymbia clarksoniana*

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**	
Carissa lanceolata	*Acacia excelsa*
Carissa ovata	*Sida cordifolia*
Grass species richness:	
Aristida contorta	*Aristida latifolia*
Cynodon dactylon	*Eragrostis fallax*
Forbs and others (non grass ground) species richness:	
Lomandra leucocephala	*Malvastrum sp.*
Cyperus sp.	*Wahlenbergia gracilis*
Non-native plant cover:	
Pennisetum ciliare	
Melinis repens	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	3	**3**	5	**4**	6	**5**	2	**6**	3
7	4	**8**	5	**9**	2	**10**	1	**11**	1	**12**	3
13	2	**14**	8	**15**	2	**16**	8	**17**	4	**18**	2
19	1	**20**	1	**21**	1	**22**	4				
Total:											
Note: 20 stag trees, 5 hollow potential											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	15	75	20	5	0	23
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	20	0	50	5	5	16
Native shrubs (<1m height)						
Non-native grass	35	0	10	40	70	31
Non-native forbs and shrubs						
Litter*	20	20	15	25	15	19
Rock						
Bare ground	10	5	5	25	10	11
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Subcanopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	10.1 – 16.1	6.0	S	15.5 – 19.4	3.9	C	17.6 – 23.4	5.8
C	24.9 – 30.3	5.4	S	58.9 – 65.4	6.5	S	71.4 – 76.2	4.8
C	83.0 – 85.7	2.7	C	88.7 – 100	11.3	S	95.9 – 100	4.1
Total C: 31.2% Total S: 19.3% Total E: 0.0%								

Site Survey Data – MVS25

Photo plate MVS25-1 – View of transect from point "a"

Photo plate MVS25-1 – View of transect from point "b"

NOTE: - *Unidel tertiary transect located and only BioCondition survey undertaken along the transect.*

Field Site No.: - BB31 **Site No.: –** MVS25	**RE/Landtype:** 10.5.5	**Bioregion:** 10	**Property:** Monklands Rd Reserve
Date: 01/06/12; 1318-1338		**Photos:** N, S, E & W	
Datum: WGS84	**0m mark: Zone**: 55k **50m mark: Zone**: 55k	**AMGE:** 0442682 **AMGE:** 0442718	**AMGN:** 7406719 **AMGN:** 7406687
Elevation: 343m	**Plot bearing**: 120	**Recorders:** Rob Friend	
General description: site is on BB31 within the Monklands Road road reserve in an area of Popular box and Moreton Bay Ash. Tall woodland with ground cover dominated by *Pennisetum ciliare*			

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: 13	**Non-Eucalypt Large tree DBH** (from benchmark doc.): Number of large non-eucalypt trees:
Total Large trees: 13	
Tree canopy (EDL*) height: 16	**Tree sub-canopy and/or emergent height** (where relevant): S: S 5 E: 22
Proportion of dominant canopy (EDL) species with evidence of recruitment: 15%	
Total tree (defined as single stemmed over 2m) species richness (all tree species in the 100 x 50m (not just EDL species)): *Eucalyptus populnea* *Acacia salicina* *Corymbia clarksoniana* *Corymbia tessellaris*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) species richness: *Acacia salicina* *Carissa lanceolata* *Eucalyptus populnea* *Carissa ovata* *Psydrax oleifolia*
Grass species richness: *Aristida leptopoda* *Heteropogon contortus*
Forbs and others (non grass ground) species richness: herb (Asteraceae) *Desmodium varians* Herb Fabaceae
Non-native plant cover: *Pennisetum ciliare* *Stylosanthes scabra* *Melinis repens*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		Length of CWD:		Length of CWD:		Length of CWD:		Length of CWD:		Length of CWD:	
1	5	2	2	3	4	4	6	5	6	6	2
7	1	8	1	9	2	10	2	11	1	12	4
13	1	14	2	15	8	16	1	17	1	18	2
19	1	20	2								
Total: 54											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	1	2	3	4	5	Mean
Native perennial ('decreaser') grass cover*	10	10				4
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	5			<2		1
Native shrubs (<1m height)						
Non-native grass	10	60	70	70	50	52
Non-native forbs and shrubs	20					4
Litter*	10	10	20	20	40	20
Rock						
Bare ground	50	40	10	10	10	24
Cryptograms						
Total	=100%	=100%	=100%	=100%	=100%	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	Distance (m)	Total	Tree or tree group* (C or S or E)	Distance (m)	Total	Tree or tree group* (C or S or E)	Distance (m)	Total
C	0.2 – 3.0	2.8	C	44.9 – 47.8	2.9	E	42.1 – 48.0	5.9
C	2.1 – 4.4	2.3	C	30.6 – 31.4	0.8	E	27.6 – 41.1	13.8
C	5.1 – 6.8	1.7	C	20.7 – 24.6	3.9	C	12.7 – 22.2	9.5
Total C: 23.9% Total S: 0.00% Total E: 19.7%								

Survey Site Data – MVS26

Photo plate MVS26-1 – panorama view of transect from point “a”

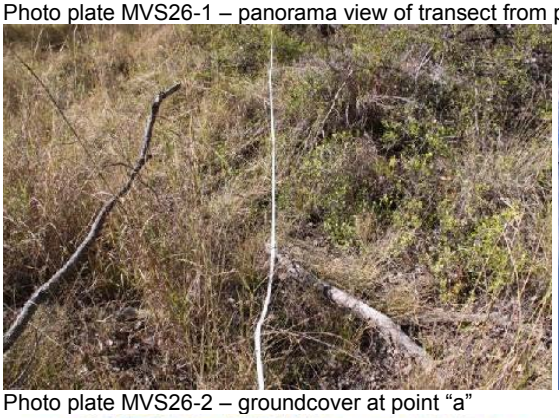


Photo plate MVS26-2 – groundcover at point “a”

Photo plate MVS26-3 – canopy cover at point “a”

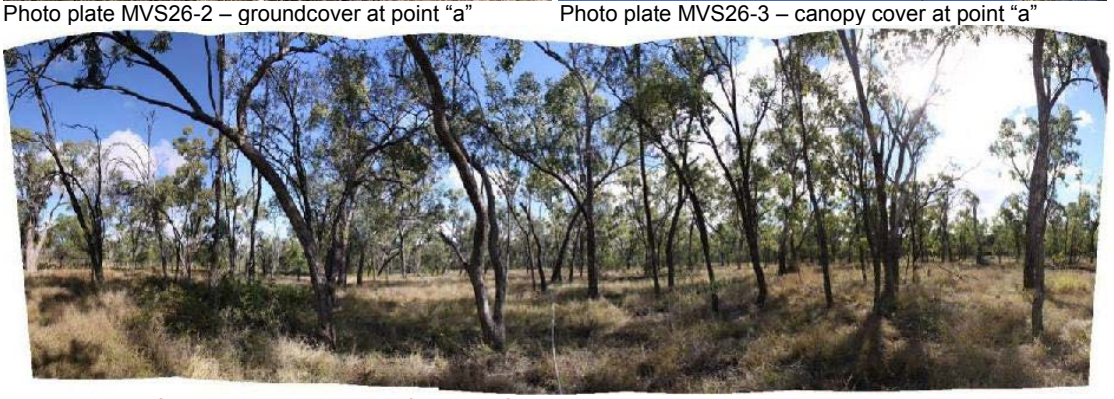


Photo plate MVS26-4 – panorama view of transect from point “b

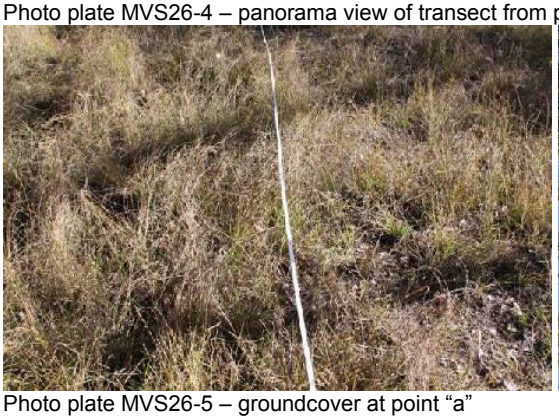


Photo plate MVS26-5 – groundcover at point “a”

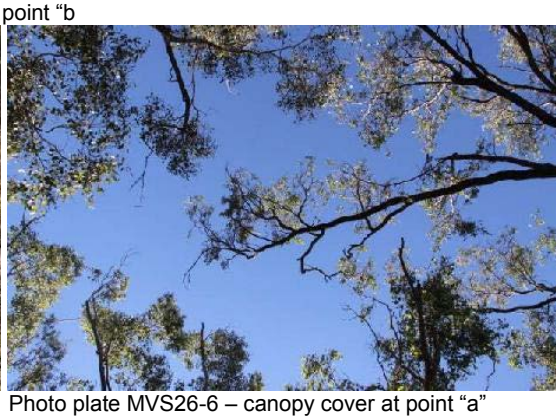


Photo plate MVS26-6 – canopy cover at point “a”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB13RF
Site No.	MVS26
Date/Time:	28/06/2012; 1326-1444
Regional Ecosystem Profile	
RE/landtype:	10.3.3
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	D – 5<20ha

Site Description			
Location:	Monklands Station approx. 1.2 km east of Monklands Rd, 28.61 km (137°) to Alpha and 36.34 km (244°) to Jericho		
Site Description:	*E. populnea* very open forest to tall woodland, little shrub stratum.		
Orientation of Transect:	Along contour	Elevation	346 m.
Bearing:	65°	Datum:	WGS84
Easting/Northing:	a) 55K 443582; 7406032 b) 55K 443675; 7406070	Latitude/Longitude	a) S23.45473 E146.44762 b) S23.45439 E146.44853

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	16	12–18	<10%	*Eucalyptus populnea*	<10%
	13	12 - 14	<1%	*Eucalyptus crebra*	<1%
Tree 2	8	5–10	<5%	*Acacia salicina*	<1%
		6–10		*Eucalyptus populnea*	<5%
Tree 3	5	4-6	5%	*Eremophila mitchellii*	5
Shrub 1	1	1	<1%	*Carissa ovata*	<28
		1		*Acacia excelsa*	<1
		1		*Grevillea striata*	<1
Ground		<0.5	72	*Heteropogon contortus*	
				Eucalyptus populnea	
				Eragrostis spp.	
				Pennisetum ciliare	
%Rock		%Bare ground 1%	%Leaf litter	27%	%Cryptogram

Abundance Measures																
Basal Area (0.5mx1cm gap)					**Species**	**Stem Count** (500m^2)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
	12				*Eucalyptus populnea*		14	8	3		5		10				
					Acacia salicina			3		6	1			<1			
					Grevillea striata					1						<1	
					Carissa ovate					1	1						5
					Malvastrum sp.						4						<1
					Eucalyptus crebra		1						<1				

Ground layer only											
Species	**Stem Count** (500m^2)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Eucalyptus populnea			1					5			1
Pennisetum ciliare	5					10					2
Eragrostis sp. #1	8	20	20	30	25	25	60	70	90	80	64
Eragrostis sp. #2			5					5			1
Cyperus sp.					2					10	2
Dead						10					2
Litter						55	35	25	10	10	27
Rock											
Bare Ground							5				1
Cryptophytes											

Community Health and Condition			
Overall Health:	Moderate	Fire:	Non observations
Potential EVR Flora Species Habitat:	Moderate – *Desmodium macrocarpum*	Fire Height:	n/a
EVR Flora Species Recorded:	None	Fire Age:	n/a
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	n/a
Weed Cover (%):	<2	Logging:	No
Disturbance:	Low - cattle	Ringbarking/thinning:	No
Disturbance cover (%):	100%	Feral Digging:	No
Grazing:	Yes	Flooding:	No
		Extensive Clearing:	No
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observations
Landform Pattern:	PLA	Soil Colour:	Grey brown to dark grey
Altitude:	346m	Soil Texture:	Sandy loam
Relief:		Soil Description:	
Slope:	<5°	Geology:	Map (reliability low)
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	Not present		

Site Survey Data – MVS26

Photo plate MVS26-7 - North from point "a"

Photo plate MVS26-8 - South from point "a"

Photo plate MVS26-9 - East from point "a"

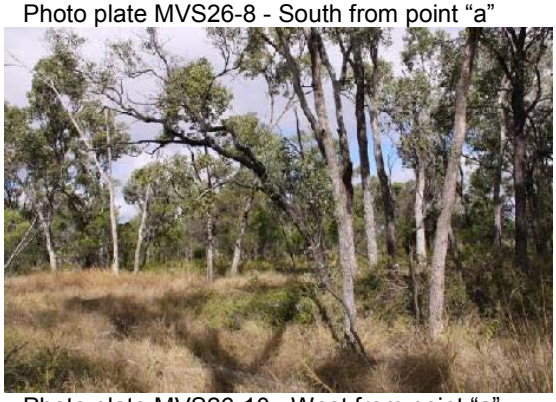


Photo plate MVS26-10 - West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: 11	**Non-Eucalypt Large tree DBH (from benchmark doc.): - Number of large non-eucalypt trees:** 0
Total Large trees: 11	
Tree canopy (EDL*) height: 16	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 5 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 10%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus populnea	*Acacia salicina*
Eremophila mitchellii	*Eucalyptus crebra*

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**
Grevillea striata
Acacia salicina
Acacia excelsa
Grass species richness:
Eragrostis sp.
Heteropogon contortus
A Grass
Forbs and others (non grass ground) species richness:
Lomandra leucocephala
Cyperus sp.
Non-native plant cover:
Pennisetum ciliare

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	6	**3**	4	**4**	1	**5**	8	**6**	8
7	6	**8**	2	**9**	8	**10**	4	**11**	8	**12**	4
13	2	**14**	6								
Total: 71											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	25	60	75	90	80	66
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)					10	2
Native shrubs (<1m height)						
Non-native grass	10					2
Non-native forbs and shrubs						
Litter*	65	35	25	10	10	29
Rock						
Bare ground		5				1
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	0 – 2.7	2.7	S	0 – 1.4	1.4	C	19.7 – 22.3	2.6
C	22.6 – 28.6	6.0	C	33.2 – 48.0	14.8	C	65.8 – 73.6	7.8
C	71.7 – 76.3	4.6	C	77.3 – 86.0	8.7	S	79.2 – 81.3	2.1
S	81.4 – 82.8	1.4	S	86.4 – 92.5	6.1	C	93.3 – 100	6.7
Total C: 53.9% Total S: 11.0% Total E: 0.00%								

Site Survey Data – MVS27

Photo plate MVS27-1 – panorama view of transect from point “a”

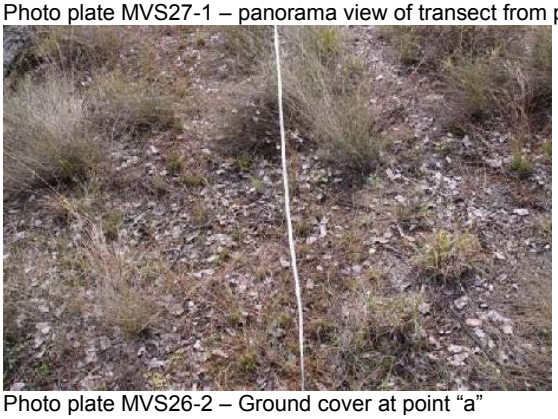


Photo plate MVS26-2 – Ground cover at point “a”

Photo plate MVS26-3 – Canopy cover at point “a”

Photo plate MVS27-4 – panorama view of transect from point “b”

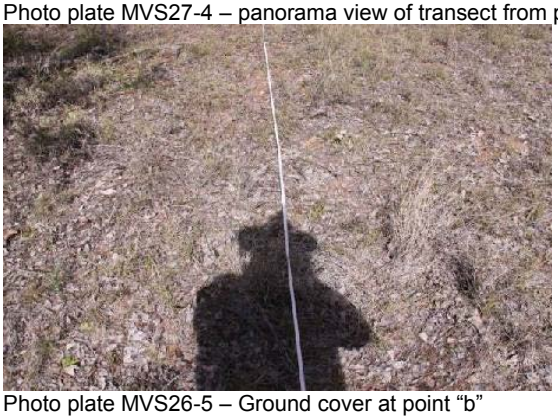


Photo plate MVS26-5 – Ground cover at point “b”

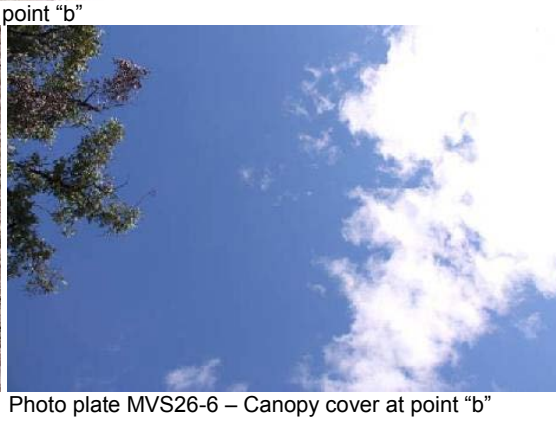


Photo plate MVS26-6 – Canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS16
Site no.	MVS27
Date/Time:	29/06/2012; 1116-1217
Regional Ecosystem Profile	
RE/landtype:	10.5.5
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Lambton Meadows north of Monklands Rd, 33.79 km (118°) from Alpha and 24.78 km (245°) Jericho		
Site Description:	*E. melanophloia* woodland to 12 – 15.5 m with a predominantly grassy understorey. Termite mounds present with large logs on the ground. Buffel grass not dominant		
Orientation of Transect:	Along contour	Elevation:	368
Bearing:	355°	Datum:	WGS84
Easting/Northing:	a) 55K 33269 7400804 b) 55K 33268 7400850	Latitude/Longitude:	a) S23.50156 E146.34642 b) S23.50115 E146.34641

Structural Summary						
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**		**Individual covers (%)**
Tree 1	14	12 – 15	>10%	*Eucalyptus melanophloia*		10%
	16	16		*Brachychiton populneus*		<1%
Tree 2	9	8 – 10	>10%	*Acacia sericophylla*		10%
				Eucalyptus melanophloia		5%
Tree 3	6	4 – 8	7%	*Eucalyptus melanophloia*		<5%
				Psydrax oleifolia		<2%
Shrub 1	2	1 – 3	1%	*Carissa ovata*		<1
				Carissa lanceolata		<1
Ground			46%	*Pennisetum ciliare*		
				Themeda triandra		
				Aristida leptopoda		
				Eragrostis sp.		
				Lomandra leucocephala		
				Aristida contorta		
				Aristida calycina		
				Herb (Asteraceae)		
				Desmodium hirsuta		
				Stylosanthes scabra		
				Schizachyrium fragile		
%Rock	0	%Bare ground	10	%Leaf litter	27	%Cryptogram	0

Abundance Measures																	
Basal Area (0.5mx1cm gap)					**Species**	**Stem Count** ($500m^2$)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
	9				*Eucalyptus melanophloia*		9	2	1	3							
					Psydrax oleifolia				1	3							
					Carissa ovata					1							
					Carissa lanceolata					7							
					Acacia sericophylla				1		1						

Ground layer only											
Species	**Stem Count** ($500m^2$)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Stylosanthes scabra	2	13				5					1
Pennisetum ciliare	7		2		2	10					2
Aristida leptopoda	1	5	4	11	3	5		60	60	10	26
Brachyscome ciliare	20		4		4	10	10			5	5
Aristida calycina							5				1
Triodia pungens		8					50				10
Lobelia sp.		2					<1				
Schizachyrium fragile		3					10				2
Aristida contorta							5				1
Heteropogon contortus										40	8
Dead											
Litter						60	10	35	10	20	26
Rock											
Bare Ground						10	10	5	30	25	16
Cryptophytes											

Community Health and Condition			
Overall Health:		Fire:	n/a
Potential EVR Flora Species Habitat:		Fire Height:	n/a
EVR Flora Species Recorded:		Fire Age:	n/a
Weed Species:		Fire Proportion:	n/a
Weed Cover (%):	<10	Logging:	None
Disturbance:		Ringbarking/thinning:	None
Disturbance cover (%):		Feral Digging:	No
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern:	PAC	Soil Colour:	Brown
Altitude:	368m	Soil Texture:	Fine sandy loam
Relief:		Soil Description:	Fine sandy loam, brown in colour, red to orange B horizon
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	Minor		

BioCondition Site Survey Data – MVS27

Photo plate MVS27-7 – North from point "a"

Photo plate MVS27-8 – South from point "a"

Photo plate MVS27-9 – East from point "a"

Photo plate MVS27-10 – West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 2	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 1 (*Brachychiton populneus*)
Total Large trees: 2	
Tree canopy (EDL*) height: 14	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 5 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 5%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Psydrax oleifolia*	 *Brachychiton populneus* *Acacia sericophylla*

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia sericophylla* *Carissa lanceolata*	 *Carissa ovata*
Grass species richness: *Themeda triandra* *Aristida leptopoda*	 *Eragrostis sp.* *Schizachyrium fragile*
Forbs and others (non grass ground) species richness: *Desmodium hirsuta* *Chrysocephalum apiculatum*	
Non-native plant cover: *Pennisetum ciliare* *Stylosanthes scabra*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	6	**2**	10	**3**	5	**4**	2	**5**	1	**6**	3
7	4										
Total: 31											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	5	60	60	60	45	46
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	10	20	5	0	5	8
Native shrubs (<1m height)						
Non-native grass	10		<1			2
Non-native forbs and shrubs	5					
Litter*	60	10	30	10	20	27
Rock						
Bare ground	10	10	5	30	30	17
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	0 – 6.2	6.2	C	18.4 – 23.1	4.7	C	31.8 – 32.4	0.6
S	17.4 – 19.6	2.2	C	19.8 – 29.6	9.8	C	45.9 – 48.9	3.0
S	66.3 – 68.2	1.9	C	68.5 – 75.5	7.0	C	74.0 – 85.1	11.1
S	77.5 – 80.1	2.6	S	96.7 – 100	3.3			
Total C: 42.4% Total S: 10.0% Total E: 0.00%								

Site Survey Data – MVS28

No photos available

Project: Waratah Coal Galilee Basin Mine Site Vegetation Survey		**Site Location:** Lambton Meadows, north of Monklands Rd. Elevation 366 m	
Date: 29 June 2012; 1256	**Photos**		**Field site No**. Q10 **Site No.** MVS28
Survey plot location (GPS - UTM): 55k 433979 7401899	**Land Zone**: 5	**Soil type**: Red, sandy soil	**Canopy height (m)** Range: 12 - 16 Average: 14

Vegetation description: *Eucalyptus melanophloia* woodland to 16 metre with a stand of *Callitris glaucophylla* as a dominant in the T2/T3 strata.	**Regional Ecosystem**: 10 .5. 5	**FPC (%)** 10%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia* 16m; 10%	a	*Callitris glaucophylla* – 8m; 50%	a	*Carissa ovata, 1m, <5%*	f	*Aristida personata*	o
2			*Psydrax oleifolia* – 5 m, <5%	f			*Pennisetum ciliare*	o

Site Survey Data – MVS29

Photo plate MVS29-1 – panorama view of transect from point “a”

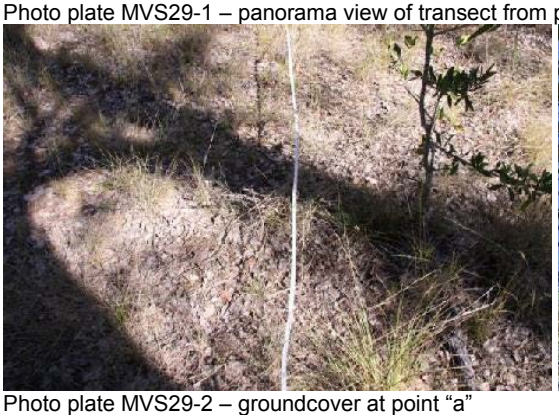


Photo plate MVS29-2 – groundcover at point “a”

Photo plate MVS29-3 – canopy cover at point “a”

Photo plate MVS29-4 – panorama view of transect from point “b”

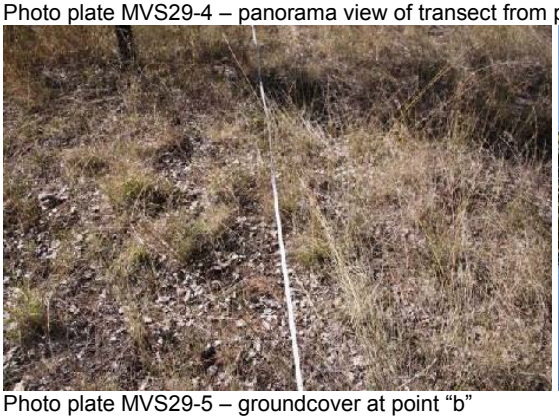


Photo plate MVS29-5 – groundcover at point “b”

Photo plate MVS29-6 – canopy cover at point “b

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB04RF
Site no.	MVS29
Date/Time:	29/06/2012
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Lambton Meadows at Unidel site BB04. North of Monklands Rd, Alpha 34.12 km 121°; Jericho 26.28 km 242°		
Site Description:	*E. melanophloia* woodland with a grassy understorey		
Orientation of Transect:	Along contour	Elevation:	373m
Bearing:	204°	Datum:	WGS84
Easting/Northing:	a) 55K 433973 7402744 b) 55K 433958 7402703	Longitude/Latitude:	a) S23.48407 E146.35340 b) S23.48443 E146.35325

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	14	12 – 16		*Eucalyptus melanophloia*	20%
	16	16		*Brachychiton populneus*	<1%
Tree 2	9	8 - 10		*Acacia excelsa*	<2%
				Eucalyptus melanophloia	10%
Tree 3	6.5	5 – 8		*Psydrax oleifolia*	<5%
				Acacia excelsa	<5%
				Eucalyptus melanophloia	5%
Shrub 1	3	2 – 4		*Eucalyptus melanophloia*	<5%
				Psydrax oleifolia	<5%
Ground				*Themeda triandra*	
				Aristida personata	
				Aristida latifolia	
				Eragrostis lacunaria	
				Prostrate herb	
%Rock		%Bare ground	14	%Leaf litter	39	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					**Species**	**Stem Count** (500m^2)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
	6				*Eucalyptus melanophloia*		8	2	4	2							
	1				*Brachychiton populneus*												
					Acacia excelsa			1	4	3							
					Psydrax oleifolia				5	3	1						
					Acacia sericophylla				1								

Ground layer only											
Species	**Stem Count** (500m^2)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Aristida personata	9	2	4	2		35	5	10	5		11
Prostrate herb	1					5					1
Pennisetum ciliare		1					5				1
Eragrostis lacunaria		8	6	3			20	20		5	9
Panicum sp.		5		3			15		10		5
Schizachyrium fragile			3					5			1
Themeda triandra									60		12
Triodia pungens				7						20	4
Aristida latifolia				2						5	1
Bothriochloa ewartiana				1						10	2
Dead											
Litter						50	50	55	20	20	39
Rock											
Bare Ground						10	5	10	5	40	14
Cryptophytes											

Community Health and Condition			
Overall Health:	Relatively good	Fire:	Nil
Potential EVR Flora Species Habitat:	Low	Fire Height:	n/a
EVR Flora Species Recorded:	None	Fire Age:	n/a
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	n/a
Weed Cover (%):	5%	Logging:	None
Disturbance:	Yes - cattle	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern:	PAC	Soil Colour:	Brown with tan highlights
Altitude:	373m	Soil Texture:	Sandy loam
Relief:		Soil Description:	Sandy loam, brown with reddish hints A horizon
Slope:	Flat	Geology:	Map (reliability low)
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	None		

BioCondition Site Survey Data – MVS29

Photo plate MVS29-7 – North from point "a"

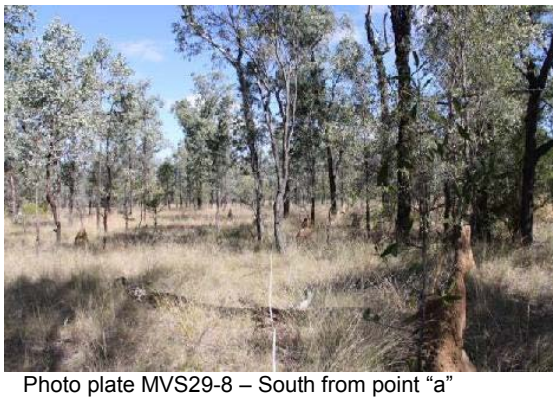


Photo plate MVS29-8 – South from point "a"

Photo plate MVS29-9 – East from point "a"

Photo plate MVS29-2 – West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 1	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees: 1	
Tree canopy (EDL*) height: 15	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 3 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 60%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Acacia excelsa* *Psydrax oleifolia*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Psydrax oleifolia*
Grass species richness: *Themeda triandra* *Aristida leptopoda* *Aristida personata* *Eragrostis lacunaria* *Bothriochloa ewartiana* *Triode pungens*
Forbs and others (non grass ground) species richness: Prostrate herb
Non-native plant cover: *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	4	**3**	1	**4**	2	**5**	3	**6**	2
7	1	**8**	1								
Total: 18											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	35	45	35	75	40	46
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	5					1
Native shrubs (<1m height)						
Non-native grass						
Non-native forbs and shrubs						
Litter*	50	50	55	20	20	39
Rock						
Bare ground	10	5	10	5	40	14
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	0 – 2.5	2.5	S	12.7 – 14.6	1.9	C	21.4 – 24.5	3.1
S	7.8 – 21.1	13.3	C	26.3 – 31.6	5.3	S	45.0 – 47.3	2.3
S	65.1 – 67.3	2.2	C	67.3 – 71.5	4.2	C	76.5 – 79.7	3.2
C	86.6 – 91.9	5.3						
Total C: 23.6% Total S: 19.7% Total E: 0.00%								

Site Survey Data – MVS30

Photo plate MVS30-1 – panorama view of transect from point “a”

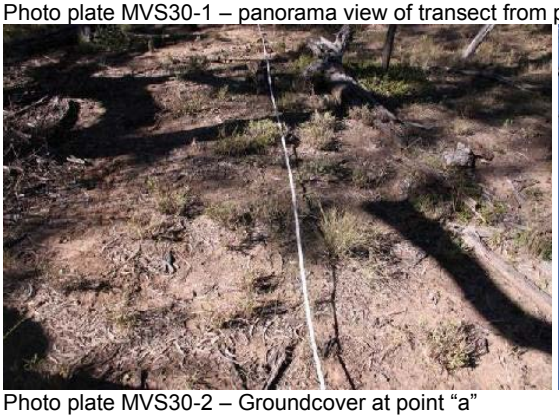


Photo plate MVS30-2 – Groundcover at point “a”

Photo plate MVS30-3 – canopy cover at point “a”

Photo plate MVS30-4 – panorama view of transect from point “b””

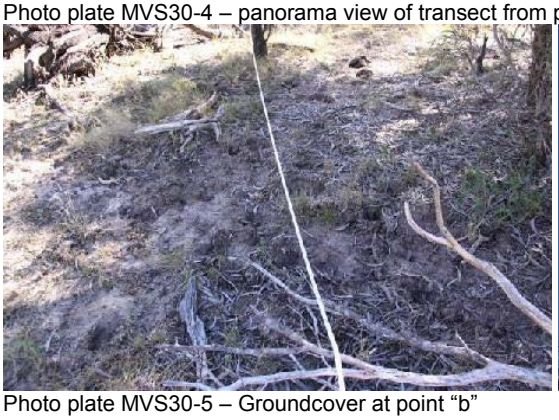


Photo plate MVS30-5 – Groundcover at point “b”

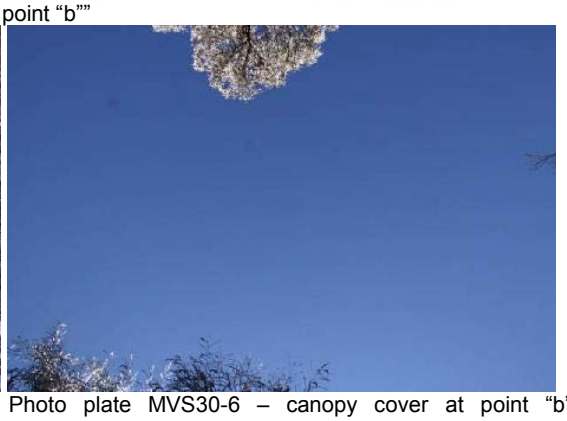


Photo plate MVS30-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB10RF
Site no.	MVS30
Date/Time:	29/06/2012
Regional Ecosystem Profile	
RE/Landtype:	10.4.3
Bioregion:	10 – Desert uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	Endangered
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	5-<20 ha

Site Description			
Location:	Lambton Meadows north of Monklands Rd. 126° and 30.41 km to Alpha, and 246° and 30.32 km Jericho		
Site Description:	Residual stand of Brigalow, low open forest with large paddymelon holes/gilgoils. Numerous fallen trees and numerous immature Brigalow specimens		
Orientation of Transect:	Along contour	Elevation:	356m
Bearing:	130°	Datum:	WGS84
Easting/Northing:	a) 55K 438449 7402821 b) 55K 438475 7402788	Latitude/Longitude:	a) S23.48355 E146.39724 b) S23.48384 E146.39748

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	12	10 – 14	30	*Acacia harpophylla*	30%
Tree 2	9	7-10	50	*Acacia harpophylla*	30%
				Eremophila mitchellii	20%
Tree 3	5	3-6	<5	*Acacia harpophylla*	<5%
				Eremophila mitchellii	<5%
Shrub 1	2	1-3	>10	*Eremophila mitchellii*	10%
				Lysiphyllum carronii	<5%
Shrub 2	<1	<1	10	*Carissa ovata*	10%
Ground				*Pennisetum ciliare*	
				Cheilanthes sieberi	
				Aristida leptopoda	
%Rock		%Bare ground	57	%Leaf litter	14	%Cryptogram	

Abundance Measures																		
Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)						
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2	
	5				*Acacia harpophylla*		4	15	10	2			10					
			1		*Eremophila mitchellii*				6	4					5			
	1				*Lysiphyllum carronii*			1					<1	<1				
					Carissa ovata					1	4						2	
					Geijera parviflora				1	1						<1		

Ground layer only											
Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Acacia harpophylla				1					5		1
Pennisetum ciliare	5	5	7			5	5	20			5
Chrysocephalum apiculatum	10	2			2	10					2
Panicum sp.	4	7		4	18	5	5		15	40	13
Geijera parviflora		11					5				1
Low herb (Malvaceae)			2	1				5	5		2
Dead										10	2
Litter						5	5	30	25	10	14
Rock											
Bare Ground						75	80	50	50	40	57
Cryptophytes											

Community Health and Condition			
Overall Health:	Moderate	Fire:	No scaring or evidence
Potential EVR Flora Species Habitat:	low	Fire Height:	n/a
EVR Flora Species Recorded:	Nil	Fire Age:	n/a
Weed Species:	yes	Fire Proportion:	n/a
Weed Cover (%):	5%	Logging:	None
Disturbance:	Yes – cattle, pigs	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	
Topography and Landform			
Landform Situation:	A	Soils:	Surface (reliability high)
Landform Pattern:	PA	Soil Colour:	Dark brown
Altitude:	356 m	Soil Texture:	Loam
Relief:		Soil Description:	Dark brown loam soil, little clay
Slope:	Flat	Geology:	Map (reliability low)
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:			

BioCondition Site Survey Data – MVS30

Photo plate MVS30-7 – North from point "a"

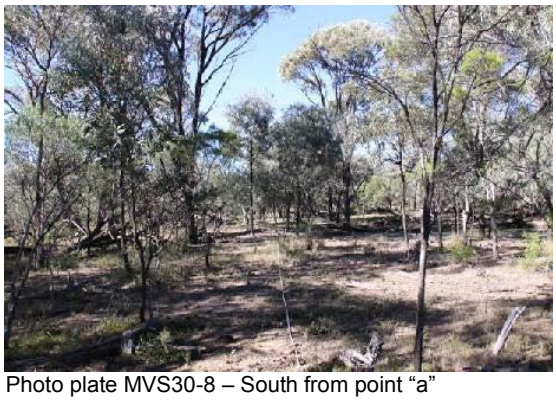


Photo plate MVS30-8 – South from point "a"

Photo plate MVS30-9 – East from point "a"

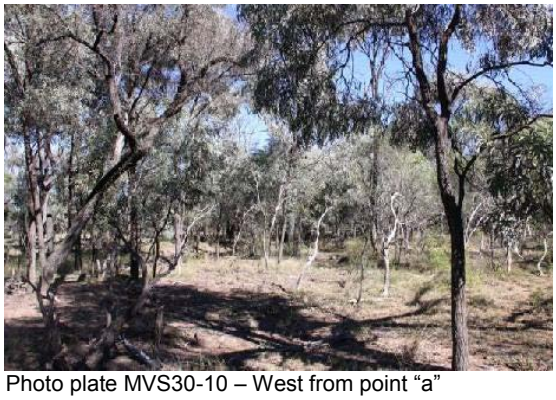


Photo plate MVS30-10 – West from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:**	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees:	
Tree canopy (EDL*) height:	**Tree sub-canopy and/or emergent height** (where relevant): **S:** **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment:	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Acacia harpophylla* *Geijera parviflora* *Eremophila mitchellii*	

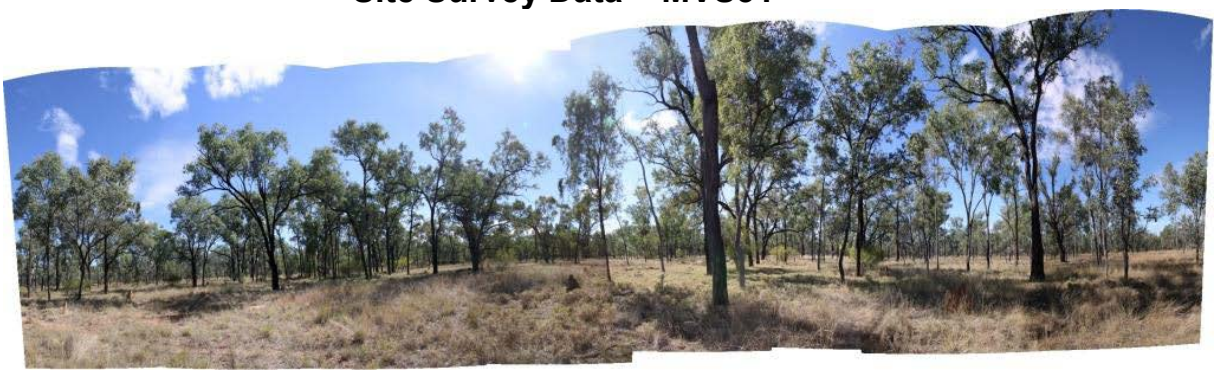
50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Lysiphyllum carronii* *Carissa ovata*
Grass species richness: *Aristida leptopoda* *Panicum sp.*
Forbs and others (non grass ground) species richness: *Cheilanthes sieberi* Herb (Asteraceae) Herb (Malvaceae)
Non-native plant cover: *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	10	**2**	2	**3**	2	**4**	2	**5**	1	**6**	1
7	1	**8**	3	**9**	6	**10**	12	**11**	10	**12**	12
13	12	**14**	2	**15**	5	**16**	2	**17**	1	**18**	1
19	1	**20**	4								
Total: 90											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	5	5	0	15	40	13
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	10		5	5		4
Native shrubs (<1m height)		5		5		2
Non-native grass	5	5	20			6
Non-native forbs and shrubs						
Litter*	5	5	30	25	20	17
Rock						
Bare ground	75	80	45	50	40	58
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	0.0 – 0.6	0.6	S	54.6 – 57.3	2.7	S	45.8 – 49.5	3.7
C	14.7 – 20.8	6.1	S	56.9 – 58.6	1.7	S	44.7 – 47.5	2.8
S	20.5 – 22.8	2.3	S	62.4 – 63.9	1.5	S	37.2 – 38.6	1.4
S	22.8 – 24.5	1.7	S	63.1 – 66.4	3.3	S	31.9 – 34.1	2.2
S	22.8 – 24.9	2.1	S	65.7 – 68.7	3.0	C	30.0 – 34.7	4.7
S	23.5 – 24.7	1.2	S	81.6 – 84.7	3.1	C	93.0 – 100	7.0
S	23.8 – 28.0	4.2						
Total C: 18.4% Total S: 36.9% Total E: 0.00%								

Site Survey Data – MVS31



MVS31-1 – Panorama of the area around MVS31 west to east via north.

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Lambton Meadows south of Monklands Rd and east of pulled areas. Alpha 28.95 km @ 135^0; Jericho 30.62km @ 248^0.	
Date: 30/06/12; 1224	**Photos** 6700 – 6707		**Filed Survey No**. Q11(MVS20) **Site No.** MVS31
Survey plot location (GPS - UTM): 55k 0439318 7401525	**Land Zone:** 5	**Soil type**: Light brown sandy loam	**Canopy height** (m) Range: 10 -14 m Average: 12
Vegetation description *Eucalyptus melanophloia* tall woodland to 18m		**Regional Ecosystem**: 10.5.5	**FPC** (%) 30%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia; 18m,* 20%	a	*Eucalyptus melanophloia; 8m*	f	*Carissa lanceolata; 1.5m*	f	*Heteropogon contortus*	a
2	*Corymbia plena; 14m,* 5%	O	*Corymbia plena; 8m*	o	*Carissa ovata; <1*	f	*Melinis repens*	o
3	*Brachychiton populneus; 14,* 1%	o					*Aristida leptopoda*	f
4							*Pennisetum ciliare*	f
5							*Aristida latifolia*	f

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Other species in area: *Eucalyptus populnea*, *Corymbia tessellaris*, *C. dallachiana, A. salicina, A. excelsa and A. sericophylla*

Site Survey Data – MVS32

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Lambton Meadows. Site in vegetated ephemeral drainage depression south of Monklands Rd. Alpha 30.77km @ 121^0; Jericho 23.13km @ 248^0.	
Date: 30/6/12; 1321	**Photos** 6719 - 6727	**Survey plot No.** Q12 **Site No.** MVS32	
Survey plot location (GPS - UTM): 55 K 436840 7401009	**Land Zone:** 3	**Soil type:** Grey and light sand with some loam	**Canopy height (m)** **Range:** 12 - 14 **Average**: 13
Vegetation description Low open forest/tall woodland with Eucalyptus populnea to 14 metres	**Regional Ecosystem:** 10.3.27	**FPC (%)** 40%	

	Species: (E/T1)		**Species: (T2 / T3)**		**Species: (S1 / S2)**		**Species: (G1 / G2)**	
1	*Eucalyptus populnea, 14m; 40%*	a	*Eucalyptus populnea; 8m; 10%*	a	*Eremophila mitchellii*	f	*Cyperus sp.*	o
2			*Acacia salicina; 6 m; <5%*	f	*Carissa ovata*	a	*Pennisetum ciliare*	a
3			*Acacia excelsa; 6m; <5%*	o	*Acacia sericophylla*	o	*Melinis repens*	o
4					*Geijera parviflora*	o	*Aristida contorta*	o
5					*Carissa lanceolata*	a	*Heteropogon contortus*	o

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS33

Photo plate MVS33-1 – View upstream along Beta Creek from south the north through west

Project: Waratah Coal Mine Site Vegetation Survey			**Site Location:** Lambton Meadows, south of Monklands Rd on Beta Creek near the Station's southern boundary. Alpha 30.01km @ 120^0; Jericho 28.24km @ 249^0.
Date: 30/6/12; 1345	**Photos** 6734 - 6745		**Filed Survey No**. Q13 **Site No**. – MVS33
Survey plot location (GPS - UTM): 55K 0437272 7400235	**Land Zone**: 3	**Soil type**: Sand, alluvium	**Canopy height** (m) Range: 10-16 Average: 13
Vegetation description Riparian vegetation dominated by *Eucalyptus camaldulensis* and *E populnea*		**Regional Ecosystem**: 10.3.14	**FPC** (%) 15%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus populnea*	f	*Eucalyptus camaldulensis*	f	*Eucalyptus camaldulensis*	f	*Pennisetum ciliare*	f
2	*Eucalyptus melanophloia*	o	*Grevillea striata*	o			*Heteropogon contortus*	a
3	*Eucalyptus camaldulensis*	f	*Callitris glaucophylla*	f			*Enteropogon acicularis*	f
4	*Brachychiton populneus*	o	*Acacia salicina*	o			*Melinis repens*	f
							Themeda triandra	o
							Schizachyrium fragile	f

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS34

No photos available

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Edge of pulled area above LZ associated with waterway, south of Monklands Rd on Lambton Meadows. Alpha 29.94km @121^0; Jericho 28.45km @ 249^0.	
Date: 30 June 2012; 1358	**Photos**		**Field Survey No**. Q14/MVS19 **Site No.** MVS34
Survey plot location (GPS - UTM): 55 K 437377 7400291	**Land Zone**: 5	**Soil type**: Light brown to tan sand to sandy loam	**Canopy height** (m) Range: 6-9 Average: 8
Vegetation description: Disturbed area on edge of waterway vegetation		**Regional Ecosystem**: Non-remnant edge of 10.3.14a	**FPC** (%) 10%

	Species: (E/T1)		Species: (T2)		Species: (T3/ S1)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	f	*Callitris glaucophylla*	f	*Callitris glaucophylla*	f	*Aristida latifolia*	f
2	*Callitris glaucophylla*	a			*Alphitonia excelsa*	f	*Heteropogon contortus*	f
3	*Corymbia plena*	o			*Carissa lanceolata*	o	*Themeda triandra*	f
4					*Psydrax oleifolia*	f	*Melinis repens*	o
5					*Carissa ovata*	f	*Pennisetum ciliare*	a
6					*Grevillea striata*	o	*Schizachyrium fragile*	f
7					*Acacia sericophylla*	o	*Stylosanthes scabra*	o
8					*Acacia salicina*	o		

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS35

Photo plate MVS35-1 – Panorama view of site south to north through west

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** north western portion of Kia Ora Station. Alpha 42.38kn @141^0; Jericho 38.08km @ 223^0.	
Date: 30/6/2012; 1523	**Photos** 58 – 62, 67 - 73		**Field Survey No**. BB28RF **Site No.** MVS35
Survey plot location (GPS - UTM): 55k 431141 7418825	**Land Zone**: 5	**Soil type:** Hard loam/clay	**Canopy height** (m) Range: - Average: -
Vegetation description Pasture with regenerating low trees along fence lines.	**Regional Ecosystem:** - Non remnant		**FPC** (%) 95%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1					*Carissa ovata*	o	*Pennisetum ciliare*	a
2					*Acacia sericophylla*	o	*Themeda triandra*	a
3					*Archidendropsis basaltica*	o	*Eragrostis fallax*	o
4							*Heteropogon contortus*	f
5							*Stylosanthes scabra*	f
6							*Cynodon dactylon*	f
7							*Cyperus sp.*	o
8								

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data– MVS36

Photo plate MVS26-1 – panorama view of pasture from west to east through north off fence track.

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Kia Ora Station, north east of homestead. Alpha 37.79km @ 144^0; Jericho 39.43km @ 230^0.	
Date: 30/06/12; 1552	**Photos** 67 - 73		**Field Survey No.** BB29 **Site No –** MVS36
Survey plot location (GPS - UTM): 55 K 440926 7415745	**Land Zone:** 5	**Soil type:** Dark grey loamy sand	**Canopy height** (m) Range: Average:
Vegetation description: Improved pasture	**Regional Ecosystem:** Non remnant		**FPC** (%): 90% groundcover

Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1						*Pennisetum ciliare*	a
2						*Melinis repens*	a
3						*Themeda triandra*	a
4						*Eragrostis fallax*	o
						Stylosanthes scabra	f

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS37

Photo plate MVS37-1 – panorama view of area from south to north through west.

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Lambton Meadows, SW of homestead Jericho 14.79km @ 240°; Alpha 41.62km @ 108°	
Date: 19 June 2012; 1051	**Photos** 6777 - 6787		**Survey plot No**. MVS14/Q15 **Site No.:-** MVS37
Survey plot location (GPS - UTM): 55k 423592 7397754	**Land Zone**: 5	**Soil type**: Orange loamy sand	**Canopy height** (m) Range: - 16 Average: 16
Vegetation description *Eucalyptus melanophloia* woodland with *Corymbia dallachiana* & *E. populnea*.		**Regional Ecosystem**: 10.5.5a	**FPC** (%) 10%

	Species: (E/T1)		**Species: (T2 / T3)**		**Species: (S1 / S2)**		**Species: (G1 / G2)**	
1	*Eucalyptus melanophloia*	a	*Grevillea striata*	o	*Acacia excelsa*	o	*Aristida leptopoda*	f
2	*Corymbia dallachiana*	o	*Eucalyptus melanophloia*	f	*Eucalyptus ammophila*	o	*Aristida latifolia*	f
3	*Eucalyptus populnea*	o	*Corymbia dallachiana*	o	*Grevillea striata*	o	*Schizachyrium fragile*	f
4					*Petalostigma pubescens*	o	*Triodia pungens*	f
5					*Eremophila mitchellii*	o	*Themeda triandra*	f
6					*Carissa ovata*	o	*Heteropogon contortus*	f
7							Herb, Asteraceae	o
8							*Pennisetum ciliare*	f

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS38

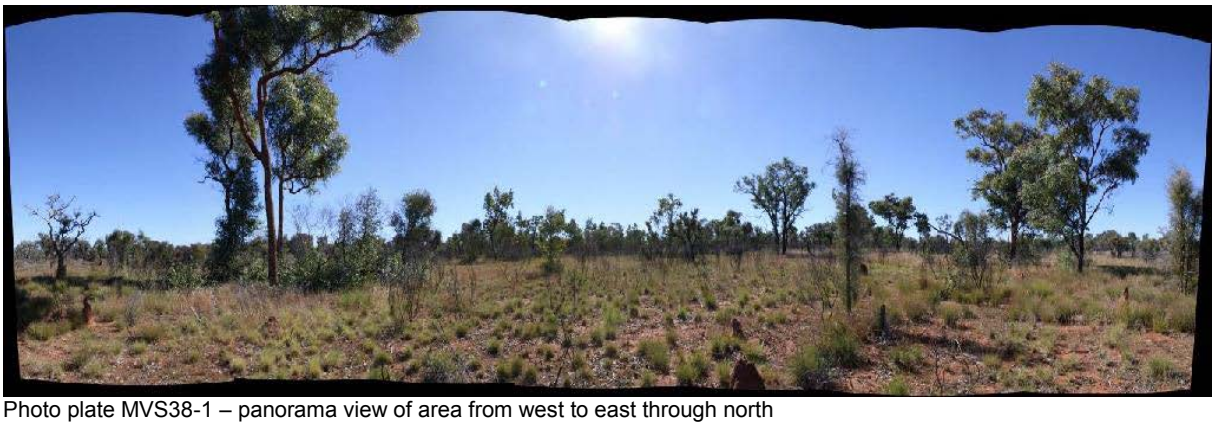


Photo plate MVS38-1 – panorama view of area from west to east through north

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Jericho 17.13km @ 233°; Alpha 41.72km @ 112°	
Date: 01/07/12; 1201	**Photos** 6822 - 6836		**Survey plot No**. Q16 **Site No. –** MVS38
Survey plot location (GPS - UTM): 55k 0424459 7400576	**Land Zone:** 5	**Soil type:** Red/orange/tan sandy loam	**Canopy height (m)** **Range: -** 3 - 5 **Average: -** 5

Vegetation description	**Regional Ecosystem:**	**FPC (%)**
Area of *Melaleuca tamariscina* and *Eucalyptus ammophila* low open woodland with *Corymbia leichhardtii* and *Eucalyptus melanophloia* as emergents. Understorey is dominated by regrowth *Melaleuca tamariscina* and *Micromyrtus gracilis* with *Acacia leptostachya.* A range of native grass species dominate the groundcover. Weedy pasture species not evident in this area.	10.5.1g	<5%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	o	*Eucalyptus ammophila*	f	*Melaleuca tamariscina*	*f*	*Schizachyrium fragile*	*c*
2	*Corymbia leichhardtii*	f	*Melaleuca tamariscina*	d	*Acacia melliodora*	*o*	*Aristida latifolia*	*f*
3	*Brachychiton populneus*	o	*Grevillea parallela*	f	*Micromyrtus gracilis*	*d*	*Triodia pungens*	*c*
4			*Alphitonia excelsa*	f	*Acacia leptostachya*	*c*	*Melinis repens*	*o*
5			*Grevillea pteridifolia*	c	*Jacksonia rhadinoclona*	*o*	*Prostrate herb*	*o*
			Petalostigma pubescens	c			*Lomandra leucocephala*	*f*
							Digitaria divaricatissima	*o*

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Termite mounds present
- Area has been burnt approximately 2 years ago. Intense fire scalding to 8m slow recovery

Site Survey Data– MVS39

Photo plate MVS39-1 – Panorama view of area from west to east through north

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Lambton Meadows; Alpha 42.10km @ 110°; Jericho 15.96 @ 234°	
Date: 01/07/12; 1255	**Photos** 6869 - 6878		**Survey plot No.: -** MVS13/Q17 **Site No.: -** MVS39
Survey plot location (GPS - UTM): 55K 0423726 7399653	**Land Zone:** 5	**Soil type:** Dark grey/brown sandy loam	**Canopy height (m)** **Range: -** 8 - 12m **Average: -** 10m

Vegetation description	**Regional Ecosystem:**	**FPC (%)**
Disturbed open woodland degraded by vegetation removal and a recent fire.	Based on cover this area would be described as non-remnant	<5%

	Species: (E/T1)		**Species: (T2 / T3)**		**Species: (S1 / S2)**		**Species: (G1 / G2)**	
1	*Brachychiton populneus*	o	*Eremophila mitchellii*	f	*Carissa ovata*	f	*Themeda triandra*	f
2	*Eucalyptus melanophloia*	o	*Eucalyptus melanophloia*	o			*Aristida leptopoda*	f
3			*Acacia sericophylla*	f			*Pennisetum ciliare*	f
4			*Grevillea striata*	o			*Heteropogon contortus*	a
5							*Drosera sp.*	f

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Area could be described as non-remnant which has been further degraded by a high intensity burn

Site Survey Data – MVS40

Photo plate MVS40-1 – panorama view of transect from point “a” west to east through north

Photo plate MVS40-2 – groundcover at point “a”

Photo plate MVS40-3 – canopy cover at point “a”

Photo plate MVS40-4 – View of transect from point “b”, east to west through south

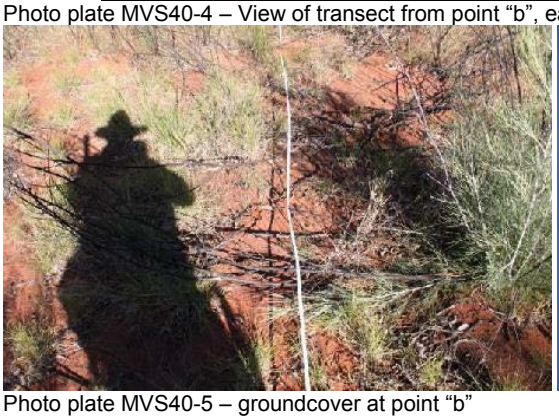


Photo plate MVS40-5 – groundcover at point “b”

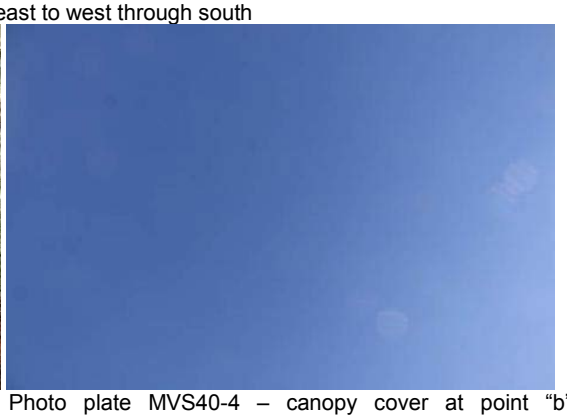


Photo plate MVS40-4 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS12
Site No	MVS40
Date/Time:	01/07/2012; 1411-1513
Regional Ecosystem Profile	
RE/Landtype:	10.5.1g
Bioregion:	10 – Desert uplands
EPBC Status:	Nil
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Western part of Lambton Meadows, Jericho 17.50km, 228° and Alpha 42.76km, 113°		
Site Description:	Bloodwood woodland with a shrubby understorey dominated by *Corymbia leichhardtii; C. similis with Eucalyptus ammophila, C. setosa* and *E. crebra*. A recent high intensity fire in 2011 has reduced the understorey and some canopy cover.		
Orientation of Transect:	Along contour	Elevation	396m
Bearing:	350°	Datum:	WGS84
Easting/Northing:	a) 55K 423886; 7401880 b) 55K 423868; 7401922	Latitude/Longitude	a) S23.49143 E146.25458 b) S23.49105 E146.25440

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	10	8–12	10	*Corymbia leichhardtii*	10%
	10	8-12		*Corymbia plena*	<5%
Tree 2	6.5	5 – 8	10	*Corymbia Leichhardtii*	10%
				Corymbia plena	<1%
				Eucalyptus crebra	<1%
Tree 3	3	4 – 5	<5	*Corymbia setosa*	<1%
				Petalostigma pubescens	5%
				Grevillea parallela	5%
Shrub 1	2.5	1 - 4	30	*Petalostigma pubescens*	<5
				Grevillea pteridifolia	<5
				Eremophila mitchellii	<5
				Dodonaea filifolia	<5
				Acacia bancroftiorum	<5
				Alphitonia excelsa	30
				Acacia leptocarpa	<5
				Acacia decora	<5
Ground			<10	*Aristida leptopoda*	
				Triodia pungens	
				Pennisetum ciliare	
				Desmodium varians	

%Rock	0	%Bare ground	75	%Leaf litter	5	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	1				*Corymbia leichhardtii*		2	3	3	2			5	5	5	2	
	2				*Eucalyptus crebra*		1	2	8	5			5	1	5	2	
					Petalostigma pubescens				12	8					15	10	
					Acacia bancroftiorum					1						1	
					Alphitonia excelsa					46						30	
					Acacia leptocarpa						23						15
					Dodonaea filifolia						3						1
					Acacia decora						34						20
					Grevillea pteridifolia					6						10	
					Grevillea parallela				1	2	1				<2	<5	
					Acacia sp.					1						1	
					Desmodium varians						1						1

Ground layer only

Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Triodia pungens	6					20					4
A grass #1		12	1				30	1			6
Schizachyrium fragile		2	20				5	20			5
Themeda triandra									100		20
Digitaria brownii										5	1
A grass #2										10	2
Eremophila mitchellii			1				5				1
A Herb			1								
Dead											
Litter						5		5		60	14
Rock											
Bare Ground						75	60	75	0	25	47
Cryptophytes											

Community Health and Condition			
Overall Health:	Recovering after an intense fire	Fire:	Present
Potential EVR Flora Species Habitat:	moderate	Fire Height:	>12m
EVR Flora Species Recorded:	None	Fire Age:	>1.5 years
Weed Species:	*Pennisetum ciliare* observed in low numbers	Fire Proportion:	>100%
Weed Cover (%):	2%	Logging:	None
Disturbance:	Fire disturbance	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	Yes
Grazing:	?	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observations
Landform Pattern:	PA	Soil Colour:	Red/orange
Altitude:	397m	Soil Texture:	Sandy loam
Relief:		Soil Description:	Red, sandy loam
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	None, minor		

BioCondition Site Survey Data – MVS40

Photo plate MVS40-7 – north from point "a"

Photo plate MVS40-8 – south from point "a"

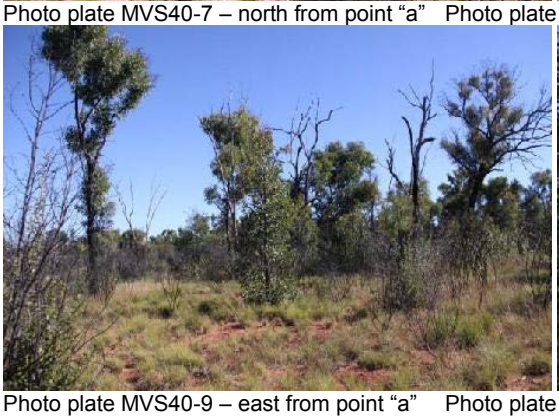


Photo plate MVS40-9 – east from point "a"

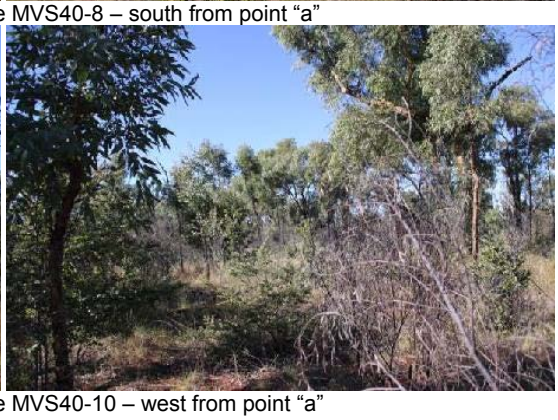


Photo plate MVS40-10 – west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 2	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 1 (Bp)
Total Large trees: 2	
Tree canopy (EDL*) height: 12	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 4 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 80%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Corymbia leichhardtii* *Corymbia plena* *Eremophila mitchellii* *Grevillea parallela* *Alphitonia excelsa* *Acacia bancroftiorum* *Eucalyptus crebra* *Acacia leptocarpa* *Grevillea pteridifolia* *Brachychiton populneus* (Bp)	
50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Grevillea pteridifolia* *Petalostigma pubescens* *Acacia decora* *Alphitonia excelsa*	
Grass species richness: *Aristida leptopoda* *Triodia pungens* *Digitaria brownii* *Themeda triandra* *A grass #1* *A grass #2* *Schizachyrium fragile*	
Forbs and others (non grass ground) species richness: *Desmodium varians*	
Non-native plant cover: *Pennisetum ciliare*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	0	**2**		**3**	.	**4**		**5**		**6**	
Total:											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	20	40	20	100	15	39
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)						
Native shrubs (<1m height)						
Non-native grass						
Non-native forbs and shrubs						
Litter*	5	0	5	0	60	14
Rock						
Bare ground	75	60	75	0	25	47
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)

Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	17.8 – 18.8	1.0	S	25.2 – 26.0	0.8	C	31.3 – 33.0	1.7
C	31.6 – 34.4	2.8	C	33.3 – 37.3	4.0	S	67.6 – 69.2	1.6
C	69.1 – 72.6	3.5	S	79.0 – 79.7	0.7	C	81.2 – 84.7	3.5
C	82.9 – 85.6	2.7						
Total C: 18.2% Total S: 4.10% Total E: 0.00%								

Shrub canopy cover: (*denote as native or exotic. Only native shrub cover is used in the scoring)

Shrubs*	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**
S	8.7 – 9.8	1.1	S	21.0 – 21.8	0.8			
Total native1.9% Total exotic:0.0%								

Site Survey Data– MVS41

Photo plate MVS41-1 – Panorama from west to east through north of Quaternary site.

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Lambton Meadows, alt. 370m. East of homestead and south of track which provides access to the western boundary of the property.	
Date: 01/07/12; 1642	**Photos** 6914 - 6925		**Survey plot No.: -** MVS15/Q18 **Site No.: -** MVS41
Survey plot location (GPS - UTM): 55K 0426108 7399152	Land Zone: 5	**Soil type**: Sandy loam, brown to tan brown	**Canopy height** (m) Range: - 10 - 14 Average: 12
Vegetation description *Eucalyptus melanophloia* woodland to 14m, EDL 12m	**Regional Ecosystem**: - 10.5.5		**FPC** (%) 10%

Species: (E/T1)			Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	a	*Eucalyptus melanophloia*	a	*Carissa ovata*	f	*Themeda triandra*	f
2			*Psydrax oleifolia*	f			*Melinis repens*	f
3			*Grevillea striata*	o			*Heteropogon contortus*	f
4			*Acacia salicina*	o			*Aristida latifolia*	f
5			*Grevillea parallela*	o			*Panicum ammophila*	o
6							*Eragrostis sororia*	o
7							*Aristida leptopoda*	f
8							*Eragrostis elongata*	o
9							*Schizachyrium fragile*	f
10							*Pennisetum ciliare*	f

Site Survey Data – MVS42

Photo plate MVS42-1 – Panorama view of transect from point ”a”, north to south through east

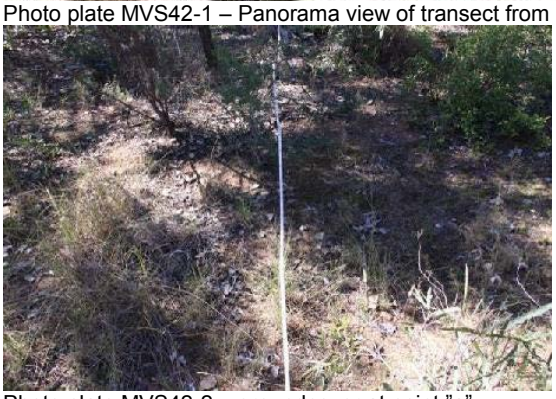


Photo plate MVS42-2 – groundcover at point ”a”

Photo plate MVS42-3 – canopy cover at point ”a”

Photo plate MVS42-4 – Panorama view of transect from point ”b”, south to north through west

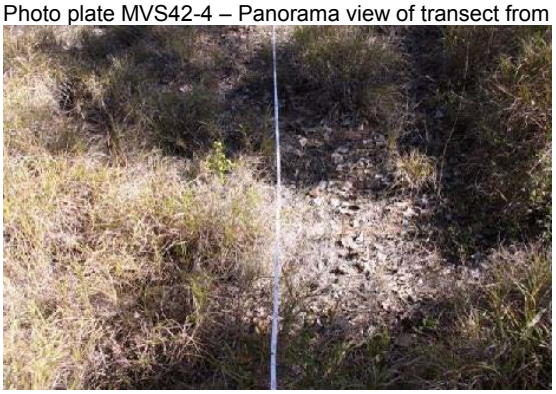


Photo plate MVS42-5 – groundcover at point ”b”

Photo plate MVS42-6 – canopy cover at point ”b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB15RF
Site no.	MVS42
Date/Time:	02/07/2012; 1233-1335
Regional Ecosystem Profile	
RE/Landtype:	10.5.27
Bioregion:	10 – Desert Uplands
EPBC Status:	Nil
VMA Status:	Least Concern
EPA Status:	No Concern at Present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Glen Innes Station, 300m west of Monklands Rd in the NE portion. Alpha 31.52km @ 142°; Jericho 38.06km @ 239°		
Site Description:	*E. populnea* woodland to very open forest with a shrubby understorey		
Orientation of Transect:	Along contour	Elevation:	342m
Bearing:	30°	Datum:	WGS84
Easting/Northing:	a) 55K 443282 7410159 b) 55K 443319 7400185	Latitude/Longitude:	a) S23.41744 E146.44484 b) S23.41721 E146.44520

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	13.5	12 – 15	10	*Eucalyptus populnea*	10
Tree 2	9	8-10	5	*Acacia excelsa*	5
Tree 3	5.5	4-7	>10	*Eremophila mitchellii*	10
	6	4-8		*Lysiphyllum carronii*	<5
Shrub 1	2.5	2-3	<20	*Eremophila mitchellii*	5
	1.5	1-2		*Dodonaea viscosa*	10
	1.5	1-2		*Carissa lanceolata*	<5
	2.5	2-3		*Psydrax oleifolia*	<5
	2	1-3		*Geijera parviflora*	<5
Shrub 2	<1	<1	10	*Carissa ovata*	10
Ground		<08	48	*Pennisetum ciliare*	
				Aristida leptopoda	
				A grass	
				Eragrostis parviflora	
				Heteropogon contortus	
				Triodia pungens	
%Rock	0	%Bare ground	26	%Leaf litter	26
%Cryptogram					

Abundance Measures																	
Basal Area (0.5mx1cm gap)					**Species**	**Stem Count** (500m^2)						**Cover** (%)					
E	**T1**	**T2**	**T3**	**S1**		**E**	**T1**	**T2**	**T3**	**S1**	**S2**	**E**	**T1**	**T2**	**T3**	**S1**	**S2**
	4				*Eucalyptus populnea*		8						10				
		1			*Acacia excelsa*				1		1				1		1
		1			*Lysiphyllum carronii*			1	4					1	5		
					Psydrax oleifolia					5						2	
					Dodonaea viscosa				1	31						5	
					Eremophila mitchellii				10	8	1				15	5	1
					Carissa ovata					12	52					10	40
					Carissa lanceolata					13						10	
					Geijera parviflora				1	5	1				1	2	1
					Archidendropsis basaltica						2						1

Ground layer only											
Species	**Stem Count** (500m^2)					**Cover** (%)					
	G1	**G2**	**G3**	**G4**	**G5**	**G1**	**G2**	**G3**	**G4**	**G5**	**G**
Triodia pungens	10			1	2	50			5	10	13
Pennisetum ciliare	1	1	8		4	5		80	40	20	29
Aristida leptopoda		5		30	4		10			10	4
Heteropogon contortus				5	1				5	5	2
Aristida contorta				5							
Panicum larcomianum				5							
Dead											
Litter						5	85	20	5	15	26
Rock											
Bare Ground						40	5	0	45	40	26
Cryptophytes											

Community Health and Condition			
Overall Health:	Good	Fire:	n/a
Potential EVR Flora Species Habitat:	Moderate	Fire Height:	n/a
EVR Flora Species Recorded:	Nil	Fire Age:	n/a
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	n/a
Weed Cover (%):	30%	Logging:	None
Disturbance:	Yes – cattle grazing	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes
Topography and Landform			
Landform Situation:		Soils:	Surface observations
Landform Pattern:		Soil Colour:	Tan brown
Altitude:	343m	Soil Texture:	Sandy loam
Relief:		Soil Description:	Tan/brown sandy loam A horizon
Slope:	Flat	Geology:	Map (reliability medium)
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:			

BioCondition Site Survey Data – MVS42

Photo plate MVS42-7 – north from point ”a”

Photo plate MVS42-8 – south from point ”a”

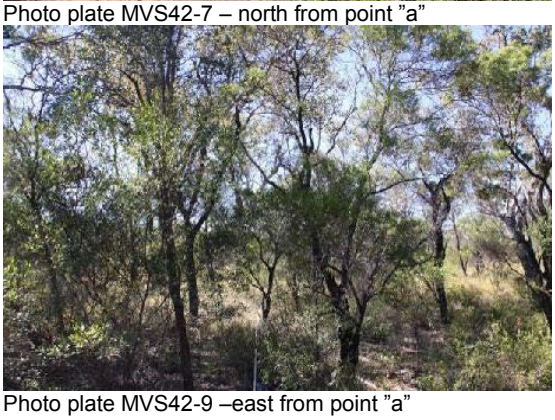


Photo plate MVS42-9 –east from point ”a”

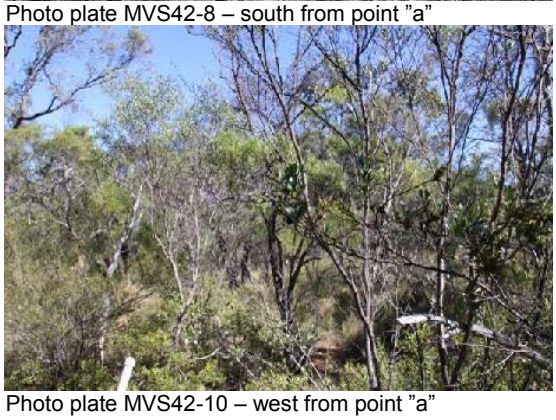


Photo plate MVS42-10 – west from point ”a”

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 0	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees:	
Tree canopy (EDL*) height: 14	**Tree sub-canopy and/or emergent height** (where relevant): **S:** **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 60%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus populnea* *Acacia excelsa* *Eremophila mitchellii* *Lysiphyllum carronii*	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Eremophila mitchellii* *Geijera parviflora* *Carissa ovata* *Dodonaea viscosa* *Carissa lanceolata*	
Grass species richness: *Heteropogon contortus* *Aristida leptopoda* *Eragrostis parviflora* A grass	
Forbs and others (non grass ground) species richness:	
Non-native plant cover: *Pennisetum ciliare*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	8	**2**	4	**3**	2	**4**	1	**5**	1	**6**	2
Total: 18											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	50	10	5	5	25	19
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)						
Native shrubs (<1m height)						
Non-native grass	5	0	75	45	20	29
Non-native forbs and shrubs						
Litter*	5	85	20	5	15	26
Rock						
Bare ground	40	5	0	45	40	26
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	6.5 – 7.4	0.9	C	49.3 – 55.0	5.7	S	10.2 – 13.4	3.2
S	6.4 – 8.1	1.7	C	57.2 – 60.5	3.3	C	10.9 – 13.0	2.1
S	7.7 – 8.6	0.9	S	64.8 – 67.0	2.2	S	14.0 – 15.9	1.9
C	14.6 – 21.0	6.4	S	20.2 – 22.1	1.9	C	23.0 – 29.8	6.8
C	29.4 – 30.5	1.1	C	37.7 – 41.2	3.5	S	37.8 – 38.6	0.8
Total C: 28.9% Total S: 11.6% Total E: 0.00%								

Shrub canopy cover: (*denote as native or exotic. Only native shrub cover is used in the scoring)								
Shrubs*	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**
S	0.0 – 0.9	0.9	S	1.3 – 2.4	1.1	S	5.9 – 6.7	0.8
S	12.6 – 13.9	1.3	S	14.5 – 16.1	1.6	S	23.0 – 29.7	6.7
S	75.7 – 79.8	4.1	S	77.9 – 79.6	1.7	S	79.7 – 80.7	1.0
Total native: 19% Total exotic: 0%								

Site Survey Data – MVS43

Photo plate MVS43-1 – panorama view of transect from point “a”. west to east through north

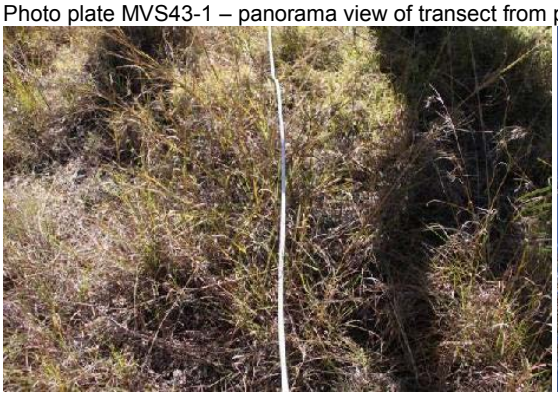


Photo plate MVS43-2 – groundcover at point “a”

Photo plate MVS43-3 – canopy cover at point “a”

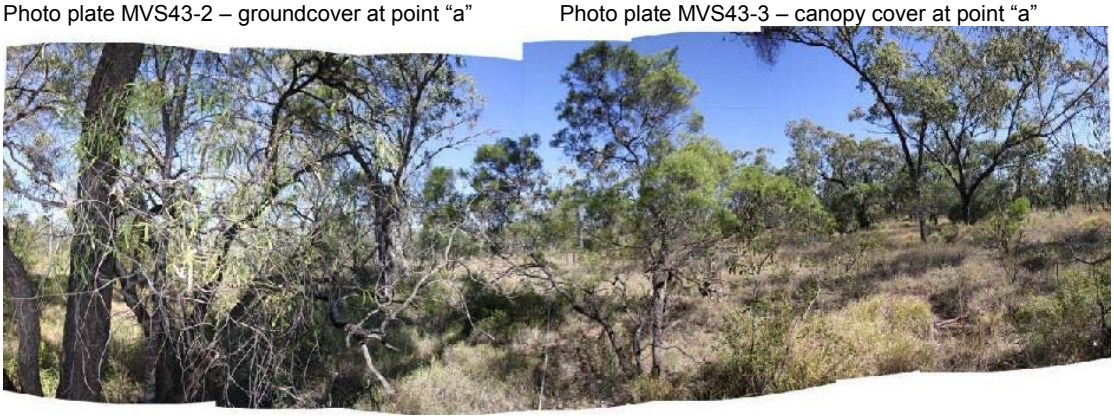


Photo plate MVS43-4 – panorama view of transect from point “b”. east to west through south

Photo plate MVS43-5 – groundcover at point “b”

Photo plate MVS43-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB27RF
Site no.	MVS43
Date/Time:	03/07/2012; 1123 - 1129
Regional Ecosystem Profile	
RE/Landtype:	10.5.27a
Bioregion:	10 – Desert uplands
EPBC Status:	Nil
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	North eastern corner of Glenn Innes approx. 250m south of northern boundary fence; Alpha 32.66km @ 143°; Jericho 38.74km @ 237°		
Site Description:	*E. populnea* woodland on gently sloping land of <5% with a slightly southerly aspect. Some old trees present		
Orientation of Transect:	Along contour	Elevation:	340
Bearing:	23°	Datum:	WGS84
Easting/Northing:	a) 55K 443423 7411209 b) 55K 443442 7411252	Latitude/Longitude:	a) S23.40796 E146.44625 b) S23.40758 E146.44644

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	16	20 – 12	<10	*Eucalyptus populnea*	<10
Tree 2		5-7	>10	*Grevillea striata*	<5
		5-8		*Acacia salicina*	<5
		4-6		*Eremophila mitchellii*	10
Tree 3		3-4	5	*Geijera parviflora*	<5
		3-4		*Acacia sericophylla*	<5
Shrub 1		1-3	>40	*Carissa lanceolata*	40
		1-3		*Brachychiton populneus*	<5
		1-3		*Acacia sericophylla*	<5
Shrub 2		<1	20	*Carissa ovata*	20
Ground			70	*Themeda triandra*	
				Pennisetum ciliare	
				Heteropogon contortus	
				Aristida leptopoda	
				Stylosanthes scabra	
				Chrysocephalum apiculatum	

%Rock		%Bare ground	20	%Leaf litter	10	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	14				*Eucalyptus populnea*		5			2			10				
					Geijera parviflora				3	5						1	
					Eremophila parviflora				3	3							
					Carissa ovata					17						<5	
					Acacia salicina			3		2	1						
					Psydrax oleifolia					2						<1	
					Acacia sericophylla					2	2					<1	
					Grevillea striata				2	1	1				<1		
					Acacia excelsa				1						<1		
					Excoecaria parviflora					1						<1	
					Alstonia constricta					1						<1	

Ground layer only											
Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Pennisetum ciliare	17	2			8	60	10			60	26
Aristida leptopoda	6	6				20	40				12
Triodia pungens	3	3	8	10		10	10	70	70		32
Melinis repens				1					5		
Dead											
Litter						10	5			35	10
Rock											
Bare Ground							35	30	25	5	20
Cryptophytes											

Community Health and Condition			
Overall Health:	Moderate	Fire:	None observable
Potential EVR Flora Species Habitat:	Moderate	Fire Height:	n/a
EVR Flora Species Recorded:	None	Fire Age:	n/a
Weed Species:	Yes - *Pennisetum ciliare, Melinis repens, Stylosanthes scabra*	Fire Proportion:	n/a
Weed Cover (%):	50	Logging:	None
Disturbance:	Yes – cattle grazing	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	None	Flooding:	None
		Extensive Clearing:	None
		Remnant:	
Topography and Landform			
Landform Situation:		Soils:	Surface observations
Landform Pattern:		Soil Colour:	Light brown
Altitude:	340m	Soil Texture:	Loam
Relief:		Soil Description:	Light brown loam, very little sand
Slope:	Flat	Geology:	
Slope Class:	<5°	Rock/Sediment Type:	
Erosional Landform:	None, minor		

BioCondition Site Survey Data – MVS43

Photo plate MVS43-7 – north from point "a"

Photo plate MVS43-8 – south from point "a"

Photo plate MVS43-9 – east from point "a"

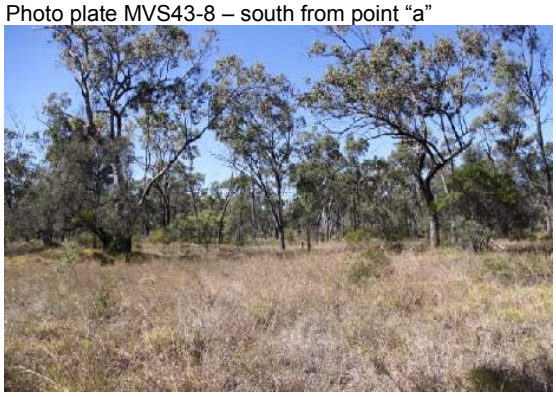


Photo plate MVS43-10 – west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 8	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 8 (12 – 20)m	
Tree canopy (EDL*) height: 16	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 10%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** **Note**: hollows present in all large trees. *Eucalyptus populnea* *Grevillea striata* *Geijera parviflora* *Acacia salicina*	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Psydrax oleifolia* *Brachychiton populneus* *Carissa lanceolata* *Carissa ovata* *Acacia sericophylla* *Acacia salicina*	
Grass species richness: *Themeda triandra* *Heteropogon contortus* *Aristida leptopoda*	
Forbs and others (non grass ground) species richness: *Chrysocephalum apiculatum*	
Non-native plant cover: *Pennisetum ciliare* *Stylosanthes scabra* *Melinis repens*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	2	**2**	4	**3**	4	**4**	3	**5**	4	**6**	5
7	4	**8**	3	**9**	2	**10**	1	**11**	1		
Total: 33											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	30	50	70	70	0	44
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)						
Native shrubs (<1m height)						
Non-native grass	60	10	0	5	60	27
Non-native forbs and shrubs						
Litter*	10	5	0	0	35	10
Rock						
Bare ground	0	35	30	25	5	19
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	0.0 – 8.4	8.4	S	99.8 – 100	0.2	C	74.6 – 78.0	3.4
S	24.8 – 27.6	2.8	C	66.8 – 70.9	4.1	S	57.9 – 58.2	0.3
C	41.9 – 45.2	3.3	C	57.1 – 61.4	4.3	S	48.7 – 54.5	5.8
C	46.7 – 57.0	10.3	S	44.8 – 47.4	2.6			
Total C: 33.8% Total S: 11.7% Total E: 0.00%								

Shrub canopy cover: (*denote as native or exotic. Only native shrub cover is used in the scoring)								
Shrubs*	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**
S	70.1 – 70.9	0.8	S	70.7 – 71.7	1.0			
Total native: 1.8% Total exotic: 0.0%								

Site Survey Data – MVS44

Photo plate MVS44-1 – panorama view of transect from point “a” north-west to south east through north

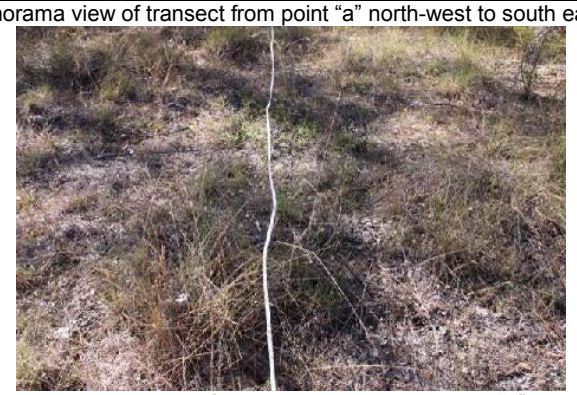


Photo plate MVS44-2 – groundcover at point “a”

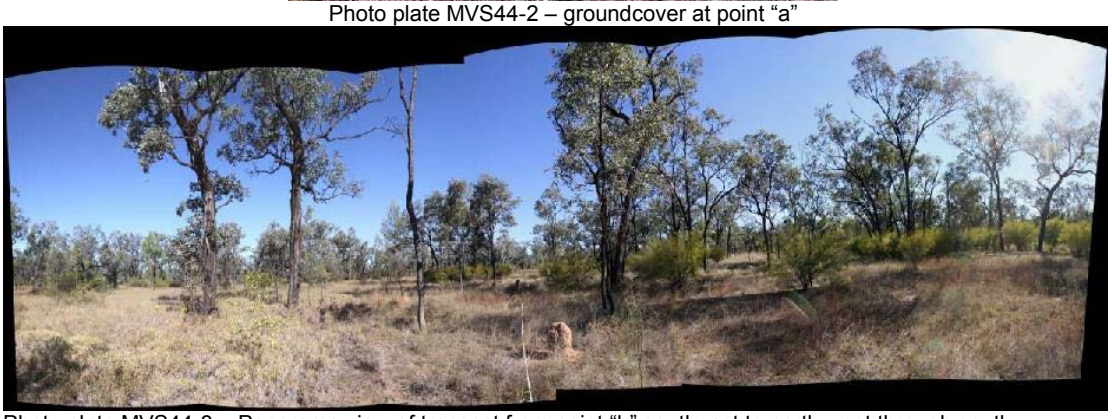


Photo plate MVS44-3 – Panorama view of transect from point “b” southeast to north west through south

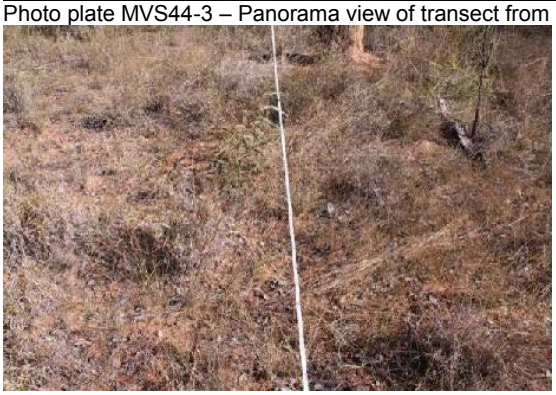


Photo plate MVS44-4 – groundcover at point “b”

Photo plate MVS44-5 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB01RF
Site no.	MVS44
Date/Time:	03/07/2012; 1352 - 1441
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10 – Desert Uplands
EPBC Status:	Nil
VMA Status:	Least Concern
EPA Status:	No Concern at Present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Glen Innes Station, central eastern portion. Alpha 32.87km @ 137°; Jericho 35.54km @ 238°		
Site Description:	Flat plain with *E. melanophloia* and *C. dallachiana* woodland. *E. populnea* a very minor species at this location. *Carissa lanceolata* occurs frequently within the shrub stratum		
Orientation of Transect:	Along the contour	Elevation:	355m
Bearing:	24°	Datum:	WGS84
Easting/Northing:	a) 55K 440847; 7409303 b) 55K 440868; 7409344	Latitude/Longitude	a) S23.42509 E146.42097 b) S23.42472; E146.42118

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	14	10 – 16	>15%	*Eucalyptus melanophloia*	15%
	10	8 – 12		*Corymbia dallachiana*	<5%
	9	8 – 10		*Corymbia erythrophloia*	<1%
	10	8 – 12		*Corymbia plena*	<1%
Tree 2	7	6 – 8	<5%	*Acacia sericophylla*	<1%
	7	6 - 8		*Eucalyptus melanophloia*	<5%
Tree 3	5	4 – 6	<2%	*Psydrax oleifolia*	<2%
Shrub 1	2	1 - 3	30%	*Carissa lanceolata*	30%
	2	1 - 3		*Acacia sericophylla*	<5%
Ground			40%	*Aristida leptopoda*	
				Triodia pungens	
				Schizachyrium fragile	
				Pennisetum ciliare	
				Stylosanthes scabra	
				Themeda triandra	
%Rock		%Bare ground	30	%Leaf litter	30	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	7				*Eucalyptus melanophloia*		8	3	1				10				
					Corymbia plena		1		1				<1				
					Carissa lanceolata					15						10	
					Psydrax oleifolia				1	3						<1	
					Acacia sericophylla				1	1	5					<1	

Ground layer only											
Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Digitaria sp.	3					5					1
Aristida leptopoda	3					5					1
Pennisetum ciliare	1	1	3	2	2	10	5	5		10	6
Chrysocephalum apiculatum	6					10					2
Triodia pungens		5	3				20				4
Aristida contorta		4	3	9	7		5	5	15	40	13
Desmodium varians		1					5	5			2
Aristida latifolia			1					5			1
Schizachyrium fragile			4	2				10	10		4
Eragrostis sp.	1										
A Herb (Asteraceae)					3					10	2
Dead						5					1
Litter						30	55	40	20	10	31
Rock											
Bare Ground						35	10	30	55	30	32
Cryptophytes											

Community Health and Condition			
Overall Health:	Moderate to good	Fire:	none
Potential EVR Flora Species Habitat:	moderate	Fire Height:	n/a
EVR Flora Species Recorded:	none	Fire Age:	n/a
Weed Species:	Yes - *Pennisetum ciliare*	Fire Proportion:	n/a
Weed Cover (%):	<10%	Logging:	None
Disturbance:	Yes – cattle grazing	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	no
		Remnant:	Yes
Topography and Landform			
Landform Situation:		Soils:	Surface observations
Landform Pattern:	SA	Soil Colour:	Tan-orange
Altitude:	355m	Soil Texture:	Sandy loam
Relief:		Soil Description:	Tan/orange sandy loam
Slope:	Flat	Geology:	Map
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:			

BioCondition Site Survey Data – MVS44

Photo plate MVS44-6 – view north from point "a"

Photo plate MVS44-7 – view south from point "a"

Photo plate MVS44-8 – view east from point "a"

Photo plate MVS44-9 – view west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 5	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:**
Total Large trees: 5	
Tree canopy (EDL*) height: 16	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 4 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 5%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Corymbia plena* *Acacia sericophylla*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Psydrax oleifolia* *Carissa lanceolata*
Grass species richness: *Aristida leptopoda* *Digitaria sp.* *Eragrostis sp.* *Schizachyrium fragile*
Forbs and others (non grass ground) species richness: A Herb (Asteraceae)
Non-native plant cover: *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	3	**2**	3	**3**	1	**4**	8	**5**	4	**6**	2
Total: 21											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	10	25	20	25	40	24
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	10	5	5	0	10	6
Native shrubs (<1m height)						
Non-native grass	10	5	5	0	10	6
Non-native forbs and shrubs						
Litter*	35	55	40	20	10	32
Rock						
Bare ground	35	10	30	55	30	32
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	2.9 – 10.2	7.3	C	9.0 – 14.2	5.2	S	52.4 – 53.1	0.7
S	59.0 – 60.9	1.9	C	66.2 – 74.9	8.7	C	76.0 – 82.8	6.8
Total C: 28.0% Total S: 2.60% Total E: 0.00%								

Site Survey Data – MVS45

Photo plate MVS45-1 – Panorama view of transect from point “a” west to east through north

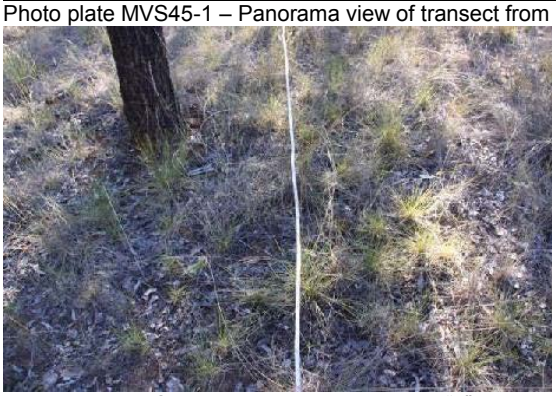


Photo plate MVS45-2 – groundcover at point “a”

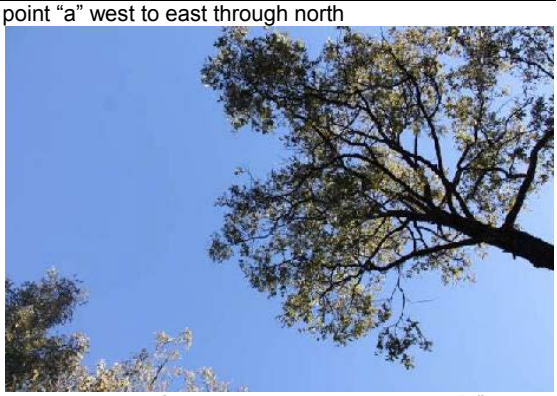


Photo plate MVS45-3 – canopy cover at point “a”

Photo plate MVS45-4 – Panorama view of transect from point “b” east to west through south

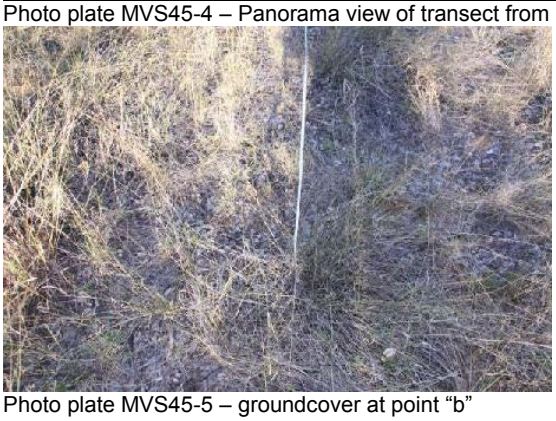


Photo plate MVS45-5 – groundcover at point “b”

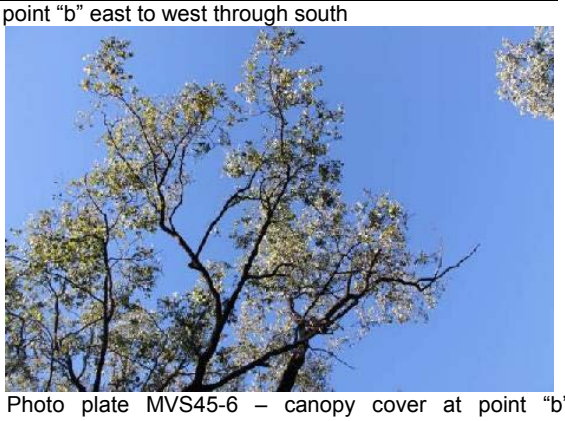


Photo plate MVS45-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB14RF
Site no.	MVS45
Date/Time:	03/07/2012
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10 – Desert uplands
EPBC Status:	Nil
VMA Status:	Least concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Flat sandy plain, Glen Innes approx. 1km from turkey nest dam off main access rd. Alpha 31.13km @ 138°; Jericho 36.48km @ 240°		
Site Description:	Flat, sandy plain dominated by *E. melanophloia* with *C. dallachiana*, *C. plena* and *E. populnea*. Small areas of *Pennisetum ciliare*. Area generally in good condition.		
Orientation of Transect:	Along contour	Elevation:	354m
Bearing:	300°	Datum:	WGS84
Easting/Northing:	a) 55K 442475 7408434 b) 55K 442437; 7408457	Latitude/Longitude:	a) S23.43300 E146.43687 b) S23.43279 E146.43650

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	14	12 – 16	>20	*Eucalyptus melanophloia*	20
	14	12 – 16		*Corymbia dallachiana*	<5
	13	12 – 14		*Eucalyptus populnea*	<10
Tree 3	6.5	5 – 8	<10	*Acacia sericophylla*	<1
				Eucalyptus melanophloia	<5
				Corymbia dallachiana	<5
				Geijera parviflora	<5
				Acacia excelsa	<5
				Corymbia plena	<5
				Citrus glauca	<5
Shrub 1	3.5	2 – 5	>10	*Carissa lanceolata*	10
				Acacia excelsa	<5
				Acacia sericophylla	<5
Shrub 2	<1	<1	10	*Carissa ovata*	10
Ground				*Aristida leptopoda*	
				Triodia pungens	
				Pennisetum ciliare	
				Schizachyrium fragile	
				Aristida contorta	
				Themeda triandra	

%Rock		%Bare ground	15	%Leaf litter	30	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count ($500m^2$)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	3				*Eucalyptus melanophloia*		9	4	2	2			20	<5	<5	<5	
	2				*Corymbia dallachiana*		2		2				<5		<5		
	1				*Eucalyptus populnea*												
					Acacia sericophylla				2	3	1				<5	<5	<5
					Geijera parviflora				2						<5		
					Carissa lanceolata					13						30	
					Acacia excelsa			1	1	3				<5	<5	<5	
					Corymbia plena			1	2					<5	<5		
					Citrus glauca				1								
					Carissa ovata						20						10

Ground layer only

Species	Stem Count ($500m^2$)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Triodia pungens	9	6			5	50	50			40	28
Aristida contorta	2		6		3	5		50		5	12
Themeda triandra		2					10				2
Pennisetum ciliare			3	1	1			10	5	5	4
Aristida latifolia				6	2				30	5	6
Schizachyrium fragile				2					5		1
Dead											
Litter						45	40	30	5	40	32
Rock											
Bare Ground						5	0	10	55	5	15
Cryptophytes											

Community Health and Condition

Overall Health:	Moderate to good	Fire:	None
Potential EVR Flora Species Habitat:	Moderate	Fire Height:	NA
EVR Flora Species Recorded:	Nil	Fire Age:	NS
Weed Species:	Yes, *Pennisetum ciliare*	Fire Proportion:	NA
Weed Cover (%):	<5%	Logging:	No
Disturbance:	Cattle grazing	Ringbarking/thinning:	No
Disturbance cover (%):	100%	Feral Digging:	No
Grazing:	Yes	Flooding:	No
		Extensive Clearing:	No
		Remnant:	Yes

Topography and Landform

Landform Situation:	A	Soils:	Surface observation
Landform Pattern	PAC	Soil Colour:	Brown to tan
Altitude:	355m	Soil Texture:	Loam with little sand
Relief:		Soil Description:	Loam with little sand, brown to tan
Slope:	Flat	Geology:	Map
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:			

BioCondition Site Survey Data – MVS45

Photo plate MVS45-7 – north from point "a"

Photo plate MVS45-8 – south from point "a"

Photo plate MVS45-9 – east from point "a"

Photo plate MVS45-10 – west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: 1	**Non-Eucalypt Large tree DBH (from benchmark doc.): - Number of large non-eucalypt trees:**
Total Large trees: 1	
Tree canopy (EDL*) height: 14	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 5%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus melanophloia	*Corymbia dallachiana*
Eucalyptus populnea	*Geijera parviflora*
Acacia sericophylla	*Acacia excelsa*
Acacia salicina	*Citrus glauca*
Note: limited tree hollows	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**	
Acacia sericophylla	*Carissa lanceolata*
Carissa ovata	*Acacia excelsa*
Grass species richness:	
Aristida leptopoda	*Aristida latifolia*
Aristida contorta	*Schizachyrium fragile*
Themeda triandra	
Forbs and others (non grass ground) species richness:	
Non-native plant cover:	
Pennisetum ciliare	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	6	**2**	4	**3**	2	**4**	3	**5**	8	**6**	1
7	2	**8**	5								
Total: 35											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	50	60	55	20	50	47
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)						
Native shrubs (<1m height)						
Non-native grass			5	5	5	3
Non-native forbs and shrubs						
Litter*	45	40	30	5	40	32
Rock						
Bare ground	5	0	10	70	5	18
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	6.03 – 6.5	0.47	C	75.3 – 77.1	1.8	S	15.4 – 19.1	3.7
S	9.2 – 10.4	1.2	S	80.2 – 83.0	2.8	C	16.1 – 20.5	4.4
C	10.4 – 13.6	3.2	S	95.4 – 97.8	2.4	C	30.5 – 35.6	5.1
C	14.8 – 17.4	2.6	C	99.3 – 100	0.7	S	58.2 – 60.1	1.9
S	65.8 – 67.3	1.5	C	69.6 – 73.4	3.8	C	70.5 – 72.6	2.1
C	73.3 – 77.9	4.6						
Total C: 28.77% Total S: 13.50% Total E: 0.0%								

Shrub canopy cover: (*denote as native or exotic. Only native shrub cover is used in the scoring)								
Shrubs*	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**
S	18.3 – 18.8	0.5						
Total native: 0.5% Total exotic:								

Site Survey Data – MVS46

Photo plate MVS16-1 – Panorama view of area around site west to east through north.

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Glen Innes Station Alpha 34.40km @ 137°; Jericho 35.13km @ 235°	
Date: 10-07-2012; 1054	**Photos** 88 - 94		**Field Survey No**. Q19/MVS34 **Site No.** MVS46
Survey plot location (GPS - UTM): 55K 0439691 7410317	**Land Zone:** 5	**Soil type:** Dark grey to brown grey sandy loam	**Canopy height (m)** **Range:** 10-14m **Average:** 12m
Vegetation description *Eucalyptus populnea* and *Eucalyptus melanophloia* woodland		**Regional Ecosystem:** 10.5.5/10.5.27	**FPC (%)** 20%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	f	*Eucalyptus populnea*	o	*Carissa lanceolata*	f	*Aristida leptopoda*	f
2	*Eucalyptus populnea*	o	*Eucalyptus melanophloia*	f	*Carissa ovata*	f	*Aristida contorta*	f
3			*Carissa lanceolata*	f	*Acacia excelsa*	o	*Themeda triandra*	f
4			*Corymbia erythrophloia*	o	*Acacia sericophylla*	o	*Triodia pungens*	f
5			*Acacia sericophylla*	o			*Pennisetum ciliare*	f
6			*Psydrax oleifolia*	o			*Stylosanthes scabra*	f
7			*Archidendropsis basaltica*	o			*Melinis repens*	o
8							*Desmodium macrocarpum*†	o
9							*Entolasia sp.*	o
10							*Heteropogon contortus*	f
11							*Goodenia hirsutus*	o
12							*Panicum sp.*	o

Codes: -a = abundant; f = frequent; O = occasional; †= EVNT species

Notes: -

- Photos 85 – 87 of *Desmodium macrocarpum* (Dm02 – 3 specimens recorded)
- All specimens in shaded situations under large trees

Site Survey Data – MVS47

Photo plate MVS47-1 – Panorama view of transect from point “a”. South-west to north-east through west

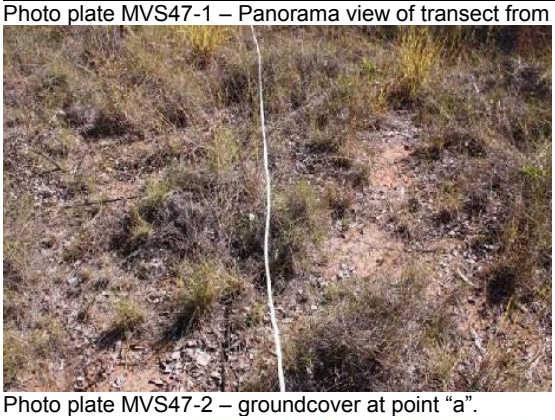


Photo plate MVS47-2 – groundcover at point “a”.

Photo plate MVS47-3 –Canopy cover at point “a”.

Photo plate MVS47-4 – Panorama view of transect from point “b”. North-east to south-west through east

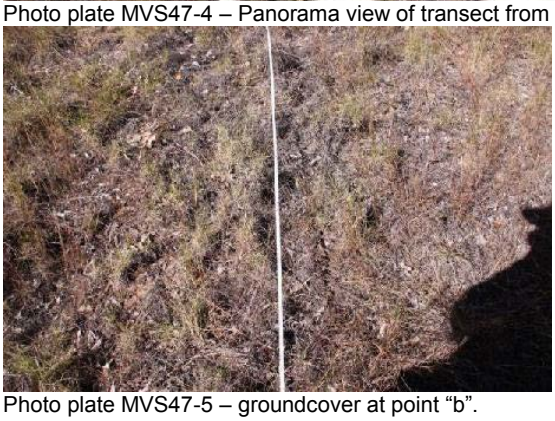


Photo plate MVS47-5 – groundcover at point “b”.

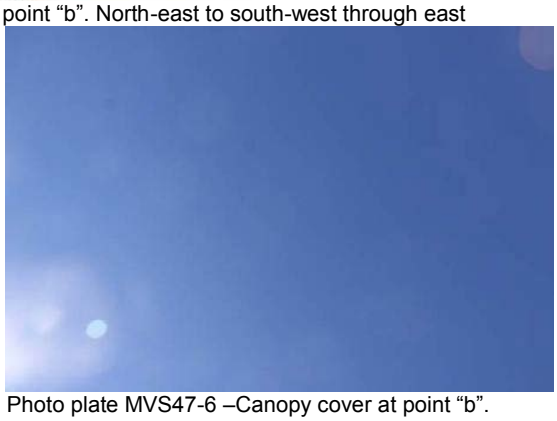


Photo plate MVS47-6 –Canopy cover at point “b”.

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB16RF
Site no.	MVS47
Date/Time:	04/07/2012; 1226 - 1320
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10 – Desert uplands
EPBC Status:	NA
VMA Status:	Least concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Site in the north, central portion of Glen Innes Station. Jericho 34.77km @ 233°; Alpha 35.79km @137°		
Site Description:	*E. populnea* - *E. melanophloia* woodland with *C. Dallachiana*. Small areas of *Pennisetum ciliare* around base of trees		
Orientation of Transect:	Along contour	Elevation:	361
Bearing:	300°	Datum:	WGS84
Easting/Northing:	a) 55K 438607 7411194 b) 55K 438561 7411213	Latitude/Longitude:	a) S23.40793 E146.39913 b) S23.40775 E146.39867

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	13	12–14	<20%	*Eucalyptus melanophloia*	<10%
	14	12–16		*Eucalyptus populnea*	<10%
	12	10–14		*Corymbia dallachiana*	<1%
	10	8-12		*Brachychiton populneus*	<1%
Tree 2	8	6-10	<10	*Eucalyptus melanophloia*	<5
				Eucalyptus populnea	<5
				Corymbia dallachiana	<5
Tree 3	5	4-6	<10	*Petalostigma pubescens*	<10
Shrub 1	1	1-1.5	>30	*Carissa lanceolata*	10
	2	1-3		*Erythroxylum australe*	20
	2	1-3		*Acacia sericophylla*	<5
	2	1-3		*Acacia juncifolia*	<5
Ground			55	*Themeda triandra*	
				Heteropogon contortus	
				Triodia pungens	
				Schizachyrium fragile	
				Aristida latifolia	
				Melinis repens	
				Pennisetum ciliare	
				Stylosanthes scabra	
%Rock	0	%Bare ground	5	%Leaf litter	40
%Cryptogram					

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	3				*Eucalyptus melanophloia*		6						10				
	2				*Eucalyptus populnea*		1	3					<5	5			
	1				*Corymbia dallachiana*		5	5		9	8		5	5		<5	<5
					Acacia sericophylla			1		2				<5		<5	
					Corymbia erythrophloia		1						<5				
					Petalostigma pubescens				1						<5		
					Acacia excelsa			1		7				<5		10	
					Acacia juncifolia					2	1					<5	<5

Ground layer only

Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Heteropogon contortus	1		2			10		5			3
Triodia pungens	6					15			30	15	12
Pennisetum ciliare	1		12			5		30	5		8
Aristida latifolia	3					5				10	3
Themeda triandra		2					10				2
Melinis repens		8					30				6
Desmodium varians		1	1				5	5			2
Schizachyrium fragile				16	10				20	10	6
Dead											
Litter						20	50	50	45	60	45
Rock											
Bare Ground						45	5	10	0	5	13
Cryptophytes											

Community Health and Condition

Overall Health:	Moderate – good health	Fire:	No scaring observed
Potential EVR Flora Species Habitat:	High based on occurrences of *Triodia sp*.	Fire Height:	n/a
EVR Flora Species Recorded:	Nil	Fire Age:	n/a
Weed Species:	yes	Fire Proportion:	n/a
Weed Cover (%):	10	Logging:	None
Disturbance:	Yes - cattle	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes

Topography and Landform

Landform Situation:		Soils:	Surface observations
Landform Pattern:		Soil Colour:	Light brown
Altitude:	358m	Soil Texture:	Loam
Relief:		Soil Description:	Light brown hard loam with little sand
Slope:	Flat	Geology:	Map
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	None, minor		

BioCondition Site Survey Data – MVS47

Photo plate MVS47-7 – north-west from point "a".

Photo plate MVS47-8 –south-east from point "a".

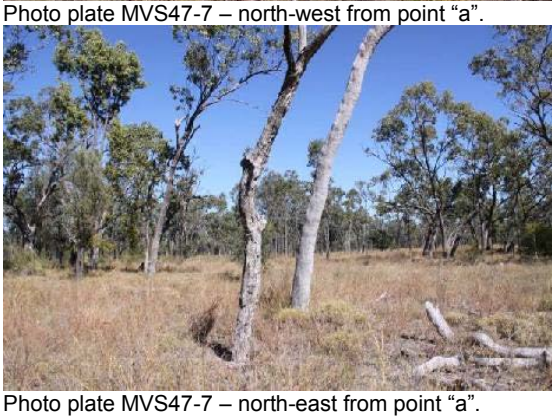


Photo plate MVS47-7 – north-east from point "a".

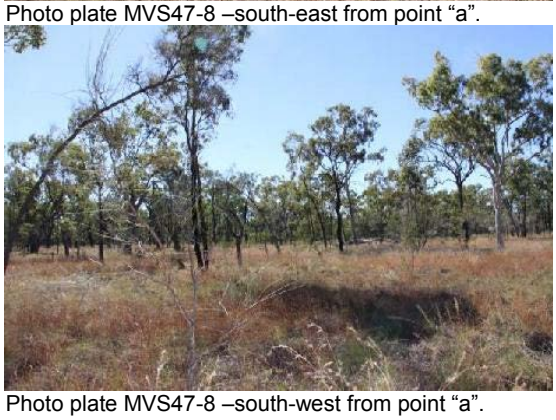


Photo plate MVS47-8 –south-west from point "a".

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: 4	**Non-Eucalypt Large tree DBH (from benchmark doc.): - Number of large non-eucalypt trees:** 1 (Bp)
Total Large trees: 4	
Tree canopy (EDL*) height: 14	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 5%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus melanophloia	*Eucalyptus populnea*
Corymbia dallachiana	*Acacia sericophylla*
Brachychiton populneus (Bp)	*Petalostigma pubescens*
Acacia excelsa	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**	
Acacia sericophylla	*Erythroxylum australe*
Acacia juncifolia	*Carissa lanceolata*
Acacia excelsa	
Grass species richness:	
Themeda triandra	*Heteropogon contortus*
Schizachyrium fragile	*Aristida latifolia*
Forbs and others (non grass ground) species richness:	
Desmodium varians	
Non-native plant cover:	
Stylosanthes scabra	
Pennisetum ciliare	
Melinis repens	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	2	**2**	2	**3**	1	**4**	1	**5**	1	**6**	6
7	1	**8**	2								
Total: 16											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	30	10	5	50	35	26
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)		5	5			2
Native shrubs (<1m height)						
Non-native grass	5	30	30	5	0	14
Non-native forbs and shrubs						
Litter*	20	50	50	45	60	45
Rock						
Bare ground	45	5	10	0	5	13
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	8.1 – 15.2	7.1	C	21.6 – 28.1	6.5	C	25.7 – 33.9	8.2
S	26.4 – 26.9	0.5	S	61.1 – 61.8	0.7	C	75.8 – 81.0	5.2
C	81.0 – 86.8	5.8	C	95.0 – 100	5.0			
Total C: 37.8% Total S: 1.20% Total E: 0.00%								

Site Survey Data – MVS48

Photo plate MVS48-1 – Panorama view of survey site west to east through north.

Project: Waratah Coal Mine Site Vegetation Survey			**Site Location:** Glen Innes Station, near northern boundary. Alpha 36.22 km @ 137^0; Jericho 34.94 km @ 232^0
Date: 04 July 2012; 1406	**Photos** 7150 - 7160		**Field Survey No.** BB17/Q20 **Site No.** MVS48
Survey plot location (GPS - UTM): 55K 0438464 7411655	**Land Zone:** 5	**Soil type:** Light brown sandy loam	**Canopy height (m)** **Range:** 12 - 16 **Average:** 14
Vegetation description *Eucalyptus populnea* - *Eucalyptus melanophloia* woodland		**Regional Ecosystem:** 10.5.5	**FPC (%)** 20%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus populnea*	f	*Eucalyptus populnea*	o	*Carissa ovata*	f	*Pennisetum ciliare*	a
2	*Eucalyptus melanophloia*	a	*Eucalyptus melanophloia*	f	*Carissa lanceolata*	f	*Chrysocephalum apiculatum*	f
3			*Archidendropsis basaltica*	o	*Erythroxylon australe*	f	*Heteropogon contortus*	f
4			*Acacia salicina*	f			*Aristida contorta*	o
5			*Psydrax oleifolia*	o			*Aristida leptopoda*	o
6			*Geijera parviflora*	o			*Aristida latifolia*	f
7							*Themeda triandra*	f
							Eriachne mucronata	o
							Schizachyrium fragile	f
							Stylosanthes scabra	f

Notes: -

- Abandoned search for BB17 could not be located
- Site the same as BB17 in canopy, understorey and groundcover composition stratum, Quaternary level survey undertaken
- South of the Q site it appears to have been cleared in the past with an even aged stand dominated by *Eucalyptus melanophloia* to 10m

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS49

Photo plate MVS49-1 – Panorama view of transect from point “a”. View south to north through west.

Photo plate MVS49-2 – groundcover at point “a”

Photo plate MVS49-3 – canopy cover at point “a”

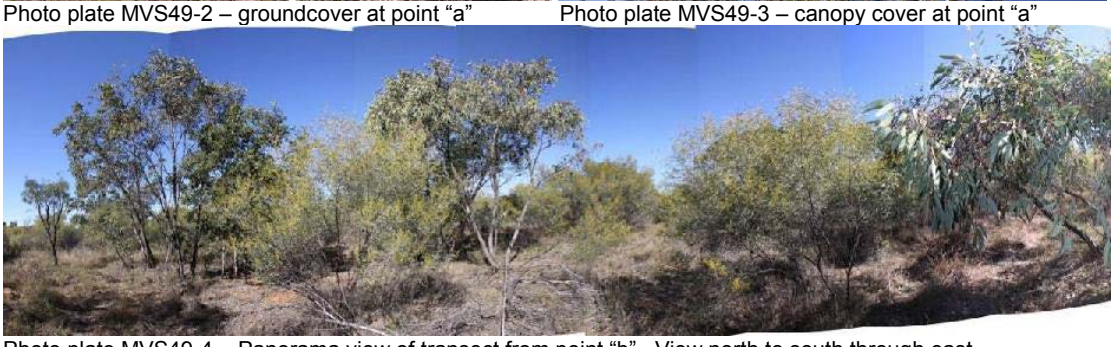


Photo plate MVS49-4 – Panorama view of transect from point “b”. View north to south through east.

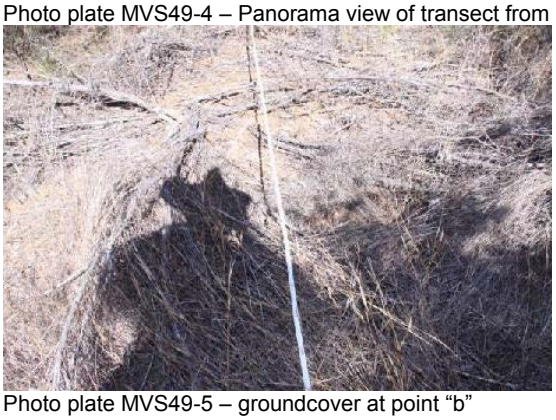


Photo plate MVS49-5 – groundcover at point “b”

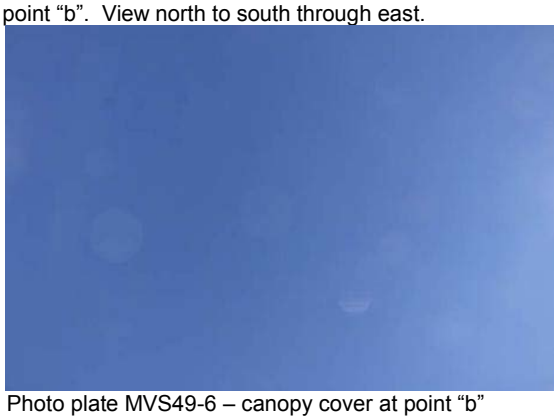


Photo plate MVS49-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS35
Site no.	MVS49
Date/Time:	05/07/2012; 1237 - 1320
Regional Ecosystem Profile	
RE/Landtype:	Non remnant – regrowth of 10.5.1g
Bioregion:	10 – Desert uplands
EPBC Status:	NA
VMA Status:	Non-remnant
EPA Status:	NA
Mapped:	No
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	North western corner of Glen Innes Station in an area of regrowth upland wallum. Alpha 39.59km @ 133°; Jericho 31.67km @ 227°		
Site Description:	Area of dryland wallum with *M. tamariscina*, *E. ammophila*, *Corymbia leichhardtii* and *Corymbia setosa* with *Acacia leptostachya* as the dominate regrowth species. This area was pulled in mid 1990's and is mapped as non-remnant.		
Orientation of Transect:	Along contour	Elevation:	383m
Bearing:	350°	Datum:	WGS84
Easting/Northing:	a) 55K 433980 7411880 b) 55K 433972 7411927	Latitude/Longitude:	S23.40155 E146.35387 S23.40112 E146.35380

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Emergent	6	4-8	1	*Brachychiton populneus*	1
Tree 3	2.5	2-3	90	*Acacia leptostachya*	80
				Eucalyptus ammophila	5
				Corymbia setosa	5
				Santalum lanceolatum	<5
	3	2 -4		*Grevillea striata*	<5
Shrub 1	1.5	1-2	60	*Acacia leptostachya*	60
Shrub 2	<1	<1	75	*Harmogia densifolia*	60
				Acacia leptostachya	15
Ground			73	*Schizachyrium fragile*	
				Aristida latifolia	
				Lomandra leucocephala	
				Triodia pungens	
%Rock		%Bare ground	11	%Leaf litter	16	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
					Acacia leptostachya				26	18					70	10	
					Harmogia densifolia						>200						90
					Grevillea striata				3						<1		
					Eucalyptus ammophila				11						<5		
					Alphitonia excelsa				3						<5		
					Santalum lanceolatum				1						<5		

Ground layer only											
Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Harmogia densifolia	5	7	1			10	80	10			20
Schizachyrium fragile	4	2	3	3	20	10	5	10	10	80	4
Aristida Latifolia	3					30					6
Triodia pungens			9	4				70	45		23
Brachyscome ciliaris					2					5	1
Dead						5	5		40		10
Litter						10	5	5	5	5	6
Rock											
Bare Ground						35	5	5	0	10	11
Cryptophytes											

Community Health and Condition			
Overall Health:	In recovery state	Fire:	None observed
Potential EVR Flora Species Habitat:	Moderate	Fire Height:	n/a
EVR Flora Species Recorded:	None	Fire Age:	n/a
Weed Species:	None observed in transect	Fire Proportion:	n/a
Weed Cover (%):	0%	Logging:	None
Disturbance:	Historic clearing & grazing	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	Historic clearing has occurred
		Remnant:	No
Topography and Landform			
Landform Situation:	A	Soils:	Surface observations
Landform Pattern:	PLA	Soil Colour:	Red/orange brown
Altitude:	383m	Soil Texture:	Sandy loam
Relief:		Soil Description:	Red/orange brown sandy loam
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	-		

BioCondition Site Survey Data – MVS49

Photo plate MVS49-7 – view north from point "a"

Photo plate MVS49-8 – view south from point "a"

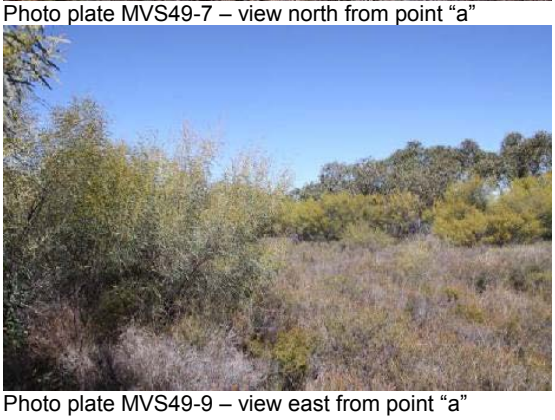


Photo plate MVS49-9 – view east from point "a"

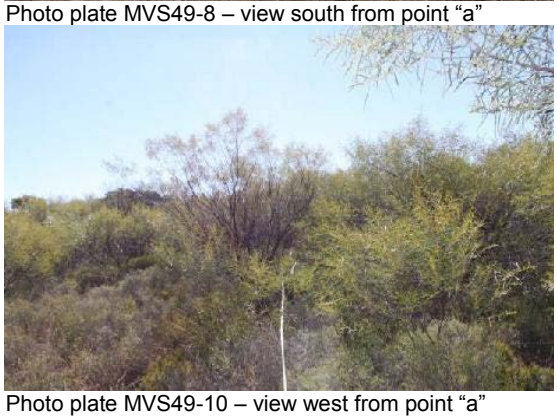


Photo plate MVS49-10 – view west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 0	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 0	
Tree canopy (EDL*) height: 3	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 1 **E:** 8
Proportion of dominant canopy (EDL) species with evidence of recruitment: unknown ?	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Acacia leptocarpa *Corymbia setosa* *Alphitonia excelsa* *Brachychiton populneus*	*Eucalyptus ammophila* *Grevillea striata* *Santalum lanceolatum*

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia leptocarpa* *Harmogia densifolia*
Grass species richness: *Schizachyrium fragile* *Triodia pungens* *Aristida latifolia*
Forbs and others (non grass ground) species richness: *Brachyscome ciliaris*
Non-native plant cover:

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	0										
Total: 0											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	40	5	80	55	80	52
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)					5	1
Native shrubs (<1m height)	10	80	10			20
Non-native grass						
Non-native forbs and shrubs						
Litter*	15	10	5	45	5	16
Rock						
Bare ground	35	5	5	0	10	11
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	39.5 – 42.2	2.7	S	98.2 – 100	1.8	C	64.7 – 66.4	1.7
S	42.1 – 46.3	4.2	S	57.3 – 58.8	1.5	S	55.0 – 58.6	3.6
S	51.8 – 54.4	2.6						
Total C: 1.70% Total S: 16.4% Total E: 0.0%								

Shrub canopy cover: (*denote as native or exotic. Only native shrub cover is used in the scoring)								
Shrubs*	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**
S	0 – 1.7	1.7	S	53.5 – 54.9	1.4	S	42.2 – 43.9	1.7
S	7.3 – 11.3	3.0	S	79.8 – 80.7	0.9	S	37.2 – 38.6	1.4
S	11.3 – 12.4	1.1	S	80.6 – 83.4	2.8	S	33.5 – 35.8	2.3
S	12.2 – 15.4	3.2	S	25.2 – 27.5	2.3	S	24.8 – 26.6	1.8
S	15.3 – 17.4	2.1	S	20.2 – 23.1	2.9	S	17.1 – 19.8	2.7
Total native: 31.3% Total exotic: 0.0%								

Survey Site Data – MVS50

No photos available

Project: Waratah Coal Mine Site Vegetation Survey			**Site Location:** Glen Innes Station, northern portion off fence track to area that was cleared in the early 1990s. Alpha 38.86km @ 132^0; Jericho 31.06km @ 228^0.
Date: 05-07-2012; 1505	**Photos:**		**Field Survey No.** MVS45/Q21 **Site No. –** MVS50
Survey plot location (GPS - UTM): UTM - 55K 434057 7410892	**Land Zone:** 5	**Soil type:** Red/orange brown sandy loam	**Canopy height** (m) **Range: -** 8-12 **Average:** 104
Vegetation description: - Disturbed regrowth with Eucalyptus melanophloia and *E. populnea* with a sparse understorey containing Acacia sericophylla, A. excelsa and Grevillea striata. *Corymbia leichhardtii, C. dallachiana* and *Corymbia setosa* also present in the area.		**Regional Ecosystem: -** 10.5.1/10.5.5	**FPC** (%) 10%

Species: (E/T1)			**Species: (T2 / T3)**		**Species: (S1 / S2)**		**Species: (G1 / G2)**	
1	*Eucalypts melanophloia*	a	*Acacia sericophylla*	f	*Carissa lanceolata*	f	*Heteropogon contortus*	a
2	*Eucalyptus populnea*	f	*Acacia excelsa*	f	*Carissa ovata*	f	*Pennisetum ciliare*	f
3	*Corymbia leichhardtii*	f	*Grevillea striata*	o	*Acacia sericophylla*	f	*Themeda triandra*	f
4	*Corymbia dallachiana*	o	*Grevillea parallela*	o	*Acacia excelsa*	f	*Aristida latifolia*	f
5	*Brachychiton populneus*	o	*Petalostigma pubescens*	f			*Aristida leptopoda*	f
6	*Corymbia plena/C. clarksoniana*	o	*Corymbia setosa*	o			*Eragrostis sp.*	o
7			*Alphitonia excelsa*	f				

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS51

Photo plate MVS51-1 – Panorama view of transect from point “a”, from west to east through north

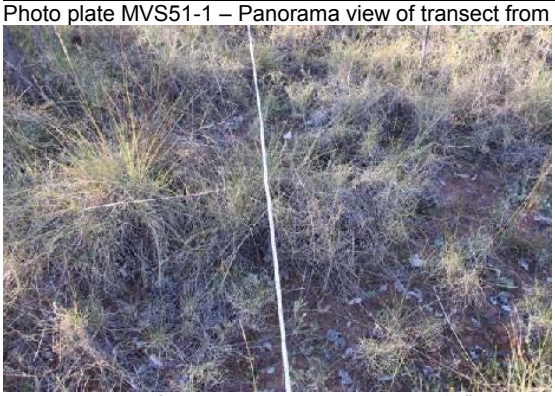


Photo plate MVS51-2 – groundcover at point “a”

Photo plate MVS51-3 – canopy cover at point “a”

Photo plate MVS51-4 – Panorama view of transect from point “b”, from east to west through south

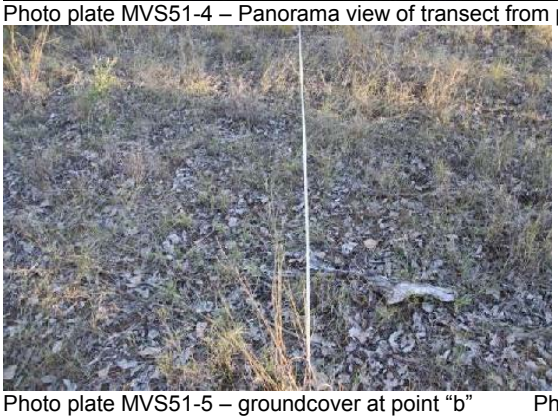


Photo plate MVS51-5 – groundcover at point “b”

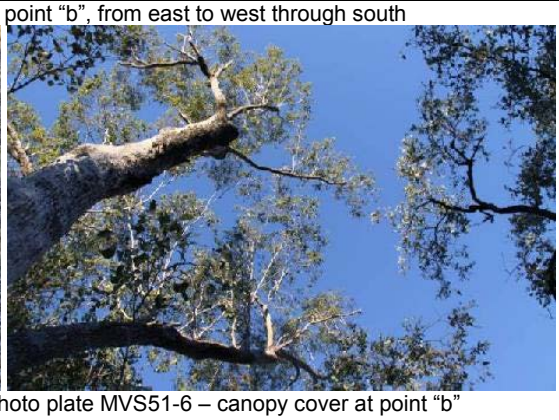


Photo plate MVS51-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB05RF
Site no.	MVS51
Date/Time:	05/07/2012; 1620 - 1652
Regional Ecosystem Profile	
RE/Landtype:	105.5
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Central northern portion of Glen Innes Station approx 400m south of the powerline easement. Alpha 37.03km @ 132°; Jericho 31.54km @232°		
Site Description:	*Eucalyptus populnea* and *E. melanophloia* woodland on a sandy plain with *Corymbia plena*/*C. clarksoniana*		
Orientation of Transect:	Along contour	Elevation:	370m
Bearing:	10°	Datum:	WGS84
Easting/Northing:	a) 55K 435574 7409830 b) 55K 435577 7409882	Latitude/Longitude:	a) S23.42008 E146.36938 b) S23.41966 E146.36941

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	13	12 – 14	<10	*Eucalyptus populnea*	10
	12	10 – 14		*Eucalyptus melanophloia*	<10
Tree 2	7	5-8	<5	*Acacia sericophylla*	<1
				Eucalyptus populnea	<5
Tree 3	3	2-5	<5	*Eucalyptus populnea*	<5
Shrub 1	1.5	1-2	<5	*Acacia excelsa*	<5
				Grevillea striata	<5
Shrub 2	<1	<1	<5	*Grevillea striata*	<5
				Carissa ovata	<5
Ground	.5	<1	57	*Triodia pungens*	
				Schizachyrium fragile	
				Aristida leptopoda	
				Aristida latifolia	
				Chrysocephalum apiculatum	
				Pennisetum ciliare	
				Eragrostis sp.	
				Stylosanthes scabra	
				Desmodium varians	
%Rock		%Bare ground	31	%Leaf litter	12	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					Species	Stem Count ($500m^2$)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
					Eucalyptus populnea		2	1	6				<5	<5	5		
					Eucalyptus melanophloia		4	5	1				>5	5	<5		
					Acacia excelsa					4						<5	
					Grevillea striata					1	1					<5	<5
					Carissa ovata					10						>5	
					Acacia sericophylla				1	2					<5	<5	

Ground layer only											
Species	Stem Count ($500m^2$)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Triodia pungens	10	8	4		3	55	55	50		20	36
Schizachyrium fragile	2	4			4	5	5			5	3
Aristida latifolia	2		3			5		5			2
Chrysocephalum apiculatum	2					5					1
Pennisetum ciliare				3	1				10	5	3
Eragrostis sp.				6	10				10	20	6
Stylosanthes scabra				4					5		1
Desmodium varians					1					5	1
Sida cordifolia					1					5	1
Heteropogon contortus					3					15	3
Dead											
Litter						5	20	10	20	5	12
Rock											
Bare Ground						25	20	35	55	20	31
Cryptophytes											

Community Health and Condition			
Overall Health:		Fire:	None observed
Potential EVR Flora Species Habitat:	High	Fire Height:	n/a
EVR Flora Species Recorded:	Yes in close proximity	Fire Age:	n/a
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	n/a
Weed Cover (%):	1%	Logging:	None
Disturbance:	Yes – cattle grazing	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern:	PLA	Soil Colour:	Light brown/tan-brown
Altitude:	370m	Soil Texture:	Sandy loam
Relief:		Soil Description:	Sandy loam plain
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	-		

BioCondition Site Survey Data – MVS51

Photo plate MVS51-7 – view north from point "a"

Photo plate MVS51-8 – view south from point "a"

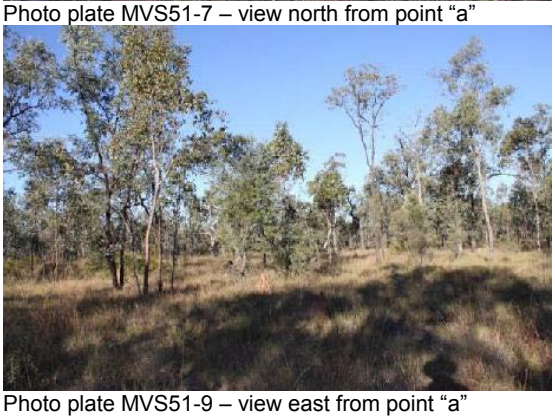


Photo plate MVS51-9 – view east from point "a"

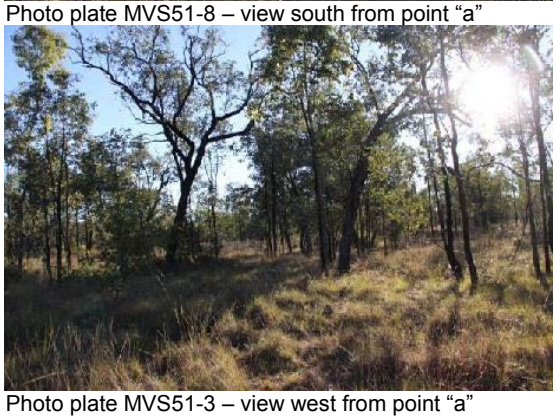


Photo plate MVS51-3 – view west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 5	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 5	
Tree canopy (EDL*) height: 14	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 8 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 40%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus populnea* *Eucalyptus melanophloia* *Corymbia erythrophloia* *Corymbia plena*/*Corymbia clarksoniana*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia excelsa* *Grevillea striata* *Carissa ovata*
Grass species richness: *Triodia pungens* *Schizachyrium fragile* *Aristida leptopoda* *Aristida latifolia*
Forbs and others (non grass ground) species richness: *Chrysocephalum apiculatum*
Non-native plant cover: *Pennisetum ciliare* *Stylosanthes scabra*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	2	**3**	1	**4**	3	**5**	1	**6**	1
7	2	**8**	3	**9**	2	**10**	1	**11**	1		
Total: 21											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	60	60	55	10	60	49
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	5	0	0	0	5	2
Native shrubs (<1m height)						
Non-native grass	5	0	0	10	5	4
Non-native forbs and shrubs	0	0	0	5	5	2
Litter*	5	20	10	20	5	12
Rock						
Bare ground	25	20	35	55	20	31
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	2.7 – 4.3	1.6	S	9.3 – 10.7	1.4	S	43.7 – 47.3	3.6
C	46.6 – 57.9	11.3	C	54.7 – 57.7	3.0	S	57.6 – 59.9	2.3
C	78.4 – 86.8	8.4						
Total C: 22.70% Total S: 8.90% Total E: 0.00%								

Site Survey Data – MVS52

Photo plate MVS52-1 – Panorama view of transect at point “a”. View from south to north through west

Photo plate MVS52-2 – groundcover at point “a”

Photo plate MVS52-3 – canopy cover at point “a”

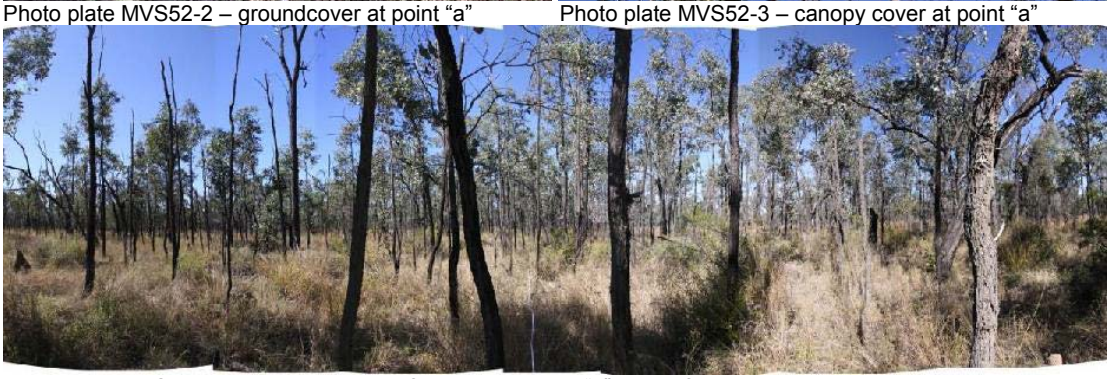


Photo plate MVS52-4 – Panorama view of transect at point “b”. View from north to south through east.

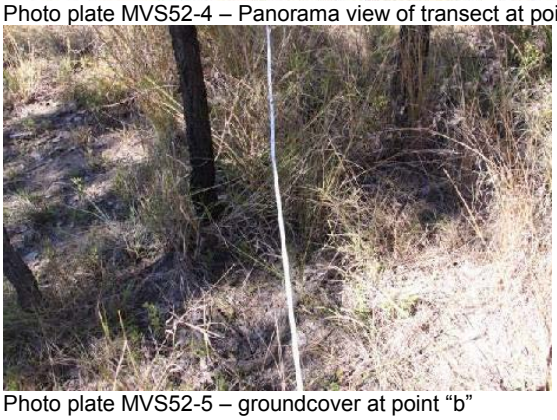


Photo plate MVS52-5 – groundcover at point “b”

Photo plate MVS52-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB03RF
Site no.	MVS52
Date/Time:	06/07/2012; 1130 - 1229
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50 ha

Site Description			
Location:	Western central portion of Glen Innes; Alpha 37.31km @ 127°; Jericho 28.09km @ 233°		
Site Description:	*E. melanophloia* low open forest to 14m, canopy @ 9 – 14m. grassy groundcover, little shrub stratum		
Orientation of Transect:	Along contour	Elevation:	382m
Bearing:	300°	Datum:	WGS84
Easting/Northing:	a) 55 K 433174 7407297 b) 55 K 433132 7407327	Latitude/Longitude:	a) S23.44291 E146.34578 b) S23.44264 E146.34537

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	14	10 – 16	<5	*Eucalyptus melanophloia*	<5
Tree 2	9	9 – 10	>20	*Eucalyptus melanophloia*	>20
Tree 3	3	2-5	<20	*Eucalyptus melanophloia*	>15
				Alphitonia excelsa	<5
				Psydrax oleifolia	<5
Shrub 1	1.5	0.5 – 2	<10	*Carissa lanceolata*	5
				Petalostigma pubescens	5
Shrub 2	<1	<1	10	*Carissa ovata*	10
Ground			58	*Themeda triandra*	
				Pennisetum ciliare	
				Heteropogon contortus	
				Aristida latifolia	
%Rock		%Bare ground 8%	%Leaf litter 34%	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	1	10			*Eucalyptus melanophloia*		1	45	45	2			<5	35	30	<5	
					Corymbia plena			1	2					<5	<5		
					Carissa ovata					24						35	
					Petalostigma pubescens					1						<5	
					Alphitonia excelsa				1	1	1				<5	<5	<5
					Carissa lanceolata					4						<5	

Ground layer only											
Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Heteropogon contortus	3		3	2		10		20	5		7
Pennisetum ciliare	6	2	2	3	12	50	5	15	20	60	30
Themeda triandra		3					40				8
Aristida latifolia		3	4	3			30	20	20		14
Dead						40	25	35	45	0	29
Litter										20	4
Rock											
Bare Ground								10	10	20	8
Cryptophytes											

Community Health and Condition			
Overall Health:	Moderate	Fire:	Yes
Potential EVR Flora Species Habitat:	High - confirmed	Fire Height:	1 – 6m
EVR Flora Species Recorded:	*Desmodium macrocarpum*	Fire Age:	>3 yrs
Weed Species:	yes	Fire Proportion:	>5%
Weed Cover (%):	35%	Logging:	None
Disturbance:	Cattle grazing	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observations
Landform Pattern:	PLA	Soil Colour:	Dark grey
Altitude:	382m	Soil Texture:	Loam
Relief:		Soil Description:	Dark grey, hard loam
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	-		

BioCondition Site Survey Data – MVS52

Photo plate MVS52-7 – view north from point "a"

Photo plate MVS52-8 – view south from point "a"

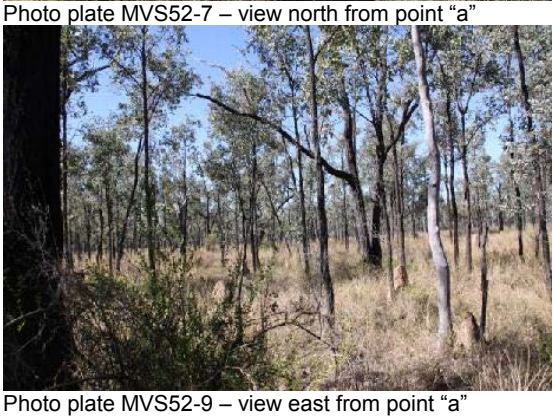


Photo plate MVS52-9 – view east from point "a"

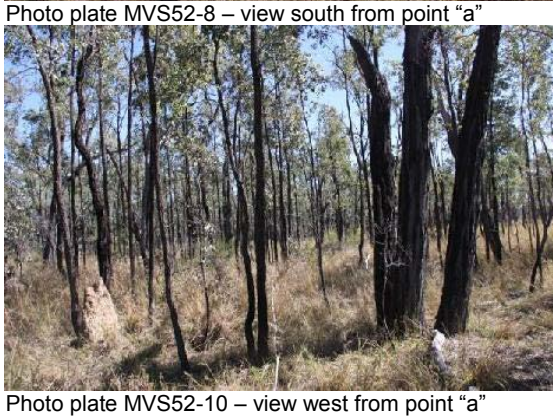


Photo plate MVS52-10 – view west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 1	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 1	
Tree canopy (EDL*) height: 9	**Tree sub-canopy and/or emergent height** (where relevant): **S:** <8 **E:** 14
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Corymbia plena*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Petalostigma pubescens* *Carissa lanceolata* *Carissa ovata*
Grass species richness: *Themeda triandra* *Heteropogon contortus* *Aristida latifolia*
Forbs and others (non grass ground) species richness:
Non-native plant cover: *Pennisetum ciliare;* *Stylosanthes scabra*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	4	**3**	2	**4**	2	**5**	2	**6**	5
7	1	**8**	2	**9**	4	**10**	3	**11**	2	**12**	2
13	1	**14**	2								
Total: 36											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	10	70	40	20	0	28
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)						
Native shrubs (<1m height)						
Non-native grass	50	5	15	20	60	30
Non-native forbs and shrubs						
Litter*	40	25	35	50	20	34
Rock						
Bare ground	0	0	10	10	20	8
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	1.2 – 2.9	1.7	S	22.8 – 23.8	1.0	S	60.2 – 61.4	1.2
S	4.2 – 7.2	3.0	S	23.0 – 25.2	2.2	S	67.1 – 68.3	1.2
S	11.3 – 13.0	1.7	S	29.0 – 31.3	2.3	S	75.6 – 78.1	2.5
S	13.1 – 15.6	2.5	S	34.2 – 35.8	1.6	S	78.2 – 80.4	2.2
S	15.5 – 16.2	0.7	S	36.3 – 38.8	2.5	S	83.6 – 84.6	1.0
S	16.0 – 17.2	1.2	S	36.8 – 38.4	1.6	S	88.9 – 90.3	1.4
S	16.1 – 17.3	1.2	S	46.6 – 49.0	2.4	S	89.9 – 92.4	2.5
S	18.7 – 20.4	1.7	S	48.2 – 49.0	0.8	S	94.0 – 94.3	0.3
S	19.9 – 21.6	1.7	S	52.4 – 54.1	1.7	S	94.8 – 96.7	1.9
S	20.7 – 21.2	0.5	S	57.1 – 58.4	1.3	S	59.0 – 60.1	1.1
S	21.3 – 22.4	1.1	S	58.4 – 59.0	0.6	S	22.1 – 23.0	0.9
Total C: 0.00% Total S: 51.2% Total E: 0.00%								

Site Survey Data – MVS53

Photo plate MVS53-1 – Panorama view of transect from point “a”. View west to east through north

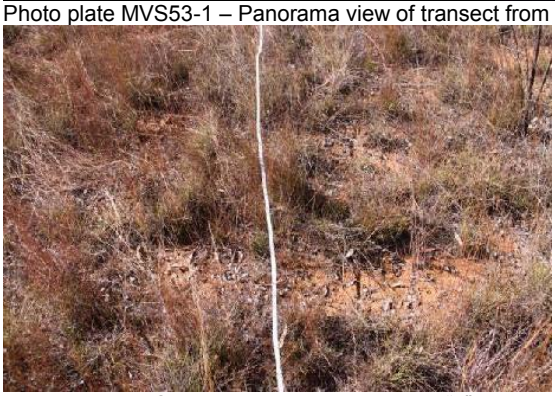


Photo plate MVS53-2 – groundcover at point “a”

Photo plate MVS53-3 – canopy cover at point “a”

Photo plate MVS53-4 – Panorama view of transect from point “b”. View east to west through south

Photo plate MVS53-5 – groundcover at point “b”

Photo plate MVS53-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB02RF
Site no.	MVS53
Date/Time:	06/07/2012; 1410-1456
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	South western portion of Glen Innes Station; Alpha 35.63km @ 125°; Jericho 27.58km @ 237°		
Site Description:	*E. melanophloia* woodland with *Corymbia plena* and *C. dallachiana* to 14m		
Orientation of Transect:	Along contour	Elevation:	378
Bearing:	45°	Datum:	WGS84
Easting/Northing:	a) 55 K 433892 7405411 b) 55 K 433926 7405443	Latitude/Longitude:	a) S23.45997 E146.35273 b) S23.45968 E146.35306

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	14	10–16	5	*Eucalyptus melanophloia*	5
	10	8-12	<5	*Corymbia plena*	<5
	12	10-14	5	*Corymbia dallachiana*	5
Tree 2	8	7-9	<5	*Corymbia dallachiana*	<5
Tree 3	5	4-6	<10	*Acacia sericophylla*	<5
		3-6		*Bursaria tenuifolia*	>5
		3-6		*Petalostigma pubescens*	5
Shrub 1	1.5	1 – 2	<5	*Acacia melleodora*	<5
Ground			76	*Themeda triandra*	
				Schizachyrium fragile	
				Triodia pungens	
				Heteropogon contortus	
				Desmodium varians	
				Aristida latifolia	
				Pennisetum ciliare	

%Rock		%Bare ground	7	%Leaf litter	13	%Cryptogram	

Abundance Measures

Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	2				*Eucalyptus melanophloia*		6	1					15	<5			
		2			*Corymbia plena*												
					Acacia sericophylla				1						<5		
					Acacia melleodora					2	1					<5	<5
					Bursaria tenuifolia				9						10		
					Corymbia dallachiana			1						<5			

Ground layer only

Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Schizachyrium fragile	5	40	30			20	75	60			31
Triodia pungens	15	2			10	40	5			90	27
Heteropogon contortus			1					10			2
Pennisetum ciliare				2					5		1
Desmodium varians			1					5			1
Aristida latifolia				20					90		18
Dead											
Litter						20	20	10	5	10	13
Rock											
Bare Ground						20		15			7
Cryptophytes											

Community Health and Condition			
Overall Health:	good	Fire:	Yes
Potential EVR Flora Species Habitat:	High	Fire Height:	1 – 6m
EVR Flora Species Recorded:	Yes - *Desmodium macrocarpum*	Fire Age:	>3 yrs
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	>5%
Weed Cover (%):	1%	Logging:	None
Disturbance:	Yes - cattle	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	None
		Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils:	Surface observation
Landform Pattern:	PLA	Soil Colour:	Light brown to tan
Altitude:	382m	Soil Texture:	Sandy loam
Relief:	-	Soil Description:	Light brown/tan sandy loam
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	-		

BioCondition Site Survey Data – MVS53

Photo plate MVS53-7 – View north from point "a"

Photo plate MVS53-8 – view south from point "a"

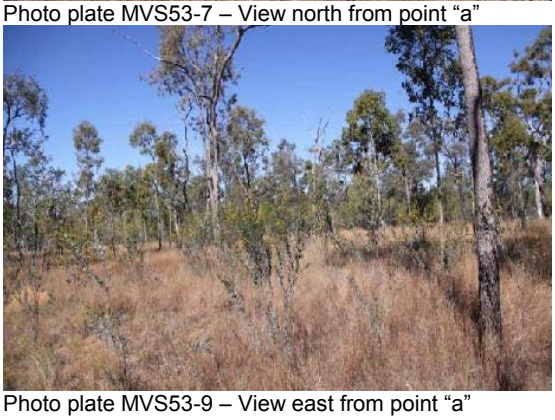


Photo plate MVS53-9 – View east from point "a"

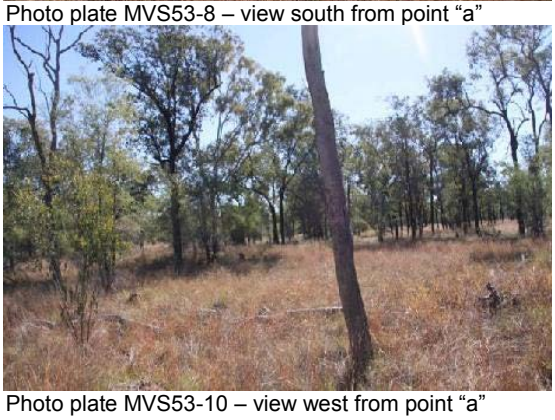


Photo plate MVS53-10 – view west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: 0	**Non-Eucalypt Large tree DBH (from benchmark doc.): Number of large non-eucalypt trees:** 0
Total Large trees: 0	
Tree canopy (EDL*) height: 9	**Tree sub canopy and/or emergent height** (where relevant): **S:** <8 **E:** 14
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus melanophloia* *Corymbia plena* *Bursaria tenuifolia* *Corymbia dallachiana* *Acacia sericophylla*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia melleodora*
Grass species richness: *Themeda triandra* *Heteropogon contortus* *Aristida latifolia*
Forbs and others (non grass ground) species richness: *Desmodium varians*
Non-native plant cover: *Pennisetum ciliare* *Stylosanthes scabra*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	4	**2**	4	**3**	2	**4**	2	**5**	2	**6**	5
7	1	**8**	2	**9**	4	**10**	3	**11**	2	**12**	2
13	1	**14**	2								
Total: 36											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	60	80	70	90	90	78
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)			5			1
Native shrubs (<1m height)						
Non-native grass				5		1
Non-native forbs and shrubs						
Litter*	20	20	10	5	10	13
Rock						
Bare ground	20		15			7
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)

Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	1.2 – 2.9	1.7	S	22.8 – 23.8	1.0	S	60.2 – 61.4	1.2
S	4.2 – 7.2	3.0	S	23.0 – 25.2	2.2	S	67.1 – 68.3	1.2
S	11.3 – 13.0	1.7	S	29.0 – 31.3	2.3	S	75.6 – 78.1	2.5
S	13.1 – 15.6	2.5	S	34.2 – 35.8	1.6	S	78.2 – 80.4	2.2
S	15.5 – 16.2	0.7	S	36.3 – 38.8	2.5	S	83.6 – 84.6	1.0
S	16.0 – 17.2	1.2	S	36.8 – 38.4	1.6	S	88.9 – 90.3	1.4
S	16.1 – 17.3	1.2	S	46.6 – 49.0	2.4	S	89.9 – 92.4	2.5
S	18.7 – 20.4	1.7	S	48.2 – 49.0	0.8	S	94.0 – 94.3	0.3
S	19.9 – 21.6	1.7	S	52.4 – 54.1	1.7	S	94.8 – 96.7	1.9
S	20.7 – 21.2	0.5	S	57.1 – 58.4	1.3	S	59.0 – 60.1	1.1
S	21.3 – 22.4	1.1	S	58.4 – 59.0	0.6	S	22.1 – 23.0	0.9
Total C: 0.00% Total S: 51.2% Total E: 0.00%								

Site Survey Data – MVS54

Photo plate MVS54-1 – Panorama view from west to east through north.

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Southern central portion of Glen Innes Station (Pebblys). Alpha l34.70km @ 126^0; Jericho 28.63km @ 238^0.	
Date: 6 July 2012; 1530	**Photos** 7381 – 7388		**Field Survey No**. MVS40/Q22 **Site No. –** MVS54
Survey plot location (GPS – UTM): 55K 0435084 7405495	**Land Zone**: 5	**Soil type**: Sandy loam, light brown	**Canopy height** (m) Range: Average:
Vegetation description Degraded area with regrowth vegetation dominated by *Archidendropsis basaltica*	**Regional Ecosystem**: Mapped as Remnant 10.5.27a/10.5.5 Site data suggest the immediate area is non-remnant		**FPC** (%) <5%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Brachychiton populneus*	o	*Eucalyptus melanophloia*	o	*Petalostigma pubescens*	f	*Themeda triandra*	a
2			*Archidendropsis basaltica*	f	*Carissa lanceolata*	f	*Aristida latifolia*	f
3			*Eremophila mitchellii*	f	*Carissa ovata*	f	*Melinis repens*	o
4			*Psydrax oleifolia*	o	*Acacia sericophylla*	o	*Triodia pungens*	a
5			*Bursaria tenuifolia*	o			*Schizachyrium fragile*	f
6							*Pennisetum ciliare*	a
7							*Sida sp.*	o
8							*Setaria surgens*	o

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Numerous termite mounds
- Area has been impacted upon with numerous dead stags of *Eucalyptus melanophloia.*
- All stags are of the approximate same DBH of < 100mm

Site Survey Data – MVS55

Photo plate MVS55-1 – View north from Q site

Photo plate MVS55-2 – View south from Q site

Photo plate MVS55-3 – View east from Q site

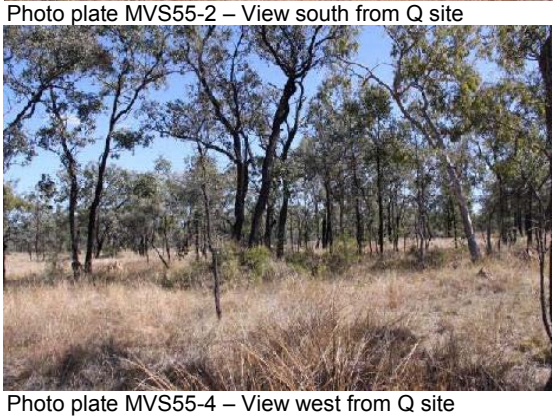


Photo plate MVS55-4 – View west from Q site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Glen Innes Station, south of Station houses. Alpha 34.92Km @ 132^0; Jericho 31.95 km @ 235	
Date: 07 July 2012; 1213	**Photos** 7395 - 7398		**Survey plot No**. MVS36/Q23 **Site No. –** MVS55
Survey plot location (GPS - UTM): 55K 437132 7408419	**Land Zone**: 5	**Soil type**: Light brown sandy loam	**Canopy height** (m) Range: 12 - 16 Average: 14
Vegetation description *E. melanophloia* woodland on sandy plain		**Regional Ecosystem**: 10.5.5	**FPC** (%) 10 - 15

Species: (E/T1)			**Species: (T2 / T3)**		**Species: (S1 / S2)**		**Species: (G1 / G2)**	
1	*Eucalyptus melanophloia*	a	*Eucalyptus melanophloia*	a	*Carissa ovata*	a	*Schizachyrium fragile*	a
2	*Corymbia dallachiana*	o	*Acacia sericophylla*	o	*Carissa lanceolata*	o	*Triodia pungens*	a
3	*Corymbia plena*	o	*Acacia excelsa*	o	*Petalostigma pubescens*	o	*Aristida personata*	
4	*Corymbia clarksoniana*	o			*Psydrax oleifolia*	o	*Melinis repens*	o
5	*Brachychiton populneus*	o					*Heteropogon contortus*	a
6							*Pennisetum ciliare*	a
7							*Chrysocephalum apiculatum*	o
8							*Drosera sp.*	o

Species: (E/T1)			Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
9							*Aristida latifolia*	f
10							*Lomandra confertifolia*	o
11							*Goodenia hirsuta*	o
12							*Wahlenbergia gracilis*	o
13							*Stylosanthes scabra*	f
14							*Sida cordifolia*	o
15							*Eragrostis sororia*	f
16							*Themeda triandra*	f

Codes: -a = abundant; f = frequent; O = occasional

Notes: -

- Very little *Pennisetum ciliare* in this area
- Pigs rootings present

Survey Site Data – MVS56

Photo plate MVS56-1 – View north from Q site

Photo plate MVS56-2 – View south from Q site

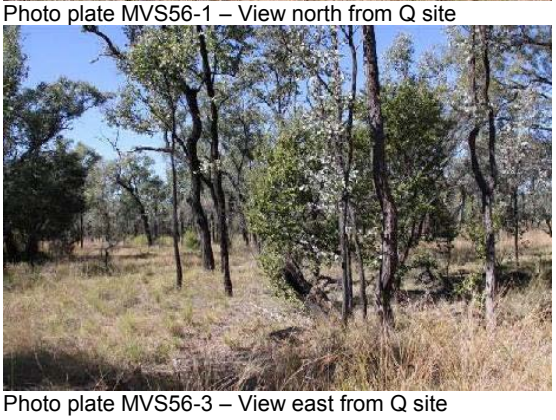


Photo plate MVS56-3 – View east from Q site

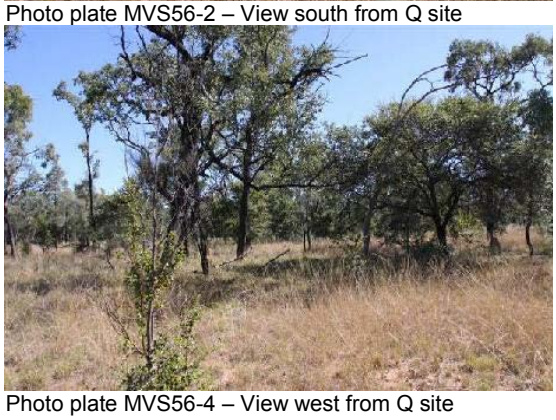


Photo plate MVS56-4 – View west from Q site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: central portion of Glen Innes Station. Alpha 36.93km @ 129^0; Jericho 29.40km @ 233^0	
Date: 7 July 2012; 1303	**Photos** 7404 - 7407		**Field Site No**. MVS37 **Site No. –** MVS56
Survey plot location (GPS - UTM): 55K 434230 7408071	**Land Zone**: 5	**Soil type**: Light brown sandy loam	**Canopy height** (m) Range: 12 - 14 Average: 13
Vegetation description *E. melanophloia* woodland with *Corymbia plena* and shrubby to grassy understorey		**Regional Ecosystem**: 10.5.5	**FPC** (%) 10 – 15%

	Species: (E/T1)		**Species: (T2 / T3)**		**Species: (S1 / S2)**		**Species: (G1 / G2)**	
1	*Eucalyptus melanophloia*	a	*Petalostigma pubescens*	f	*Carissa lanceolata*	f	*Aristida latifolia*	f
2	*Corymbia plena*	o	*Acacia sericophylla*	o	*Carissa ovata*	f	*Triodia pungens*	f
3	*Atalaya hemiglauca*	o	*Archidendropsis basaltica*	f	*Acacia excelsa*	o	*Wahlenbergia gracilis*	o
4	*Brachychiton populneus*	o	*Santalum lanceolatum*	o	*Alphitonia excelsa*	o	*Heteropogon contortus*	f
5			*Alstonia constricta*	o	*Persoonia falcata*	o	*Glycine clandestina*	o
6				o	*Flueggea leucopyrus*	a	*Desmodium filiforme*	o
7							*Stylosanthes scabra*	f

Species: (E/T1)			Species: (T2 / T3)			Species: (S1 / S2)			Species: (G1 / G2)	
8									*Setaria surgens*	o
9									*Schizachyrium fragile*	a
10									*Pennisetum ciliare*	f
11									*Cymbopogon obtectus*	o
12									*Chrysocephalum apiculatum*	o
13									*Lomandra leucocephala*	o
14									*Aristida personata*	f

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS57

Photo plate MVS57-1 – View north from Q site

Photo plate MVS57-2 – View south from Q site

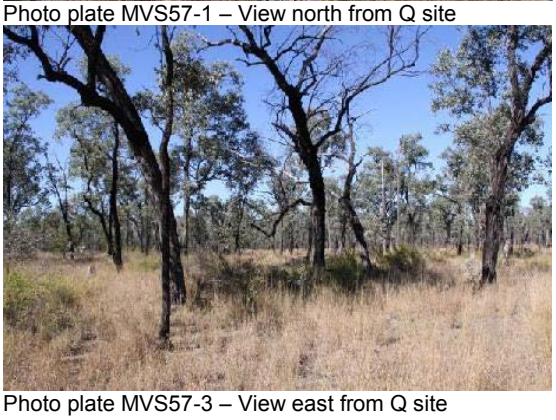


Photo plate MVS57-3 – View east from Q site

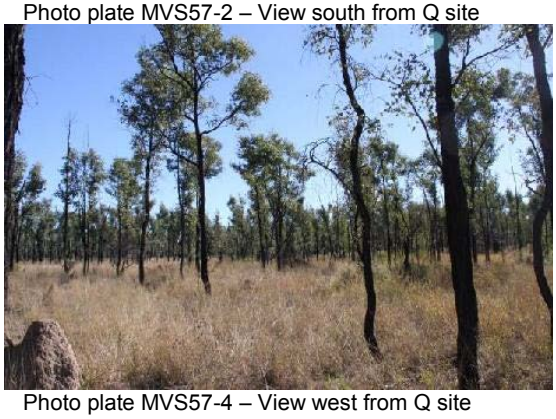


Photo plate MVS57-4 – View west from Q site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Glen Innes central portion	
Date: 7 July 2012; 1332	**Photos** 7424 - 7427		**Field Survey No.: -** MVS38/Q25 **Site No.: -** MVS57
Survey plot location (GPS - UTM): 55k 434355 7407431	**Land Zone**: 5	**Soil type**: Dark grey Loam, hard	**Canopy height** (m) Range: 12 - 16 Average: 14
Vegetation description *Eucalyptus melanophloia* woodland to 16m, sparse shrub layer with predominant native grassy groundcover. *Pennisetum Ciliare* dominates in places.		**Regional Ecosystem**: 10.5.5	**FPC** (%) 10%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	a	*Eucalyptus melanophloia*	a	*Carissa lanceolata*	f	*Pennisetum ciliare*	f
2	*Corymbia dallachiana*	o	*Acacia sericophylla*	f	*Carissa ovata*	f	*Themeda triandra*	f
3					*Petalostigma pubescens*	o	*Eragrostis sororia*	f
4							*Bothriochloa ewartiana*	o
5							*Enteropogon ramosus*	o
6							*Aristida calycina*	o

Species: (E/T1)			Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
7							*Cyperaceae sp. (dactylotes)*	o
8							*Melinis repens*	o
9							*Eragrostis parviflora*	
10							*Sida sp.*	

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS58

Photo plate MVS58-1 – View north from Q site

Photo plate MVS58-2 – View south from Q site

Photo plate MVS58-3 – View east from Q site

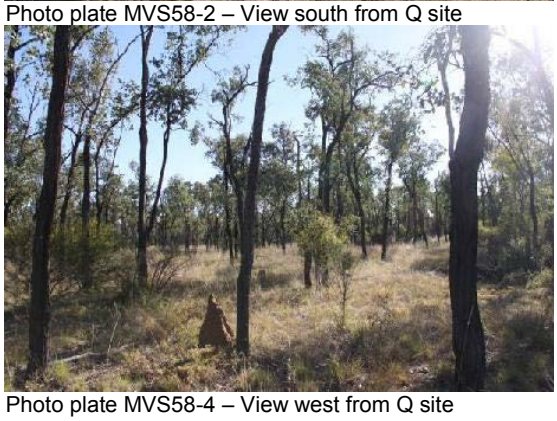


Photo plate MVS58-4 – View west from Q site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location**: Glen Innes central portion	
Date: 7 July 2012; 1508	**Photos**		**Field Survey site No**. MVS41/Q26 **Site No. –** MVS58
Survey plot location (GPS - UTM): 55K 436510 7407021	**Land Zone**: 5	**Soil type:** Grey brown loamy sand	**Canopy height** (m) Range: 10-12 Average: 11

Vegetation description *Eucalyptus melanophloia* woodland to 14 metres with little shrubby understory and a dominant grassy groundcover	**Regional Ecosystem**: 10.5.5	**FPC** (%) <15%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	a	*Acacia excelsa*	f	*Acacia sericophylla*	o	*Aristida latifolia*	a
2	*Brachychiton populneus*	f	*Psydrax oleifolia*	o	*Carissa lanceolata*	f	*Aristida calycina*	f
3					*Carissa ovata*	f	*Triodia pungens*	a
4					*Astonia constricta*	o	*Pennisetum ciliare*	f
5					*Flueggea leucopyrus*	f	*Schizachyrium fragile*	f
6							*Desmodium filiforme*	o
7							*Aristida leptopoda*	f

Species: (E/T1)			Species: (T2 / T3)			Species: (S1 / S2)			Species: (G1 / G2)	
8									*Heteropogon contortus*	o
9									*Cymbopogon obtectus*	o
10									*Setaria surgens*	o
12									*Dianella Longifolia*	o
13									*Cheilanthes sieberi*	o
14									*Melichrus procumbens*	o
15									*Wahlenbergia gracilis*	o
16									*Lomandra leucocephala*	o

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS59

Photo plate MVS59-1 – Panorama view of transect from point a (southern end)

Photo plate MVS59-2 – Ground cover at point a

Photo plate MVS59-3 – canopy cover at point a

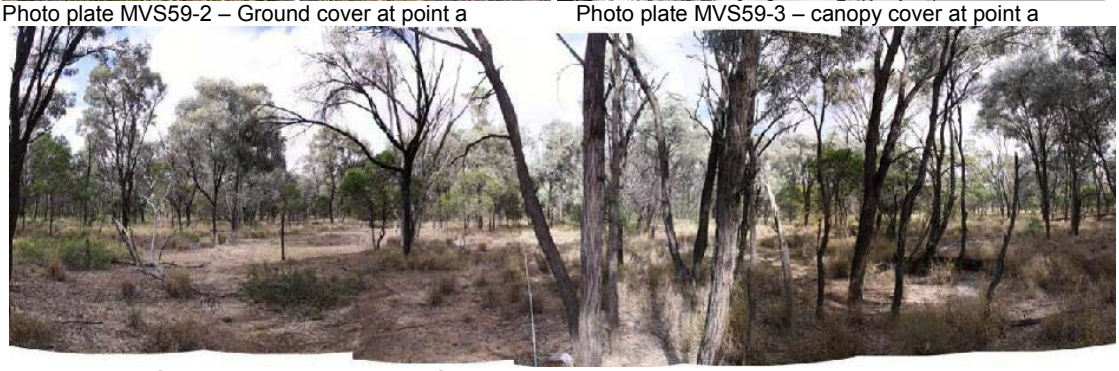


Photo plate MVS59-4 – View along transect from point b (northern end)

Photo plate MVS59-5 – Ground cover at point b

Photo plate MVS59-6 – Canopy cover at point b

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS46
Site Number	MVS59
Date/Time:	08/07/2012: 1005 – 1100
Regional Ecosystem Profile	
RE/Land type:	10.4.3a
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
Biodiversity Status:	Endangered
Mapped:	Mapped as part of a mosaic polygon of Not as 10.4.3
Width of Community:	150 – 300m
Area of Community:	1 - <5 or 5 - <20ha

Site Description			
Location:	An area of Brigalow in the eastern portion of Glen Innes Station abutting Monklands Road. Alpha 31.32km @ 141°; Jericho 37.64km @ 240°.		
Site Description:	Stand of Brigalow open forest to 16m, average 12m on mixed soils. The stand is approximately 3.6 ha in area		
Orientation of Transect:	Across the profile	Elevation	345m
Bearing:	10°	Datum:	WGS84
Easting/Northing	a) 55k 443267; 7409366 b) 55K 443274; 7409418	Latitude/Longitude	a) S23.42460 E146.44467 b) S23.42414 E146.44473

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	14	10 – 16	60	*Acacia harpophylla*	60
	14	10 - 16		*Eucalyptus populnea*	<5
	11	10 - 12		*Acacia excelsa*	<5
	11	10 – 12		*Lysiphyllum carronii*	<5
Tree 2	9	8 – 10	20	*Acacia harpophylla*	50
Tree 3	6	4 – 8	10	*Acacia harpophylla*	10
				Geijera parviflora	10
				Eremophila mitchellii	10
Shrub 1	2	1 – 3	>40	*Eremophila mitchellii*	10
				Psydrax oleifolia	<5
				Carissa lanceolata	15
				Carissa ovata	15
Shrub 2	<1	<1	5	*Carissa ovata*	5
Ground			25	*Pennisetum ciliare*	
				Aristida latifolia	
				Aristida personata.	
%Rock	0	%Bare ground	36	%Leaf litter	39
%Cryptogram	0				

Abundance Measures																	
Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	3	2			*Acacia harpophylla*		3	16	18				10	40			
					Eremophila mitchellii				7	2					5	2	
					Carissa lanceolata					9						5	
					Carissa ovata						5						5
					Geijera parviflora					2						<1	
					Eucalyptus populnea		1						<1				
					Psydrax oleifolia					1							
					Lysiphyllum carronii			1									

Ground layer only											
Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Pennisetum ciliare	5		2	4	2	60		10	15	15	20
Aristida latifolia		2					5				1
Aristida personata		12			4		10		10		4
Dead											
Litter						20	65	5	35	70	39
Rock											
Bare Ground						20	20	85	40	15	36
Cryptophytes											

Community Health and Condition			
Overall Health:	Area appear to be in good health	Fire Height:	n/a
Potential EVR Flora Species Habitat:	Low	Fire Age:	n/a
EVR Flora Species Recorded:	None	Fire Proportion:	n/a
Weed Species:	Yes -*Pennisetum ciliare*	Logging:	None
Weed Cover (%):	20%	Ringbarking/thinning:	None
Disturbance:	Cattle, pigs?	Feral Digging:	Yes
Disturbance cover (%):	100%	Flooding:	None
Grazing:	Present	Extensive Clearing:	None
Fire:	n/a	Remnant:	Yes
Topography and Landform			
Landform Situation:	A	Soils: Surface observations	
Landform Pattern:	PLA	Soil Colour:	Southern end - Light brown; northern and central - dark brown to grey black
Altitude:	340m	Soil Texture:	Loam to loam/clay
Relief:		Soil Description:	Variable soil sandy loam across the community
Slope:	Flat	Geology:	
Slope Class:	<2°	Rock/Sediment Type:	
Erosional Landform:			

BioCondition Site Data – MVS59

Photo plate MVS59-7 – view south of transect point a

Photo plate MVS59-8 – View north of transect point a

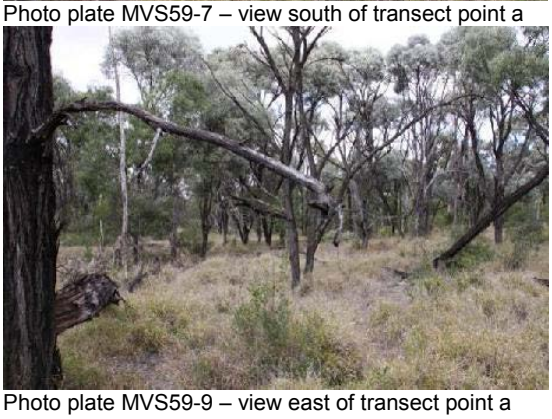


Photo plate MVS59-9 – view east of transect point a

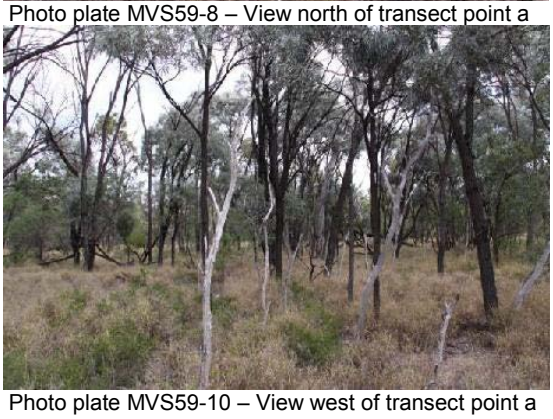


Photo plate MVS59-10 – View west of transect point a

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: No benchmark for this RE	**Non-Eucalypt Large tree DBH (from benchmark doc.): Number of large non-eucalypt trees:** 0
Total Large trees: 3	
Tree canopy (EDL*) height: 12	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 6 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 5%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Acacia harpophylla* *Eucalyptus populnea* *Eremophila mitchellii* *Psydrax oleifolia* *Geijera parviflora* *Lysiphyllum carronii*	

50 x 10m area: (*list species if known or count if unknown)
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Acacia harpophylla* *Eremophila mitchellii* *Carissa lanceolata* *Carissa ovata*
Grass species richness: *Aristida latifolia* *Aristida personata*
Forbs and others (non grass ground) species richness:
Non-native plant cover: *Pennisetum ciliare*

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	5	**2**	4	**3**	8	**4**	4	**5**	2	**6**	4
7	6	**8**	2	**9**	1	**10**	1	**11**	2	**12**	4
Total: 43											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*		15		10	10	7
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)						
Native shrubs (<1m height)						
Non-native grass	60	0	10	15	15	20
Non-native forbs and shrubs						
Litter*	20	65	5	35	70	39
Rock						
Bare ground	20	20	85	40	15	36
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	3.0 – 5.2	2.2	C	55.2 – 59.4	4.2			
S	7.4 – 9.1	1.7	C	58.4 – 61.5	3.1			
S	9.1 – 11.3	2.2	C	61.8 – 66.1	4.3			
C	9.9 – 12.3	2.4	C	64.9 – 71.7	6.8			
S	19.9 – 24.4	4.5	C	73.9 – 81.0	7.1			
S	23.8 – 26.0	2.2	C	74.9 – 76.0	1.1			
C	28.7 – 31.9	3.2	C	80.1 – 86.9	6.8			
C	42.5 – 45.9	3.4	C	86.2 – 88.0	1.8			
C	46.0 – 50.1	4.1	C	94.7 – 100	5.3			
S	50.7 – 52.0	1.3						
S	51.9 – 53.2	1.3						
S	53.9 – 57.0	3.1						
Total C: 53.6% Total S: 18.5% Total E: 0.0%								

Shrub canopy cover: (*denote as native or exotic. Only native shrub cover is used in the scoring)								
Shrubs*	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**
S	17.6 – 18.0	0.4	S	21.3 – 22.3	1.0	S	30.1 – 38.8	8.7
S	61.6 – 62.6	1.0						
Total native: 11.1% Total exotic: 0.0%								

Site Survey Data – MVS60

Photo plate MVS60-1 – Panorama view of transect from point “a’. View west to east through north

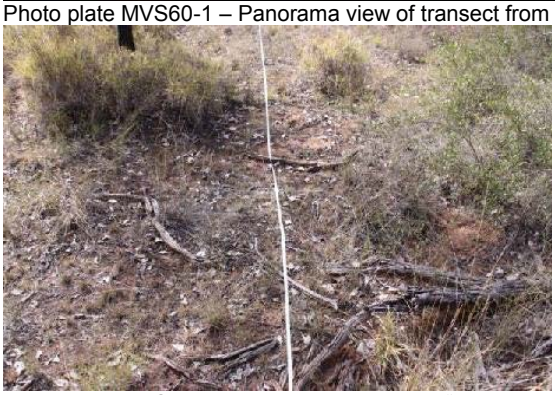


Photo plate MVS60-2 – groundcover at point “a’

Photo plate MVS60-3 – canopy cover at point “a’

Photo plate MVS60-4 – Panorama view of transect from point “b’

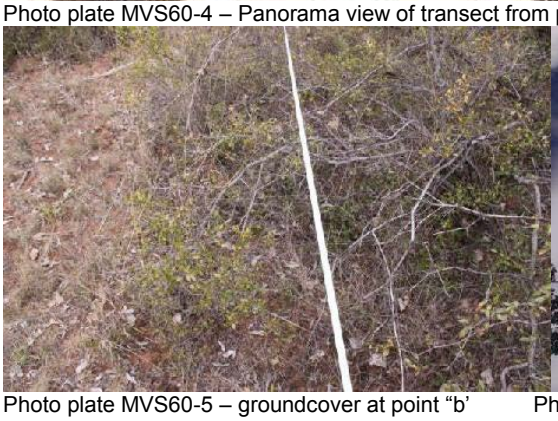


Photo plate MVS60-5 – groundcover at point “b’

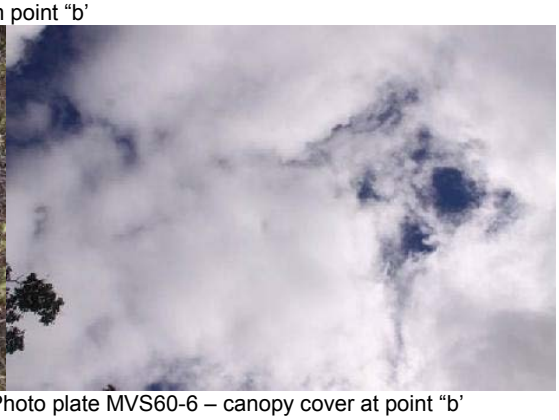


Photo plate MVS60-6 – canopy cover at point “b’

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	MVS44
Site no.	MVS60
Date/Time:	08/07/2012
Regional Ecosystem Profile	
RE/Landtype:	10.5.27
Bioregion:	10 – Desert Uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Eastern portion of Glen Innes Station. Alpha 31.15km @ 133° and Jericho 33.56km @ 241°. Monklands Rd approx. 1.5km to east.		
Site Description:	*E. populnea* woodland to open woodland. Some die back occurring or has occurred in this area. May be natural, pathogenic or herbicide.		
Orientation of Transect:	Along contour	Elevation:	354m
Bearing:	47°	Datum:	WGS84
Easting/Northing:	a) 55K 440314 7406325 b) 55K 440340 7406360	Latitude/Longitude:	a) S23.45197 E146.41563 b) S23.45166 E146.41589

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	14	12 – 16	<10	*Eucalyptus populnea*	<10%
Tree 2	9	7 – 10		*Eucalyptus populnea*	<5
Tree 3	6	4 – 7	30	*Santalum lanceolatum*	<5
				Eremophila mitchellii	15
				Geijera parviflora	5
				Maytenus cunninghamii	<5
Shrub 1	2	1 – 3	>30	*Carissa lanceolata*	20
				Flueggea leucopyrus	10
Shrub 2	<1	<1	>10	*Carissa ovata*	10
				Scaevola spinescens	>5
Ground				*Pennisetum ciliare*	
				Aristida leptopoda	
				Panicum sp.	
				Aristida latifolia	
				Eragrostis sororia	
%Rock		%Bare ground	44	%Leaf litter	4
%Cryptogram					

Abundance Measures																	
Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
	5				*Eucalyptus populnea*		3	2	1			5	<5	<5			
					Eremophila mitchellii			1	9	7				<5	10	10	
					Geijera parviflora					4						5	
					Carissa lanceolata					18						10	
					Carissa ovata						21						40
					Flueggea leucopyrus					6						15	
					Scaevola spinescens					45						30	
					Maytenus cunninghamii			1	2					<5	<5		
					Dodonaea lanceolata					2						<5	
					Acacia excelsa			4	3	1				>5	<5	<5	
					Grevillea striata					2						5	

Ground layer only											
Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Aristida leptopoda	11		1	4		20		5	5		6
Cyperus sp.	1			1		5			5		2
Panicum sp.	4					10					2
Pennisetum ciliare		10					100				20
Triodia pungens			6					40			8
Setaria surgens			4	7	40			5	10	55	14
Aristida latifolia				1					5		
Dead											
Litter						5		5	5	5	4
Rock											
Bare Ground						60		45	70	40	44
Cryptophytes											

Community Health and Condition			
Overall Health:	Area appears to be in moderate to good health	Fire:	None observed
Potential EVR Flora Species Habitat:	High – *Desmodium macrocarpum* located within 250 metres of survey transect	Fire Height:	n/a
EVR Flora Species Recorded:	Nil	Fire Age:	n/a
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	n/a
Weed Cover (%):	50%	Logging:	None
Disturbance:	Yes - cattle	Ringbarking/thinning:	?
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	Maybe
		Remnant:	Yes

Topography and Landform			
Landform Situation:	PLA	Soils:	Surface observations
Landform Pattern:	A	Soil Colour:	Light brown
Altitude:	354m	Soil Texture:	Loam
Relief:	-	Soil Description:	Light brown loam on flat plain
Slope:	Flat	Geology:	-
Slope Class:	0°	Rock/Sediment Type:	-
Erosional Landform:	-		

BioCondition Site Survey Data – MVS60

Photo plate MVS60-7 – View north from point "b'

Photo plate MVS60-8 – view south from point "b'

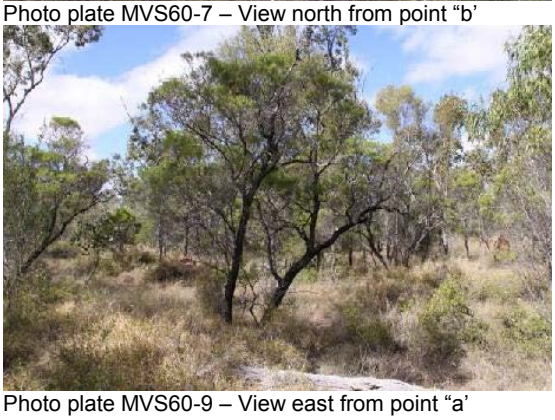


Photo plate MVS60-9 – View east from point "a'

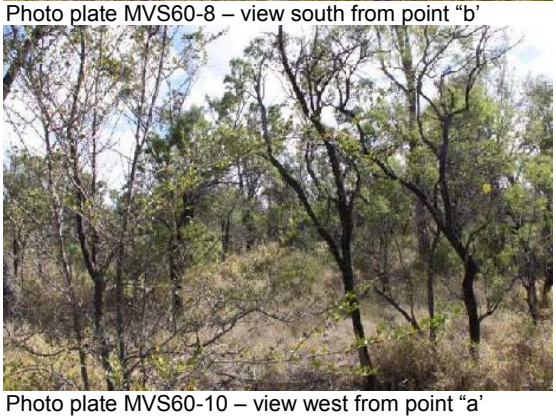


Photo plate MVS60-10 – view west from point "a'

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): **Number of large eucalypt trees:** 5	**Non-Eucalypt Large tree DBH (from benchmark doc.):** **Number of large non-eucalypt trees:** 0
Total Large trees: 5	
Tree canopy (EDL*) height: 14	**Tree sub canopy and/or emergent height** (where relevant): **S:** 7 **E:**
Proportion of dominant canopy (EDL) species with evidence of recruitment: 10	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):** *Eucalyptus populnea* *Geijera parviflora* *Lysiphyllum carronii* *Maytenus cunninghamii* *Santalum lanceolatum* *Eremophila mitchellii* *Acacia excelsa*	

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:** *Eremophila mitchellii* *Carissa lanceolata* *Grevillea striata* *Acacia excelsa* *Psydrax oleifolia* *Scaevola spinescens* *Dodonaea lanceolata*	
Grass species richness: *Aristida leptopoda* *Aristida latifolia* *Eragrostis sororia* *Triodia pungens* *Aristida latifolia* *Panicum sp.* *Setaria surgens*	
Forbs and others (non grass ground) species richness: *Cyperus sp.*	
Non-native plant cover: *Pennisetum ciliare*	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	6	**2**	4	**3**	2	**4**	1	**5**	4	**6**	5
7	2										
Total: 24											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	30	0	50	20	55	31
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	5			5		2
Native shrubs (<1m height)						
Non-native grass		100				20
Non-native forbs and shrubs						
Litter*	5	0	5	5	5	4
Rock						
Bare ground	60	0	45	70	40	43
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
C	5.2 – 12.1	6.9	S	93.3 – 96.2	2.9	C	84.7 – 88.3	3.6
S	38.8 – 39.7	0.9	S	79.3 – 83.4	4.1	S	77.0 – 80.2	3.2
C	39.1 – 44.8	5.7	C	59.9 – 65.4	5.5	S	39.8 – 43.0	3.2
Total C: 21.7% Total S: 14.3% Total E: 0.00%								

Shrub canopy cover: (*denote as native or exotic. Only native shrub cover is used in the scoring)								
Shrubs*	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**
S	51.8 – 53.7	2.1	S	87.0 – 89.5	2.5	S	85.4 – 89.4	4.0
Total native:8.6% Total exotic:0.0%								

Site Survey Data – MVS61

Photo plate MVS61-1 – View north from Q site

Photo plate MVS61-2 – View south from Q site

Photo plate MVS61-3 – View east from Q site

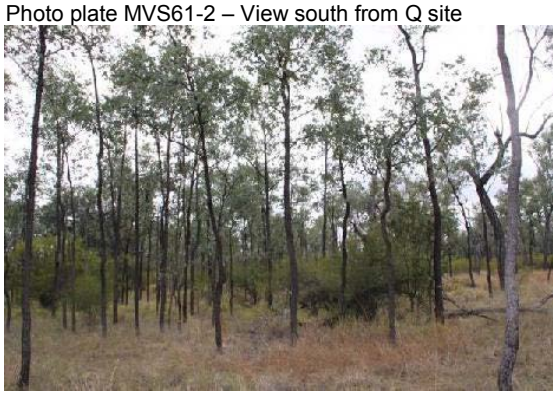


Photo plate MVS61-4 – View west from Q site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Glen Innes Station south of structures in the central south portion of Glen Innes. Alpha 32.31km @ 129°; Jericho 30.92 @ 241°	
Date: 8 July 2012	**Photos** 7537 - 7540	**Field Survey No. -** MVS43 **Site No. –** MVS61	
Survey plot location (GPS - UTM): 55K 437892 7405256	**Land Zone:** 5	**Soil type:** Sandy loam to loamy sand, tan to light brown	**Canopy height** (m) Range: 13 - 18 Average: 15
Vegetation description *Eucalyptus melanophloia* woodland to 18m surrounded by *Eucalyptus populnea* woodland.		**Regional Ecosystem**: 10.5.5	**FPC** (%) <5%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	a	*Eucalyptus melanophloia*	a	*Carissa lanceolata*	f	*Schizachyrium fragile*	a
2	*Corymbia plena/ clarksoniana*	o	*Corymbia plena/ clarksoniana*	o	*Carissa ovata*	f	*Triodia pungens*	a
3			*Archidendropsis basaltica*	f	*Archidendropsis basaltica*	f	*Aristida leptopoda*	f
4			*Acacia sericophylla*	o	*Flueggea leucopyrus*	f	*Aristida contorta*	o
5			*Petalostigma pubescens*	o			*Cymbopogon obtectus*	o
							Pennisetum ciliare	f

Species: (E/T1)			Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
							Themeda triandra	o
							Aristida latifolia	o

Codes: -a = abundant; f = frequent; O = occasional

Site Survey Data – MVS62

Photo plate MVS62-1 – View north from Q site

Photo plate MVS62-2 – View south from Q site

Photo plate MVS62-3 – View east from Q site

Photo plate MVS62-4 – View west from Q site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Glen Innes Station; Alpha 33.71m @ 128^0; Jericho 30.22km @ 239^0.	
Date: 08 July 2012; 1444	**Photos** 7541 - 7544		**Survey plot No. -** MVS42(Q24) **Site No. –** MVS62
Survey plot location (GPS - UTM): 55K 436670 745959	**Land Zone:** 5	**Soil type:** Grey to brown sandy loam	**Canopy height (m)** **Range:** 10 - 14 **Average:** 12
Vegetation description *Eucalyptus melanophloia* woodland to 14m.	**Regional Ecosystem:** 10.5.5		**FPC (%)** 20%

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	a	*Eucalyptus melanophloia*	a	*Carissa lanceolata*	f	*Themeda triandra*	a
2	*Eucalyptus populnea*	o	*Acacia sericophylla*	o	*Carissa ovata*	f	*Pennisetum ciliare*	a
3			*Eucalyptus populnea*	o	*Flueggea leucopyrus*	f	*Aristida leptopoda*	f
4			*Eremophila mitchellii*	f			*Eragrostis sororia*	o
							Heteropogon contortus	

Codes: - a = abundant; f = frequent; O = occasional

Notes: -

- Even aged stand with *Eucalyptus populnea* also present
- Area has been recently burnt (2009) as part of the properties vegetation management program

Site Survey Data – MVS63

Photo plate MVS63-1 – View north from Q site

Photo plate MVS63-2 – View south from Q site

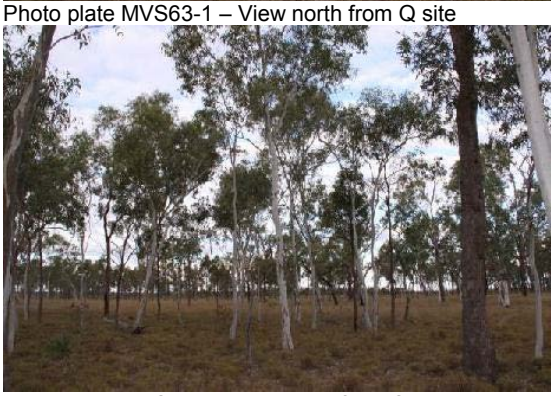


Photo plate MVS63-3 – View east from Q site

Photo plate MVS63-4 – View west from Q site

Project: Waratah Coal Mine Site Vegetation Survey	**Site Location:** northern portion of Monklands station east of Monklands road on Lagoon Creek floodplain. Area is grazed by cattle. Alpha 33.91km @ 151^0; Jericho 43.38km @ 236^0.		
Date: 8 July 2012;	**Photos** 7569 - 7574		**Survey plot No.** Q25 **Site No.** MVS63
Survey plot location (GPS - UTM): 55K 446603 7414809	**Land Zone:** 3	**Soil type:** Light brown to grey sand	**Canopy height (m)** **Range: -** 12 - 18 **Average: -** 15
Vegetation description *Eucalyptus camaldulensis* woodland to low open forest with *Corymbia clarksoniana* and a grassy understorey.		**Regional Ecosystem:** 10.3.14	**FPC (%)** 30%

	Species: (E/T1)		**Species: (T2 / T3)**		**Species: (S1 / S2)**		**Species: (G1 / G2)**	
1	*Corymbia clarksoniana*	o	*Eucalyptus populnea*	o	*Carissa lanceolata*	f	*Pennisetum ciliare**	a
2	*Eucalyptus camaldulensis*	a	*Eucalyptus camaldulensis*	a	*Acacia salicina*	o	*Aristida leptopoda*	o
3							*Stylosanthes scabra**	f
4							*Lomandra leucocephala*	o

Codes: -a = abundant; f = frequent; O = occasional; * - weed species

Site Survey Data – MVS64

No photos taken due to poor light

Project: Waratah Coal Mine Site Vegetation Survey	**Site Location:** northern portion of Monklands station east of Monklands road and west of turkey nest dam. Alpha 33.31km @ 152^0; Jericho 43.89km @ 236^0.		
Date: 08 July 2012; 1629	**Photos No –** No photo take due to poor light	**Survey plot No.** Q26 **Site No. –** MVS64	
Survey plot location (GPS - UTM): 55K 0447392 7414555	**Land Zone:** 5	**Soil type:** Red/orange sandy loam	**Canopy height (m)** **Range:** 6-10 **Average:** 8
Vegetation description Low woodland to 10 metres dominated by *Eucalyptus melanophloia* with occasional *Corymbia clarksoniana*.	**Regional Ecosystem:** Mapped as 10.4.3. Actual – non-remnant	**FPC (%)** 30%	

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	a					*Pennisetum ciliare*	a
2	*Corymbia clarksoniana*	o						
3								
4								

Notes: -

- The area is mapped as 10.4.3, however it has no *Acacia harpophylla* and based on height when compared to other *Eucalyptus melanophloia* communities would be classed as non-remnant / regrowth
- A small area in the north western corner of the dam area contains *Acacia heterophylla* with *Eucalyptus cambageana* and *Eucalyptus populnea*. For data recorded in this area also see MVS19
- Ground cover is 100% Buffel grass**.**

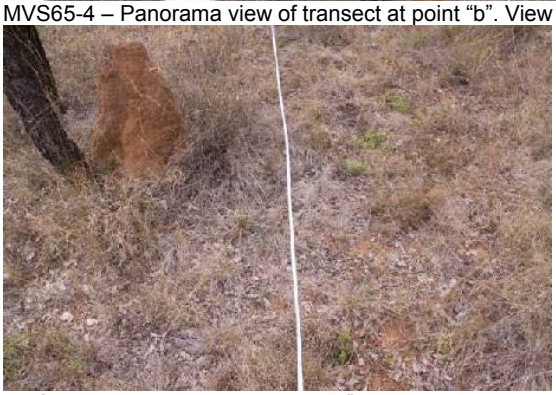
Site Survey Data – MVS65

MVS65-1 – Panorama view of transect at point “a”. View east to west through south.

MVS65-2 – groundcover at point “a”

MVS65-3 – canopy cover at point “a”

MVS65-4 – Panorama view of transect at point “b”. View west to east through north.



MVS65-5 – groundcover at point “b”

MVS65-6 – canopy cover at point “b”

Survey Details	
Recorder/s:	Rob Friend
Field Site Number:	BB09RF
Site no.	MVS65
Date/Time:	09/07/2012
Regional Ecosystem Profile	
RE/Landtype:	10.5.5
Bioregion:	10 – Desert uplands
EPBC Status:	NA
VMA Status:	Least Concern
EPA Status:	No concern at present
Mapped:	Yes
Width of Community:	Not linear
Area of Community:	>50ha

Site Description			
Location:	Lambton Meadows area north of the "Home Paddock" near the station homestead. Alpha 35.97km @ 115°; Jericho 21.90km @ 244°		
Site Description:	*E. melanophloia* low open forest, regrowth woodland, numerous small and several taller stags. Potential for some hollows.		
Orientation of Transect:	Along contour	Elevation:	375m
Bearing:	280°	Datum:	WGS84
Easting/Northing:	a) 55K 430467 7400001 b) 55K 430425 7499997	Latitude/Longitude:	a) S23.50870 E146.31894 b) S23.50873 E146.31852

Structural Summary					
Stratum	**Med. Canopy Height (m)**	**Range in strata height (m)**	**Total crown cover (%)**	**Key species**	**Individual covers (%)**
Tree 1	11	10 – 12	<10	*Eucalyptus melanophloia*	<5
	9	8 – 10		*Eucalyptus populnea*	1
	12	10 – 13		*Corymbia clarksoniana*	1
	14	12-16		*Brachychiton populneus*	1
Tree 2	7	5 – 8	50	*Eucalyptus melanophloia*	30
				Acacia excelsa	20
Tree 3	4	3 – 5	10	*Psydrax oleifolia*	5
				Acacia excelsa	5
Shrub 1	2	1 – 3	<10	*Acacia sericophylla*	<5
				Carissa lanceolata	<10
				Eucalyptus melanophloia	<5
Shrub 2	<1	<1		*Carissa ovata*	15
Ground				*Aristida leptopoda*	
				Heteropogon contortus	
				Themeda triandra	
				Pennisetum ciliare	
				A grass	
%Rock		%Bare ground 18	%Leaf litter 30	%Cryptogram	

Abundance Measures																	
Basal Area (0.5mx1cm gap)					Species	Stem Count (500m^2)						Cover (%)					
E	T1	T2	T3	S1		E	T1	T2	T3	S1	S2	E	T1	T2	T3	S1	S2
					Eucalyptus melanophloia			14	4	1				<10	<5	1	
					Psydrax oleifolia				3	13					<5	<10	
					Acacia excelsa			1	15						<10	<2	
					Acacia sericophylla					1						<1	
					Carissa ovata					20						20	
					Eucalyptus populnea			1	1							1	
					Ironbark (*E. crebra*)			1						1			

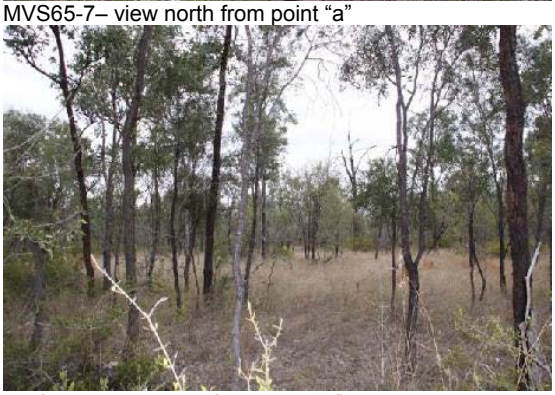
Ground layer only											
Species	Stem Count (500m^2)					Cover (%)					
	G1	G2	G3	G4	G5	G1	G2	G3	G4	G5	G
Aristida leptopoda	7	7	8		4	5	30	70		30	27
A grass	6	5		10	10	10	5		20	45	16
Eragrostis sororia	1					5					1
Desmodium varians	1					5					1
Goodenia hirsutus	1				3	5				5	2
Aristida latifolia		2		2			5		5		2
Pennisetum ciliare			2					5			1
Setaria surgens				3					5		1
Panicum sp.				1					5		1
Dead											
Litter						40	45	20	35	10	30
Rock											
Bare Ground						30	15	5	30	10	18
Cryptophytes											

Community Health and Condition			
Overall Health:	Moderate	Fire:	None observed/a
Potential EVR Flora Species Habitat:	Low	Fire Height:	n/a
EVR Flora Species Recorded:	Nil	Fire Age:	n/a
Weed Species:	Yes – *Pennisetum ciliare*	Fire Proportion:	n/a
Weed Cover (%):	1%	Logging:	None
Disturbance:	Yes - cattle	Ringbarking/thinning:	None
Disturbance cover (%):	100%	Feral Digging:	None
Grazing:	Present	Flooding:	None
		Extensive Clearing:	Height of canopy may indicate some historic disturbance of the vegetation in this area
		Remnant:	Yes
Topography and Landform			
Landform Situation:	PAL	Soils:	Surface observations
Landform Pattern:	A	Soil Colour:	Red/orange – light brown
Altitude:	377m	Soil Texture:	Loamy sand
Relief:	-	Soil Description:	Red to light brown loamy sand
Slope:	Flat	Geology:	
Slope Class:	0°	Rock/Sediment Type:	
Erosional Landform:	-		

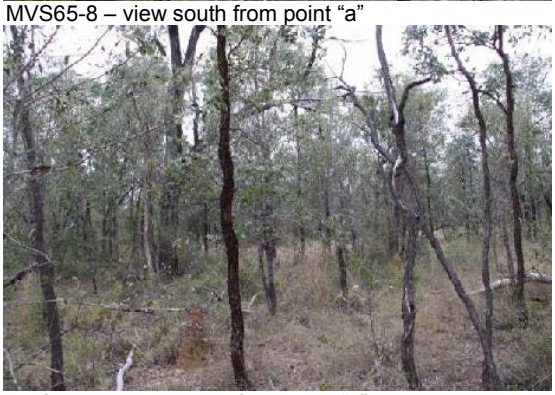
BioCondition Site Survey Data – MVS65

MVS65-7– view north from point "a"

MVS65-8 – view south from point "a"



MVS65-9– view east from point "a"



MVS65-10 – view west from point "a"

100 x 50m area: *Ecologically Dominant Layer	
Eucalypt Large tree DBH (from benchmark doc.): Number of large eucalypt trees: 0	**Non-Eucalypt Large tree DBH (from benchmark doc.): Number of large non-eucalypt trees:**
Total Large trees: 0	
Tree canopy (EDL*) height: 12m	**Tree sub-canopy and/or emergent height** (where relevant): **S:** 5 **E:** 14
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree (defined as single stemmed over 2m) **species richness (all tree species in the 100 x 50m (not just EDL species)):**	
Eucalyptus melanophloia	*Corymbia clarksoniana*
Eucalyptus populnea	*Brachychiton populneus*
Acacia excelsa	*Archidendropsis basaltica*

50 x 10m area: (*list species if known or count if unknown)	
Shrub (defined as single stemmed below 2m or multi-stemmed from base or below 20cm) **species richness:**	
Acacia sericophylla	*Eucalyptus melanophloia*
Acacia excelsa	*Carissa ovata*
Carissa lanceolata	*Petalostigma pubescens*
Grass species richness:	
Aristida leptopoda	*Themeda triandra*
Heteropogon contortus	*Eragrostis sororia*
Bursaria incana	
Forbs and others (non grass ground) species richness:	
Goodenia hirsutus	
Chrysocephalum apiculatum	
A herb	
Non-native plant cover:	
Pennisetum ciliare	

50 x 20m area: Coarse Woody Debris (all logs>10cm,>0.5m within 50 x 20m area measured to the plot boundary):											
Length of CWD:		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**		**Length of CWD:**	
1	2	**2**	2	**3**	2	**4**	3	**5**	4	**6**	2
7	1	**8**	1	**9**	1	**10**	1	**11**	2	**12**	3
13	4	**14**	6	**15**	2	**16**	2				
Total: 38											

Five 1x1m plots (*attributes are essential to assess as used in scoring, however assessment of all attributes improves your ability to more accurately visualise proportions of each of the attributes)						
Ground cover:	**1**	**2**	**3**	**4**	**5**	**Mean**
Native perennial ('decreaser') grass cover*	20	40	70	35	75	48
Native other grass cover (if relevant)*						
Native forbs and other species (non-grass)	10				5	3
Native shrubs (<1m height)						
Non-native grass			5			1
Non-native forbs and shrubs						
Litter*	40	45	20	35	10	30
Rock						
Bare ground	30	15	5	30	10	18
Cryptograms						
Total	**=100%**	**=100%**	**=100%**	**=100%**	**=100%**	

100m transect - Tree canopy cover: (only assess Emergent (E) or Sub-canopy (S) layers if the benchmark document stipulates that layers are present *If trees are in the same layer and continuous along transect you can group them)								
Tree or tree group* (C or S or E)	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**	**Tree or tree group* (C or S or E)**	**Distance (m)**	**Total**
S	0 – 0.7	0.7	S	48.0 – 49.6	1.6	S	23.4 – 25.5	2.1
S	0.6 – 3.0	2.4	S	61.7 – 63.1	1.4	S	25.9 – 27.6	1.7
S	11.0 – 12.2	1.2	S	73.9 – 76.6	2.7	S	29.0 – 30.7	1.7
S	12.7 – 15.3	2.6	S	79.9 – 82.3	2.4	S	35.4 – 37.3	1.9
S	17.4 – 19.8	2.4	S	93.4 – 94.6	1.2	S	36.1 – 37.8	1.7
S	38.8 – 40.4	1.6	S	42.3 – 44.2	1.9			
Total C: 0.00% Total S: 31.2% Total E: 0.00%								

Shrub canopy cover: (*denote as native or exotic. Only native shrub cover is used in the scoring)								
Shrubs*	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**	**Shrubs***	**Distance (m)**	**Total**
S	5.3 – 7.3	2.0	S	27.0 – 29.2	2.2	S	73.8 – 74.7	0.9
Total native: 3.1% Total exotic: 0.0%								

Site Survey Data – MVS66

MVS66-1 – View north from Q site

MVS66-2 – View south for Q site

MVS66-3 – View east from Q site

MVS66-4 – View west for Q site

Project: Waratah Coal Mine Site Vegetation Survey		**Site Location:** Lambton Meadows. Site west of the Lambton Meadows to Cavendish track. BB08 could not be located	
Date: 9 July 2012; 1201	**Photos** 7613 – 7616	**Field Survey No.** BB08RF(Q27) **Site No. –** MVS66	
Survey plot location (GPS - UTM): 55 K 427492 7403394	**Land Zone:** 5	**Soil type:** Red to red brown loam	**Canopy height (m)** **Range:** 12 - 16 **Average:** 14
Vegetation description *E. populnea* - *E. melanophloia* woodland	**Regional Ecosystem:** 10.5.5	**FPC (%)** <15%	

	Species: (E/T1)		Species: (T2 / T3)		Species: (S1 / S2)		Species: (G1 / G2)	
1	*Eucalyptus melanophloia*	a	*Eucalyptus populnea*	o	*Psydrax oleifolia*	o	*Aristida latifolia*	f
2	*Eucalyptus populnea*	f	*Psydrax oleifolia*	f	*Carissa ovata*	f	*Triodia pungens*	f
3			*Grevillea striata*	f	*Geijera parviflora*	o	*Themeda triandra*	f
4			*Eremophila mitchellii*	f	*Scaevola spinescens*	o	*Aristida contorta*	o
5			*Acacia excelsa*	o			*Aristida leptopoda*	f
6							*Eragrostis sp.*	o
7							*Desmodium varians*	o
8							*Pennisetum ciliare*	o
9	**Notes: -** Groundcover and shrub stratum recovering from an intense fire in 2011.						*Setaria surgens*	o
10							*Panicum sp.*	o
11							*Schizachyrium fragile*	f

Codes: -a = abundant; f = frequent; O = occasional

12.3 Appendix III – Comments on EIS

Comments on Waratah Coal Galilee Coal Project (Northern Export Facility) EIS

The following table outlines how the responses to the comments from the Environmental Impact Statement are responded to within this report.

Submitter No.	**251**	Issue Reference:	14000
Submitter Type		TOR Category	**Hazard and Risk (B bushfire)**
Name	**Department of Community Safety**	Relevant EIS Section	Volume 3 – Rail, Chapter 18 – Hazard Risk and Emergency Management, Section 18.5.2.9 Bushfire
Issue	Volume 3 – Rail, Chapter 18 – Hazard Risk and Emergency Management, Section 18.5.2.9 Bushfire states:		
Response in report	Not responded to in this report as it is based on additional vegetation survey of the mine site		

Submitter No.	**417**	Issue Reference:	14001
Submitter Type		TOR Category	**Land**
Name	**Isaac Regional Council**	Relevant EIS Section	
Issue	Mine operation needs to sustainably address the ingress of invasive weed species within the lease area and implement long term management strategies to prevent further expansions of existing infestations into the surrounding rural landscape especially those along the hall route, access to the site and those interface areas with water courses that can rapidly spread invasive week species to downstream properties and the wider catchment.		
Response in report	Comments of pest plant species and environmental weeds stemming from the field survey work as well as impacts and mitigation measures are addressed in section 6.8, 7.1.4 and 8.4. It was noted that there wasn't a significant number or species of declared pest plants or environmental weeds with the exception of Pennisetum ciliare over the study area.		

Submitter No.	**1840**	Issue Reference:	14001
Submitter Type		TOR Category	**Nature Conservation**
Name	**Barcaldine Regional Council**	Relevant EIS Section	
Issue	Ecological values presented are indicative and not definitive. Committed to undertaking detailed surveys of all remnant vegetation …prior to finalisation of alignment.		
Response in report	Additional survey work has been undertaken and is the primary content of the report prepared by Rob Friend & Associates Pty Ltd. The field work entails additional 64 sites surveys along with 34 BioCondition surveys. 2 tertiary survey sites were adopted from the Unidel (2010) Report however BioCondition surveys were undertaken at these sites.		

Submitter No.	**419**	Issue Reference:	14003
Submitter Type		TOR Category	**Nature Conservation (Terrestrial)**
Name	**Dept. of Environment and Resource Management**	Relevant EIS Section	Volume 3, Appendix 11, Terrestrial Ecology, Rail, Section 4.2.4
Issue	The EIS states that the flora field assessment was carried out over 10 days, however the vegetation survey sheets indicate that the survey was conducted from 21st of July to the 26th of July over a period of six days which equates to about 10 sites per day. This is not considered an adequate time to record the presence or absence of significant flora species, given that that the survey was carried out in the dry season.		
Response in report	Additional field survey was undertaken in May, June and July 2012 over three field trips which were separated by several days of rainfall. A total of 21 survey days were undertaken during this period. This survey effort located 135 Desmodium macrocarpum in 19 separate locations with 18 sites in Glen Innes Station and 1 in Monklands Station. Commentary to be found in 6.7 of the Rob Friend & Associates Pty Ltd report.		

Submitter No.	**419**	Issue Reference:	14004
Submitter Type		TOR Category	**Nature Conservation (Terrestrial)**
Name	**Dept. of Environment and Resource Management**	Relevant EIS Section	Volume 3, Section 6.3.1.4, Regional Ecosystems (Page-245)
Issue	Clearing of native vegetation for the proposal		
Response in report	While mining activity within a mining lease is exempt under the *Vegetation Management Act* 1999, any activity which requires the removal of vegetation outside of a mining lease requires approval under the *VMA* (1999). If clearing of vegetation mapped as remnant or high value regrowth is proposed Waratah Coal acknowledges it will need to gain approval from the Department of Natural Resources and Mines prior to removing any protected vegetation.		

Submitter No.	**419**	Issue Reference:	14005
Submitter Type		TOR Category	**Nature Conservation (Terrestrial)**
Name	**Dept. of Environment and Resource Management**	Relevant EIS Section	Appendix 10, Terrestrial fauna surveys, Section 6.3.2.4
Issue	The EIS does not address the difference in quality of the developed parts of the study area. There are major parts of the study area which have been blade-ploughed and are therefore a mono-culture of buffel pasture with no tree regrowth. There are other areas with substantial natural regeneration of tree growth. These two types of developed areas offer completely different opportunities in terms of regeneration to remnant vegetation.		
Response in report	Additional information has been provided with regard to the vegetative values within the mine footprint and this provides additional information with respect to informing the off-set strategy.		

Submitter No.	**419**	Issue Reference:	14006
Submitter Type		TOR Category	**Nature Conservation (Terrestrial)**
Name	**Dept. of Environment and Resource Management**	Relevant EIS Section	
Issue	The EIS discusses three rail alignment options (between 400 and 450km). These options have significantly different ecological impacts. The EIS indicates that option 1 may have less biodiversity impacts than the other options however, contains insufficient information on the ecological impacts for each option.		
Response in report	This report does not deal with the Rail Corridor.		

Submitter No.	**419**	Issue Reference:	14007
Submitter Type		TOR Category	**Nature Conservation (Terrestrial)**
Name	**Dept. of Environment and Resource Management**	Relevant EIS Section	Volume 2 Terrestrial Ecology, Section 6.3.2.3, Cavendish Area (page 179)
Issue	The main property in this area is Lambton Meadows, which contains significant biodiversity values, and not the Cavendish area.		
Response in report	Property identification resolved in this report.		

Submitter No.	**419**	Issue Reference:	14008
Submitter Type		TOR Category	**Nature Conservation / Project Approvals**
Name	**Dept. of Environment and Resource Management**	Relevant EIS Section	Section 6.3.1.4 – Ecological Communities/Regional Ecosystems (page 174)
Issue	Clearing native vegetation for a mining activity carried out on a mining lease is exempt under the *Vegetation Management Act* 1999 and the *Sustainable Planning Act* 2009. Clearing remnant vegetation outside of mining leases will be subject to the provisions of the *Vegetation Management Act* 1999. Any clearing of remnant vegetation outside of mining leases that is assessable development under *Sustainable Planning Act* 2009 is subject to an assessment against the relevant regional vegetation management code, available from http://www.derm.qld.gov.au/vegetation/regional_codes.html In order to meet certain requirements of the relevant Code under the *Vegetation Management Act* 1999, the proponent may be required to provide vegetation offsets in accordance with DERM's Policy for Vegetation Management Offsets, Version 2.4 (2009) available from: http://www.derm.qld.gov.au/about/policy/documents/3450/veg_2006_2888.pdf		
Response in report	Agreed and the point is made in the Report, see Table 2		

Submitter No.	**419**	Issue Reference:	14009
Submitter Type		TOR Category	**Nature Conservation / Project Approvals**
Name	**Dept. of Environment and Resource Management**	Relevant EIS Section	Section 6.3.1 – Flora (Pages-172 to 177) and Section 6.3.2 – Fauna (pages 178 to 186)
Issue	The EIS does not fully address nature conservation requirements. Requirements apply where the *Nature Conservation Act* 1992 provisions are relevant. Survey work must be conducted properly using suitable methods. Methods should be sent to DERM for approval and appropriate permits must be obtained before field work commences. In particular Endangered, Vulnerable and Near Threatened species must be considered and offset arrangements be finalised before any development work commences. Species that are found to occur which are listed as Extinct in the wild, must not be tampered with.		
Response in report	• Field survey undertaken in preparation of this report was in accordance with Neldner et al (2005) with Secondary and Quaternary level surveys uses. See 3.3 and Appendix II • In additional BioCondition surveys were also undertaken at all Secondary survey sites. See 3.3 and Appendix II • Random search were undertaken for those EVNT species listed as occurring within the Study Area. the reconrds of *Desmodium Macrocarpum* was significantly increased as a result of the survey effort. See 6.7 and Tables 6 & 7.		

12.4 Appendix IV – Species List

Sources 1 - Qld Herbarium - HERBRECS; 2 - Unidel (2010); 3 –previous studies; 4 RF&A (2012);

Family	Species	Common name	Source*
Acanthaceae	*Brunoniella australis* (Cav.) Bremek	Blue trumpet	1
Acanthaceae	*Dipteracanthus* australasicus F.Muell.	Desert Petunia	1
Acanthaceae	*Pseuderanthemum variabile* (R.Br.) Radlk	Pastel Flower	2
Acanthaceae	*Rostellularia adscendens* (R.Br.) R.M.Barker		1,3
Adiantaceae	*Cheilanthes distans* (R.Br.) Mett.	Bristly cloak fern	1
Adiantaceae	*Cheilanthes sieberi* Kunze	Mulga fern	1,3,4
Amaranthaceae	*Achyranthes aspera* L.	Chaff Flower	1
Amaranthaceae	*Gomphrena celosioides* Mart.	Gomphrena Weed	1,3
Amaranthaceae	*Ptilotus polystachyus* (Gaudich.) F.Muell.	Prince of Wales Feather	1,3
Amaryllidaceae	*Crinum flaccidum* Herb.	Darling lily	1,2,3
Apiaceae	*Platysace valida* (F.Muell.) F.Muell.		1
Apocynaceae	*Alstonia constricta* F.Muell.	Bitter Bark	1,2,3,4
Apocynaceae	*Carissa lanceolata* Rb.Br.	Conkerberry	1,2,3,4
Apocynaceae	*Carissa ovata* R.Br.	Currant bush	1,2,3,4
Apocynaceae	*Marsdenia viridiflora* R.Br.		1,3
Apocynaceae	*Marsdenia viridiflora* R.Br. subsp. *viridiflora*		1
Apocynaceae	*Parsonsia eucalyptophylla* F.Muell.	Gargaloo	1
Apocynaceae	*Parsonsia lanceolata* R.Br.	Northern Silk-pod	1
Apocynaceae	*Parsonsia straminea* (R.Br.) F.Muell.	Common Silk-pod	1
Apocynaceae	*Sarcostemma viminale* subsp. *brunonianum* (Wight & Arn.) P.I.Forst.	Caustic Vine	1
Araliaceae	*Astrotricha pterocarpa Benth*		1
Asteraceae	*Arctotheca calendula* (L.) Levyns	Cape weed	1
Asteraceae	*Calotis cuneifolia* R.Br.	Purple bun daisy	1,2,3
Asteraceae	*Calotis xanthosioidea* Domin.		1
Asteraceae	*Camptacra barbata* N.T.Burb.		1
Asteraceae	*Cassinia laevis* R.Br.	Cough Bush	1
Asteraceae	*Centipeda minima* (L.) A.Braun & Asch.	Spreading Sneezeweed	1
Asteraceae	*Chrysocephalum apiculatum* (Labill.) Steetz	Yellow Buttons	1,2,4
Asteraceae	*Coronarium glutinosum* (Hook.) Paul G. Wilson		1
Asteraceae	*Helichrysum glutinosum* (Hook.) Benth.		1
Asteraceae	*Olearia subspicata* (Hook.) Benth.	Spiked Daisy-bush	
Asteraceae	*Olearia xerophila* (F.Muell.) Benth.		1
Asteraceae	*Peripleura obovata* (N.T.Burb.) G.L.Nesom		1
Asteraceae	*Pluchea dentex* Benth.	Bowl Daisy	1
Asteraceae	*Podolepis longipedata* A.Cunn. ex DC.	Tall Copper-wire Daisy	1
Asteraceae	*Pterocaulon redolens* (Willd.) Fern.-Vill.		1
Asteraceae	*Pterocaulon serrulatum* Guillaumin		1
Asteraceae	*Pterocaulon serrulatum var. serrulatum*		1

Family	Species	Common name	Source*
Asteraceae	*Pterocaulon sphacelatum* (Labill.) F.Muell.	Applebush	1
Asteraceae	*Rutidosis leucantha* F.Muell.		1
Asteraceae	*Thymophylla tenuiloba* (DC.) Small		1
Asteraceae	*Verbesina encelioides* (Cav.) Benth. & Hook.f. ex A.Gray	Golden Crownbeard	1,3
Asteraceae	*Vittadinia pustulata* N.T.Burb.		1
Asteraceae	*Vittadinia sulcata* N.T.Burb.		1
Bignoniaceae	*Dolichandrone heterophylla* (R.Br.) F.Muell.	Lemonwood	4
Bignoniaceae	*Pandorea pandorana* (Andrews) Steenis	Wonga Wonga Vine	1,3
Boraginaceae	*Ehretia membranifolia* R.Br.	Weeping Koda or Peach Bush	1
Boraginaceae	*Ehretia saligna* var. *membranifolia* (R.Br.) Randell	Peach bush	4
Boraginaceae	*Heliotropium cunninghamii* Benth.	Bushy Heliotrope	1
Boraginaceae	*Heliotropium moorei* Craven	Bushy heliotrope	1
Boraginaceae	*Heliotropium tanythrix* Craven		1
Byttneriaceae	*Seringia corollata*		1
Cactaceae	*Opuntia stricta* (Haw.) Haw.	Common Prickly Pear	1
Cactaceae	*Opuntia tomentosa* Salm-Dyck	Velvet Tree Pear	1,2,3
Campanulaceae	*Wahlenbergia gracilis* (G.Forst.) A.DC	Australian bluebell	2,3
Cannabaceae	*Trema tomentosa* (Roxb.) H.Hara	Nettle Tree	2
Capparaceae	*Capparis arborea* (F.Muell.) Maiden	Bush Caper Berry	1,4
Capparaceae	*Capparis canescens* Banks ex DC.		1
Capparaceae	*Capparis lasiantha* R.Br. ex DC	Nepine	1,2,3,4
Capparaceae	*Capparis loranthifolia* Lindl.	Narrow-leafed Bumble	1
Capparaceae	*Capparis mitchellii* Lundl.	Wild orange	1
Caryophyllaceae	*Polycarpaea corymbosa* (L.) Lam.		1
Celastraceae	*Denhamia oleaster* (Lindl.) F.Muell.	Stiff Denhamia	1
Celastraceae	*Maytenus cunninghamii* (Hook.) Loes.	Yellow Berry Bush	1,3
Chenopodiaceae	*Chenopodium carinatum* R.Br.	Keeled Goosefoot	1
Chenopodiaceae	*Dysphania melanocarpa* Vent forma *melanocarpa*		1
Chenopodiaceae	*Einadia hastata* (R.Br.) A.J.Scott	Berry saltbush	1,3
Chenopodiaceae	*Einadia nutans* (R.Br.) A.J.Scott	Climbing saltbush	1
Chenopodiaceae	*Einadia nutans* subsp. *linifolia* (R.Br.) Paul G.Wilson		1
Phyllanthaceae	*Flueggea leucopyrus Willd.*		4
Chenopodiaceae	*Enchylaena tomentosa* R.Br.	Ruby saltbush	1,2,3
Chenopodiaceae	*Maireana microphylla* (Moq.) Paul G.Wilson		1
Chenopodiaceae	*Maireana villosa* (Lindl.) Paul G.Wilson		1
Chenopodiaceae	*Salsola kali* L.	Soft Roly-poly	1,3
Chenopodiaceae	*Sclerolaena birchii* (F.Muell.) Domin	Galvanised Burr	1,3
Chenopodiaceae	*Sclerolaena convexula* (R.H.Anderson) A.J.Scott	Tall Copperburr	1
Chenopodiaceae	*Sclerolaena cornishiana* (F.Muell.) A.J.Scott	Cartwheel burr	4
Chenopodiaceae	*Sclerolaena* R.Br.		1
Combretaceae	*Terminalia canescens* (DC.) T.Durand		3

Family	Species	Common name	Source*
Combretaceae	*Terminalia oblongata* F.Muell.	Rosewood	1
Commelinaceae	*Commelina diffusa* Burm.f.	Wandering jew	2
Commelinaceae	*Murdannia graminea* (R.Br.) G.Bruckn.	Slug Herb	2
Convolvulaceae	*Bonamia media* (R.Br.) Hallier f		1
Convolvulaceae	*Convolvulus angustissimus* R.Br.		1
Convolvulaceae	*Convolvulus arvensis* L.		1
Convolvulaceae	*Evolvulus alsinoides* (L.)L.		1,3
Convolvulaceae	*Evolvulus alsinoides* var *villosicalyx* Ooststr.		1
Convolvulaceae	*Ipomoea polymorpha* Roem. & Schult.	Silky cow-vine	1
Convolvulaceae	*Polymeria pusilla* R.Br.		1
Cupressaceae	*Callitris glaucophylla* Joy Thomps. & L.A.S.Johnson	White Cypress Pine	1,3,4
Cyperaceae	*Cyperus dactylotes* Benth.		1,4
Cyperaceae	*Cyperus exaltatus* Retz.		1,3,4
Cyperaceae	*Cyperus rotundus* L.	Nut grass*	1
Cyperaceae	*Fimbristylis dichotoma* (L.) Vahl	Common Fringe-sedge	1
Cyperaceae	*Gahnia aspera* (R.Br.) Spreng.	Rough Saw-sedge	1
Cyperaceae	*Schoenoplectus laevis* (S.T.Blake) J.Raynal		1
Cyperaceae	*Schoenus kennyi* (F.M.Bailey) S.T.Blake		1
Cyperaceae	*Scleria brownii* Kunth		1,3
Cyperaceae	*Scleria sphacelata* F.Muell.		1
Elatinaceae	*Bergia trimera* Fisch. & C.A.Mey.	Small Water-fire	1
Epacridaceae	*Melichrus procumbens* (Cav.) Druce	Jam tarts	4
Erythroxylaceae	*Erythroxylum australe* F.Muell.		1
Euphorbiaceae	*Acalypha eremorum* Muell.Arg.	Native Acalypha	1
Euphorbiaceae	*Beyeria viscosa* (Labill.) Miq.	Sticky wallaby Bush	1
Euphorbiaceae	*Breynia oblongifolia* (Muell.Arg.) Muell.Arg	Coffee bush	1,3,4
Euphorbiaceae	*Chamaesyce drummondii* (Boiss.) D.C.Hassall	Caustic weed	1
Euphorbiaceae	*Petalostigma banksii* Britten & S.Moore		1
Euphorbiaceae	*Petalostigma pubescens* Domin	Bitter Bark	1,2,3,4
Euphorbiaceae	*Phyllanthus carpentariae* Mull.Arg.		1
Euphorbiaceae	*Phyllanthus fuernrohrii* F.Muell.		1
Euphorbiaceae	*Phyllanthus maderaspatensis* L.		1
Euphorbiaceae	*Phyllanthus maderaspatensis* L. *var. maderaspatensis*		1
Euphorbiaceae	*Phyllanthus sp.*		2
Euphorbiaceae	*Phyllanthus virgatus* G.Forst.	Wiry spurge	1
Euphorbiaceae	*Ricinocarpos ledifolius* F.Muell.	Scrub Wedding Bush	1
Euphorbiaceae	*Ricinocarpos linearifolius* Halford & R.J.F.Hend.		1,3
Euphorbiaceae	*Ricinocarpos sp.* (Blackdown Tableland R.J. Henderson H610)		1
Euphorbiaceae	*Sauropus elachophyllus* (Benth.) Airy Shaw		1
Euphorbiaceae	*Sauropus rigens* (F.Muell.) Airy Shaw		1
Fabaceae	*Aeschynomene indica* L	Budda Pea	1
Fabaceae	*Aphyllodium biarticulatum* (L.) Gagnep.	A pea	1

Family	Species	Common name	Source*
Fabaceae	*Apophyllum anomalum* F.Muell.	A pea	1,2
Fabaceae	*Crotalaria brevis* Domin		1
Fabaceae	*Daviesia filipes* Benth.		1,3
Fabaceae	*Desmodium brachypodum* A.Gray	Large Tick-trefoil	1
Fabaceae	*Desmodium filiforme* Zoll. & Moritzi		1
Fabaceae	*Desmodium macrocarpum* Domin.	Large-podded trefoil	1,2,3,4
Fabaceae	*Desmodium varians* (Labill.) G.Don	Slender Tick-trefoil	1,4
Fabaceae	*Erythrina vespertilio* Benth.	Erythrina vespertilio	1
Fabaceae	*Glycine clandestina* J.C.Wendl.	Twining glycine	1
Fabaceae	*Glycine tabacina* (Labill.) Benth.	Glycine pea	1
Fabaceae	*Glycine tomentella* Hayata	Woolly glycine	1
Fabaceae	*Gompholobium foliolosum* Benth.	Fern-leaved Burtonia	1
Fabaceae	*Hovea lanceolata* Sims		1
Fabaceae	*Hovea parvicalyx* I.Thomps		1
Fabaceae	*Hovea tholiformis* I.Thomps		1
Fabaceae	*Indigofera australis* Willd.	Austral indigo	1,3
Fabaceae	*Indigofera colutea* (Burm.f.) Merr.	Rusty indigo	1
Fabaceae	*Indigofera hirsuta* L.	Hairy indigo	1
Fabaceae	*Jacksonia ramosissima* Benth.		1
Fabaceae	*Jacksonia rhadinoclona* F.Muell.		1
Fabaceae	*Keraudrenia collina* Domin		4
Fabaceae	*Labichea rupestris* Benth.		1
Fabaceae	*Leptosema chapmanii* Crisp		1
Fabaceae	*Lysiphyllum carronii* (F.Muell.) Pedley	Queensland Ebony	1,2,4
Fabaceae	*Lysiphyllum hookeri* (F.Muell.) Pedley	White Bauhinia	1
Fabaceae	*Mirbelia aotoides* F.Muell.		1
Fabaceae	*Neptunia gracilis* Benth.	Native Sensitive Plant	3
Fabaceae	*Parkinsonia aculeata* L.	Parkinsonia	1,4
Fabaceae	*Petalostylis labicheoides* R.Br.	Butterfly Bush	1
Fabaceae	*Rhynchosia minima* (L.) DC.	Rhyncho	1,3
Fabaceae	*Senna artemisioides* (Gaudich. ex DC.) Randell	Silver Cassia	1,3
Fabaceae	*Senna artemisioides* subsp. *filifolia* Randell		1
Fabaceae	*Senna artemisioides* subsp. *zygophylla* (Benth.) Randell		1
Fabaceae	*Senna occidentalis* (L.) Link	Coffee Senna	3,4
Fabaceae	*Stylosanthes scabra* Vogel	Shrubby stylo	2,4
Fabaceae	*Uraria lagopodioides* (L.) DC.	Lata-chakuley	1
Goodeniaceae	*Dampiera discolor* (de Vriese) K.Krause		1
Goodeniaceae	*Goodenia glabra* R.Br.		1
Goodeniaceae	*Goodenia goodeniacea* (F.Muell.) Carolin		1
Goodeniaceae	*Goodenia hirsuta* F.Muell.	Hoary goodenia	1,3,4
Goodeniaceae	*Goodenia viridula* Carolin		1
Goodeniaceae	*Scaevola parvifolia* F.Muell. ex Benth. subsp. *parvifolia*		1
Goodeniaceae	*Scaevola spinescens* R.Br.	Currant Bush	1,2
Hemerocallidaceae	*Dianella longifolia* R.Br.	Flax lily	
Hemerocallidaceae	*Dianella longifolia* var *stupata* R.J.F. Hend.	Long-leafed Flax lily	1

Family	Species	Common name	Source*
Hemerocallidaceae	*Tricoryne elatior* R.Br.	Star Lily	1
Lamiaceae	*Ajuga australis* R.Br.	Austral Bugle	2
Lamiaceae	*Chloanthes parviflora* Walp.		1,3
Lamiaceae	*Microcorys queenslandica* C.T.White		1
Lamiaceae	*Prostanthera collina* Domin		1
Lamiaceae	*Prostanthera leichhardtii* Benth.	Green-flowered Mintbush	2
Lamiaceae	*Spartothamnella juncea* (A.Cunn. ex Walp.) Briq.	Bead Bush	1
Lamiaceae	*Spartothamnella puberula* (F.Muell.) Maiden & Betche	Red-berried Stick-plant	1
Lauraceae	*Cassytha pubescens* R.Br.	Downy Devil's Twine	1,3
Laxmanniaceae	*Lomandra confertifolia* subsp. *pallida* A.T.Lee	Mat-rush	1,3
Laxmanniaceae	*Lomandra leucocephala* (R.Br.) Ewart	Woolly mat-rush	1,2,4
Laxmanniaceae	*Lomandra leucocephala* (R.Br.) Ewart subsp. *leucocephala*		1
Laxmanniaceae	*Lomandra leucocephala* subsp. *robusta* A.T.Lee		
Laxmanniaceae	*Lomandra multiflora* (R.Br.) Britten subsp. *multiflora*	Many-flowered Mat-rush	1
Loranthaceae	*Amyema congener* (Sieber ex Schult. & Schult.f.) Tiegh.	A Mistletoe	1
Loranthaceae	*Amyema conspicua* (F.M.Bailey) Danser subsp. *conspicua*	A Mistletoe	1
Loranthaceae	*Amyema quandang* (Lindl.) Tiegh.	A Mistletoe	1
Loranthaceae	*Lysiana spathulata* (Blakely) Barlow subsp. *spathulata*		1
Loranthaceae	*Lysiana subfalcata* (Hook.) Barlow		1
Lythraceae	*Ammannia multiflora* Roxb.	Jerry-Jerry	1
Malvaceae	*Abutilon otocarpum* F.Muell.		1
Malvaceae	*Abutilon oxycarpum* (F.Muell.) F.Muell. ex Benth.		1
Malvaceae	*Grewia latifolia* F.Muell. ex Benth.		1
Malvaceae	*Grewia retusifolia* Kruz.	Dog nuts	1,3
Malvaceae	*Hibiscus sturtii* Hook	Hill hibiscus	1
Malvaceae	*Malvastrum americanum* (L.) Torr. *var. americanum*		1
Malvaceae	*Melhania oblongifolia* F.Muell.	Velvet Hibiscus	1
Malvaceae	*Sida atherophora* Domin		1
Malvaceae	*Sida cordifolia* L.	Flannel weed	3
Malvaceae	*Sida corrugata* Lindl.	Corrugated Sida	1,3
Malvaceae	*Sida filiformis* A.Cunn.	Fine Sida	1
Malvaceae	*Sida rohlenae* Domin	Shrub Sida	1,3
Malvaceae	*Sida sp.*		2
Malvaceae	*Sida spinosa* L.	Spiny Sida	1,3
Malvaceae	*Sida subspicata* F.Muell. ex Benth.	Queensland Hemp	1,3
Malvaceae	*Sida virgata* Hook.		1
Malvaceae	*Waltheria indica* L.- Uhaloa		1,3
Marsileaceae	*Marsilea mutica* Mett.	Nardoo	1
Meliaceae	*Owenia acidula* F.Muell.	Emu Apple	1,3,4

Family	Species	Common name	Source*
Mimosaceae	*Acacia angusta* Maiden & Blakely		1
Mimosaceae	*Acacia bancroftiorum* Maiden	Bancrofts wattle	1
Mimosaceae	*Acacia cambagei* R.T.Baker	Gidgee	1
Mimosaceae	*Acacia catenulata* C.T.White	Bendee	1
Mimosaceae	*Acacia crassa* Pedley 268ubsp.. *Crassa*		1
Mimosaceae	*Acacia decora* Rchb.	Western silver wattle	1,2
Mimosaceae	*Acacia dietrichiana* F.Muell.		1
Mimosaceae	*Acacia elachantha* M.W.McDonald & Maslin		1
Mimosaceae	*Acacia excelsa* Benth	Ironwood	1,4
Mimosaceae	*Acacia farnesiana* (L.) Willd.	Mimosa bush	1,4
Mimosaceae	*Acacia gnidium* Benth.		1
Mimosaceae	*Acacia harpophylla* F.Muell. ex Benth.	Brigalow	1,2,3,4
Mimosaceae	*Acacia hyaloneura* Pedley		1
Mimosaceae	*Acacia johnsonii* Pedley		1
Mimosaceae	*Acacia julifera* 268ubsp.. C*urvinervia* (Maiden) Pedley		1
Mimosaceae	*Acacia juncifolia* Benth.	Rush-leafed Wattle	2
Mimosaceae	*Acacia leichhardtii* Benth.		1
Mimosaceae	*Acacia leiocalyx* (Domin) Pedley	Black wattle	1,4
Mimosaceae	*Acacia leptostachya* Benth.	Townsville Wattle	1,4
Mimosaceae	*Acacia longispicata* Benth.		1
Mimosaceae	*Acacia macradenia* Benth.	ZigZag Wattle	1
Mimosaceae	*Acacia melleodora* Pedley	Waxy Wattle	1,4
Mimosaceae	*Acacia multisiliqua* (Benth.) Maconochie		1
Mimosaceae	*Acacia oswaldii* F.Muell.	Umbrella Wattle	1
Mimosaceae	*Acacia pendula* A.Cunn. & G.Don	Weeping Myall	1
Mimosaceae	*Acacia platycarpa* F.Muell.		1
Mimosaceae	*Acacia polifolia* Pedley		1
Mimosaceae	*Acacia salicina* Lindl.	Lancewood	1,3,4
Mimosaceae	*Acacia sericophylla* F.Muell.	*Desert Dogwood*	1,4
Mimosaceae	*Acacia shirleyi* Maiden	Shirley's wattle	1,2
Mimosaceae	*Acacia spania* Pedley		1
Mimosaceae	*Acacia stipuligera* F.Muell.		1
Mimosaceae	*Archidendropsis basaltica* (F.Muell.) I.C.Nielsen	Dead finish	1,2,3,4
Myoporaceae	*Eremophila bignoniiflora (Benth.) F.Muell.*	Berrigan	4
Myoporaceae	*Eremophila deserti* (A.Cunn. ex Benth.) Chinnock	Turkeybush	1
Myoporaceae	*Eremophila latrobei* subsp. *glabra* (L.S.Sm.) Chinnock		1,3
Myoporaceae	*Eremophila latrobei*. subsp. *latrobei* F.Muell	Crimson turkeybush	1
Myoporaceae	*Eremophila longifolia* (R.Br.) F.Muell.	Emubush	1
Myoporaceae	*Eremophila mitchellii* Benth.	False sandalwood	1,2,3,4
Myoporaceae	*Myoporum acuminatum* R.Br.	Native Myrtle	2,3
Myoporaceae	*Myoporum montanum* R.Br.	Water Bush	1
Myrtaceae	*Calytrix microcoma* Craven	Turkey bush	1,4
Myrtaceae	*Calytrix tetragona* Labill.	Common Fringe myrtle	1

Family	Species	Common name	Source*
Myrtaceae	*Corymbia brachycarpa* (D.J. Carr & S.G.M. Carr) K.D. Hill & L.A.S. Johnson	Yellow jacket	1
Myrtaceae	*Corymbia citriodora* subsp. *citriodora* (Hook.) K.D.Hill & L.A.S.Johnson	Lemon Scented gum	1
Myrtaceae	*Corymbia clarksoniana* (D.J. Carr & S.G.M. Carr) K.D. Hill & L.A.S. Johnson	Clarkson's bloodwood	1,2,4
Myrtaceae	*Corymbia dallachiana* (Benth.) K.D. Hill & L.A.S. Johnson	Dallachy's gum	1,2,4
Myrtaceae	*Corymbia erythrophloia* (Blakely) K.D. Hill & L.A.S. Johnson	Gum-topped bloodwood	1,4
Myrtaceae	*Corymbia lamprophylla* (Brooker & A.R. Bean) K.D. Hill & L.A.S. Johnson	Shiny-leaved Bloodwood	1
Myrtaceae	*Corymbia leichhardtii* (Bailey) K.D. Hill & L.A.S. Johnson	Yellow Jacket	1,2,4
Myrtaceae	*Corymbia papuana* (F. Muell.) K.D. Hill & L.A.S. Johnson	Ghost gum	1
Myrtaceae	*Corymbia plena* K.D. Hill & L.A.S. Johnson	Bloodwood	1,3,4
Myrtaceae	*Corymbia setosa* (Schauer) K.D. Hill & L.A.S. Johnson	Rough-leafed Bloodwood	1,4
Myrtaceae	*Corymbia tessellaris* (F. Muell.) K.D. Hill & L.A.S. Johnson	Moreton Bay Ash	1,2,4
Myrtaceae	*Corymbia trachyphloia* (F. Muell.) K.D. Hill & L.A.S. Johnson	Brown Bloodwood	1
Myrtaceae	*Eucalyptus ammophila* Brooker, Connors & Slee	Sandplain red gum	1,4
Myrtaceae	*Eucalyptus camaldulensis* Dehnh	River red gum	1,2,4
Myrtaceae	*Eucalyptus cambageana* Maiden	*Coowarra Box*	1,2,3,4
Myrtaceae	*Eucalyptus cloeziana* F.Muell	Gympie Messmate	1
Myrtaceae	*Eucalyptus coolabah* Blakely & Jacobs	Coolabah	1
Myrtaceae	*Eucalyptus crebra* F.Muell.	Narrow-leafed Ironbark	1,2,3,4
Myrtaceae	*Eucalyptus decorticans* (Bailey) Maiden	Gum-topped Ironbark	1
Myrtaceae	*Eucalyptus drepanophylla* F. Muell. ex Benth.	Grey ironbark	1,4
Myrtaceae	*Eucalyptus exserta* F. Muell.	Queensland Peppermint	1,2
Myrtaceae	*Eucalyptus melanophloia* F. Muell.	Silver-leafed ironbark	1,2,3,4
Myrtaceae	*Eucalyptus populnea* F. Muell.	Poplar box	1,2,3,4
Myrtaceae	*Eucalyptus shirleyi* Maiden	Shirley's Silver-leaved Ironbark	1
Myrtaceae	*Eucalyptus similis* Maiden	Inland Yellow Jacket	1,4
Myrtaceae	*Eucalyptus thozetiana* F. Muell. Ex Maiden	Lapunyah	1,2
Myrtaceae	*Eucalyptus whitei* Maiden & Blakely	White's ironbark	1
Myrtaceae	*Eucalyptus xanthoclada* Brooker & A.R. Bean	Narrow-leafed ironbark	1
Myrtaceae	*Harmogia densifolia* (Sm.) Schauer		4
Myrtaceae	*Homoranthus thomasii* (F.Muell.) Craven & S.R.Jones		1
Myrtaceae	*Leptospermum lamellatum* Joy Thomps		1
Myrtaceae	*Leptospermum sericatum* Lindl.		1

Family	Species	Common name	Source*
Myrtaceae	*Lithomyrtus microphylla* (Benth.) N.Snow & Guymer		1
Myrtaceae	*Lysicarpus angustifolius* (Hook.) Druce	Budgeroo	1,3,4
Myrtaceae	*Melaleuca bracteata* F.Muell.	Black Tea tree	1
Myrtaceae	*Melaleuca linariifolia* Sm.	Narrow leaved Tea tree	1
Myrtaceae	*Melaleuca nervosa* (Lindl.) Cheel	Paperbark	1
Myrtaceae	*Melaleuca pallescens* Byrnes		1,4
Myrtaceae	*Melaleuca tamariscina* Hook.		1,4
Myrtaceae	*Melaleuca uncinata* R.Br.	Common Tea-tree	1
Myrtaceae	*Melaleuca viminalis* Sol. ex Gaertn. subsp. *viminalis*		2
Myrtaceae	*Micromyrtus gracilis* A.R.Bean		1,4
Myrtaceae	*Micromyrtus rotundifolia* A.R.Bean		1
Myrtaceae	*Ochrosperma adpressum* A.R.Bean		1
Myrtaceae	*Thryptomene parviflora* (Benth.) Domin		1
Nyctaginaceae	*Boerhavia dominii* Meikle & Hewson	Tar-vine	1
Nyctaginaceae	*Boerhavia pubescens* R.Br	Tar-vine	1
Olacaceae	*Ximenia Americana* L.	Yellow Plum	1
Oleaceae	*Jasminum didymum* G.Frost		1,2
Orchidaceae	*Cymbidium canaliculatum* R.Br.	Tiger Orchid	1,3
Oxalidaceae	*Oxalis radicosa* A.Rich.		1
Pittosporaceae	*Bursaria incana* Cav.	Mock orange	1
Pittosporaceae	*Bursaria spinosa* Cav.	Blackthorn	2
Pittosporaceae	*Bursaria tenuifolia F.M.Bailey*	Sweet bursaria	4
Poaceae	*Acrachne racemosa* (B.Heyne ex Roem. & Schult.) Ohwi		1
Poaceae	*Alloteropsis semialata* (R.Br.) Hitchc	Cockatoo grass	1,4
Poaceae	*Amphipogon sericeus* (Vickery) T.D.Macfarlane.		1
Poaceae	*Ancistrachne uncinulata* (R.Br.) S.T.Blake	Hooky grass	1,3
Poaceae	*Aristida acuta* S.T.Blake		1
Poaceae	*Aristida calycina* R. Br.		1,3
Poaceae	*Aristida caput-medusae* Domin	Many-headed wiregrass	1
Poaceae	*Aristida holathera* Domin var holathera	Tall Kerosene Grass	1
Poaceae	*Aristida ingrata* Domin		1
Poaceae	*Aristida jerichoensis* (Domin) Henrard	Jericho wiregrass	1
Poaceae	*Aristida latifolia* Domin	Feathertop speargrass	4
Poaceae	*Aristida leptopoda* Benth.	White speargrass	4
Poaceae	*Aristida lignosa* B.K.Simon		1
Poaceae	*Aristida personata*		1,3
Poaceae	*Aristida pruinosa*		1
Poaceae	*Aristida queenslandica* var *queenslandica*		1
Poaceae	*Aristida ramose*		1,4
Poaceae	*Arundinella nepalensis*	Reedgrass	1
Poaceae	*Bothriochloa bladhii* (Retz.) S.T.Blake		1
Poaceae	*Bothriochloa decipiens* (Hack.) C.E.Hubb		1
Poaceae	*Bothriochloa ewartiana* (Domin) C.E.Hubb.		1,3,4

Family	Species	Common name	Source*
Poaceae	*Chloris divaricata* R.BR. var *divaricata*	Slender Chloris	1
Poaceae	*Chloris truncata* R.Br.	Windmill grass	1,4
Poaceae	*Chrysopogon fallax* S.T.Blake		1,2,3,4
Poaceae	*Cleistochloa subjuncea* C.E.Hubb		1
Poaceae	*Cymbopogon ambiguus* A.Camus	Lemon Scented grass	1
Poaceae	*Cymbopogon bombycinus* (R.Br.) Domin. Biblioth		1
Poaceae	*Cymbopogon obtectus* S.T.Blake	Silky Heads	1,4
Poaceae	*Cymbopogon refractus* (R.Br.) A.Camus	Barb-wire grass	1
Poaceae	*Dactyloctenium australe* Steud.	Durban grass	2
Poaceae	*Dactyloctenium radulans* (R.Br.) P.Beauv.	Button grass	1
Poaceae	*Digitaria ammophila* (F.Muell.) Hughes	Silky Umbrella-grass	1
Poaceae	*Digitaria bicornis* (Lam.) Roem. & Schult.	Crab grass	1
Poaceae	*Digitaria brownii* (Roem. & Schult.) D. K. Hughes.	Cotton Panic Grass	1,3
Poaceae	*Digitaria divaricatissima (R.Br.) Hughes*	Spider grass	4
Poaceae	*Digitaria longiflora* (Retz.) Pers.	Indian crab grass	1
Poaceae	*Digitaria ramularis* (Trin.) Henrard		1
Poaceae	*Enneapogon acicularis* (Lindl.)		2
Poaceae	*Enneapogon lindleyanus* (Domin) C.E.Hubb.	Conetop nineawn	1
Poaceae	*Enneapogon polyphyllus* (Domin) N.T.Burb.	Leafy nineawn	1,3,4
Poaceae	*Enneapogon robustissimus* (Domin) N. T. Burbidge.		1
Poaceae	*Enneapogon virens* (Lindl.) Kakudidi		1
Poaceae	*Enteropogon ramosus* B. K. Simon	Curly windmill grass	1,4
Poaceae	*Eragrostis elongata* (Willd.) J.Jacq.	Clustered lovegrass	1
Poaceae	*Eragrostis lacunaria* F.Muell. ex Benth.	Purple love grass	1,3
Poaceae	*Eragrostis lanicaulis* Lazarides		1
Poaceae	*Eragrostis parviflora* (R.Br.) Trin.	Weeping lovegrass	1
Poaceae	*Eragrostis sororia* Domin		1
Poaceae	*Eragrostis spartinoides* Steud.		2
Poaceae	*Eragrostis speciosa* (Roem. & Schult.) Steud.		1
Poaceae	*Eriachne aristidea* F.Muell.	Three-awn Wanderrie Grass	1
Poaceae	*Eriachne mucronata* R.Br.	Mountain Wanderrie Grass	1,3
Poaceae	*Eulalia aurea* (Bory) Kunth	Silky browntop	1,2
Poaceae	*Heteropogon contortus* (L.) P.Beauv. ex Roem. & Schult.	Black speargrass	1,2,3,4
Poaceae	*Hymenachne amplexicaulis* (Rudge) Nees		2
Poaceae	*Iseilema fragile* S.T.Blake		3
Poaceae	*Leptochloa decipiens* (R.Br.) Stapf ex Maiden subsp. *decipiens*		1
Poaceae	*Leptochloa digitata* (R.Br.) Domin		1
Poaceae	*Melinis repens* (Willd.) Zizka	Red Natal Grass	1,2,3,4
Poaceae	*Panicum effusum* R.Br.	Branched Panic	1,3,4

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Poaceae	*Panicum larcomianum* Hughes		1
Poaceae	*Paspalidium caespitosum* C.E.Hubb.	Brigalow Grass	1,4
Poaceae	*Paspalidium constrictum* (Domin) C.E.Hubb.	Box Grass	1
Poaceae	*Paspalidium gracile* (R.Br.) Hughes	Graceful Panic Grass	1
Poaceae	*Paspalidium rarum* (R.Br.) Hughes	Rare Panic	1
Poaceae	*Pennisetum ciliare* (L.) Link	Buffel grass	1,2,3,4
Poaceae	*Perotis rara* R.Br.	Comet Grass	1,2
Poaceae	*Schizachyrium fragile* (R.Br.) A.Camus	Firegrass	1,4
Poaceae	*Setaria apiculata* (Scribn. & Merr.) K.Schum.	Pigeon grass	1
Poaceae	*Setaria surgens* Stapf	Pearl Millet	1,4
Poaceae	*Sporobolus australasicus* Domin	Australian Dropseed	1
Poaceae	*Sporobolus caroli* Mez	Fairy Grass	1
Poaceae	*Sporobolus sp.*		2
Poaceae	*Themeda avenacea* (F.Muell.) Hack. ex Maiden & Betche		1
Poaceae	*Themeda quadrivalvis* (L.) Kuntze	Grader grass	3
Poaceae	*Themeda triandra* Forssk.	Kangaroo Grass	1,2,3,4
Poaceae	*Thyridolepis xerophila* (Domin) S.T.Blake		1
Poaceae	*Triodia mitchellii* Benth.		1
Poaceae	*Triodia pungens* R.Br.	Gummy Spinifex	1,2,3,4
Poaceae	*Tripogon loliiformis* (F.Muell.) C.E.Hubb.	Eight-day Grass	1
Poaceae	*Triraphis mollis* R.Br.	Needle grass	1
Poaceae	*Urochloa piligera* (F. Muell. Ex Benth.) R.D. Webster.	Hairy Armgrass	1
Poaceae	*Urochloa subquadripara* (Trin.) R.D. Webster.	Green Summer grass*	1
Polygalaceae	*Comesperma pallidum* Pedley		1
Polygalaceae	*Polygala linariifolia* Willd.	Native Milkwort	1
Polygonaceae	*Muehlenbeckia florulenta* Meisn.	Lignum	1
Polygonaceae	*Persicaria attenuata* (R.Br.) Sojak	Velvet Knotweed	3
Polygonaceae	*Persicaria orientalis* (L.) Spach	Princes Feathers	1
Pontederiaceae	*Monochoria cyanea* (F.Muell.) F.Muell.		2
Portulacaceae	*Portulaca australis* Endl.		1
Portulacaceae	*Portulaca oleracea* L.	Common Pigweed	1
Portulacaceae	*Portulaca pilosa* L. subsp. *pilosa*		1
Proteaceae	*Grevillea decora* subsp. *decora* Domin.		1
Proteaceae	*Grevillea parallela* Knight	Beefwood	1,4
Proteaceae	*Grevillea pteridifolia* Knight	Silky Grevillea	1,4
Proteaceae	*Grevillea sessilis* C.T.White & W.D.Francis	White flowering grevillea	1
Proteaceae	*Grevillea stenobotrya* F.Muell.	Sandhill spider flower	1
Proteaceae	*Grevillea striata* R.Br.	Beefwood	1,3,4
Proteaceae	*Hakea chordophylla* F.Muell.	Bootlace Oak	1
Proteaceae	*Hakea lorea* (R.Br.) R.Br. subsp. *lorea*	Bootlace oak	1
Proteaceae	*Persoonia falcata* R.Br.	Booral	1,2,4
Rhamnaceae	*Ventilago viminalis* Hook	Supple Jack	1,2,3,4
Rubiaceae	*Everistia vacciniifolia* (F.Muell.) S.T.Reynolds & R.J.F.Hend.		1

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Rubiaceae	*Everistia vacciniifolia* var. *nervosa* S.T.Reynolds & R.J.F.Hend.		1
Rubiaceae	*Pogonolobus reticulatus* F.Muell.	Medicine Bush	1
Rubiaceae	*Psydrax attenuata* (R.Br. ex Benth.) S.T.Reynolds & R.J.F.Hend.		4
Rubiaceae	*Psydrax odorata* (G.Forst.) A.C.Sm. & S.P.Darwin	Shiny-leaved Canthium	1,2
Rubiaceae	*Psydrax odorata* forma *buxifolia* (Benth.) S.T.Reynolds & R.J.F.Hend.		1
Rubiaceae	*Psydrax oleifolia* (Hook.) S.T.Reynolds & R.J.F.Hend.		1,2,3,4
Rubiaceae	*Spermacoce brachystema* Benth.		1
Rutaceae	*Boronia bipinnata* Lindl.	Rock boronia	1
Rutaceae	*Boronia occidentalis* Duretto		1
Rutaceae	*Boronia odorata* Duretto		1
Rutaceae	*Citrus glauca* (Lindl.) Burkill	Desert lime	1
Rutaceae	*Geijera parviflora* Lindl.	Wilga	1,2,3,4
Rutaceae	*Phebalium nottii* (F.Muell.) Maiden & Betche	Pink Phebalium	1
Rytaceae	*Flindersia dissosperma* (F.Muell.) Domin	Scrub ironwood	1,4
Santalaceae	*Anthobolus leptomerioides* F.Muell.		1
Santalaceae	*Exocarpos sparteus* R.Br.	Slender Cherry	1
Santalaceae	*Santalum lanceolatum* R.Br.	Northern Sandalwood	1,3
Sapindaceae	*Alectryon oleifolius* (Desf.) S.T.Reynolds	Western Rosewood	1,2
Sapindaceae	*Atalaya hemiglauca* (F.Muell.) F.Muell. ex Benth	Whitwood	1,2,3,4
Sapindaceae	*Dodonaea filifolia* Hook	Thread-leaf Hop Bush	1,4
Sapindaceae	*Dodonaea peduncularis* Lindl.		1
Sapindaceae	*Dodonaea stenophylla* F.Muell.		1,3,4
Sapindaceae	*Dodonaea viscosa* subsp. *angustissima* (DC.) J.G.West	Hairy indigo	1
Sapindaceae	*Dodonaea viscosa* subsp. *cuneata* (Sm.) J.G.West		1
Sapindaceae	*Dodonaea viscosa* subsp. *spatulata* (Sm.) J.G.West		1
Scrophulariaceae	*Glossostigma diandrum* (L.) Kuntze	Spoon-leaf Mud-mat	1
Solanaceae	*Solanum ellipticum* R.Br.	Hillside Flannel Bush	1,3,4
Solanaceae	*Solanum ferocissimum* Lindl.		1
Solanaceae	*Solanum parvifolium* R.Br.		1,3
Sterculiaceae	*Brachychiton australis* (Schott & Endl.) Terracino	Broad Leaved Bottletree	2
Sterculiaceae	*Brachychiton populneus* (Schott & Endl.) R.Br.	Kurrajong	2,4
Sterculiaceae	*Brachychiton populneus* subsp. *trilobus* Guymer.	Kurrajong	1,3,4
Sterculiaceae	*Keraudrenia collina* Domin		1
Stylidiaceae	*Stylidium eglandulosum* F.Muell.	Woolly-stemmed Triggerplant	1
Stylidiaceae	*Stylidium eriorhizum* R.Br.		1
Thymelaeaceae	*Pimelea trichostachya* Lindl.	Flaxweed	1,3,4
Verbenaceae	*Verbena aristigera* S.Moore		3

Family	Species	Common name	Source*
Verbenaceae	*Verbena halei* Small		1
Violaceae	*Hybanthus monopetalus* (Schult.) Domin		2
Violaceae	*Hybanthus stellarioides* (Domin) P.I.Forst.		1
Xanthorrhoeaceae	*Xanthorrhoea johnsonii* A.T.Lee	Forest grass tree	1
Zygophyllaceae	*Tribulopis angustifolia* R.Br.		1
Zygophyllaceae	*Tribulus eichlerianus* K.L.Wilson	Bullhead	1

12.5 Appendix V – EPBC Protected Matters – flora and Ecological Communities

Australian Government
Department of Sustainability, Environment, Water, Population and Communities

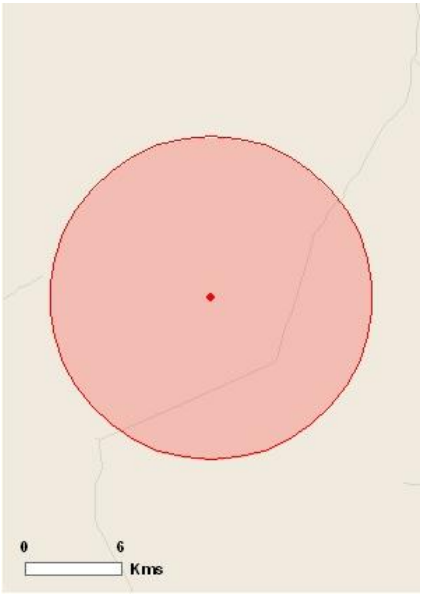
EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

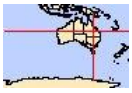
Information about the EPBC Act including significance guidelines, forms and application process details can be found at http://www.environment.gov.au/epbc/assessmentsapprovals/index.html

Report created: 27/08/12 10:13:54



This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates
Buffer: 10.0Km



Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance - see http://www.environment.gov.au/epbc/assessmentsapprovals/guidelines/index.html

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Areas:	None
Threatened Ecological Communities:	None
Threatened Species:	8
Migratory Species:	9

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place and the heritage values of a place on the Register of the National Estate. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage/index.html

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species. Information on EPBC Act permit requirements and application forms can be found at http://www.environment.gov.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	7
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

Place on the RNE:	None
State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	8
Nationally Important Wetlands:	None

Details

Matters of National Environmental Significance

Threatened Species		[Resource Information]
Name	Status	Type of Presence
BIRDS		
Erythrotriorchis radiatus		
Red Goshawk [942]	Vulnerable	Species or species habitat may occur within area

Name	Status	Type of Presence
Geophaps scripta scripta		
Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area
Neochmia ruficauda ruficauda		
Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Vulnerable	Species or species habitat may occur within area
MAMMALS		
Macrotis lagotis		
Greater Bilby [282]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)		
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area
REPTILES		
Denisonia maculata		
Ornamental Snake [1193]	Vulnerable	Species or species habitat may occur within area
Egernia rugosa		
Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area

Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Migratory Terrestrial Species		
Haliaeetus leucogaster		
White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus		
Rainbow Bee-eater [670]		Species or species habitat may occur within area
Migratory Wetlands Species		
Ardea alba		
Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis		
Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato)		
Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within

Name	Threatened	Type of Presence
		area

Other Matters Protected by the EPBC Act

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat may occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat may occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Vulnerable*	Species or species habitat may occur within area

Extra Information

State and Territory Reserves [Resource Information]

Name	State
Bimblebox	QLD

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit,

Name	Status	Type of Presence
Frogs		
Bufo marinus Cane Toad [1772]		Species or species habitat likely to occur within area
Mammals		

Name	Status	Type of Presence
Felis catus		
Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Oryctolagus cuniculus		
Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Sus scrofa		
Pig [6]		Species or species habitat likely to occur within area
Vulpes vulpes		
Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Cryptostegia grandiflora		
Rubber Vine, Rubbervine, India Rubber Vine, India Rubbervine, Palay Rubbervine, Purple Allamanda [18913]		Species or species habitat likely to occur within area
Lantana camara		
Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Parkinsonia aculeata		
Parkinsonia, Jerusalem Thorn, Jelly Bean Tree, Horse Bean [12301]		Species or species habitat likely to occur within area

Coordinates

-23.43877 146.39411

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World Heritage and Register of National Estate properties, Wetlands of International Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

For species where the distributions are well known, maps are digitised from sources such as recovery plans and detailed habitat studies. Where appropriate, core breeding, foraging and roosting areas are indicated under 'type of presence'. For species whose distributions are less well known, point locations are collated from government wildlife authorities, museums, and non-government organisations; bioclimatic distribution models are generated and these validated by experts. In some cases, the distribution maps are based solely on expert knowledge.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area

- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Department of Environment, Climate Change and Water, New South Wales
-Department of Sustainability and Environment, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment and Natural Resources, South Australia
-Parks and Wildlife Service NT, NT Dept of Natural Resources, Environment and the Arts
-Environmental and Resource Management, Queensland
-Department of Environment and Conservation, Western Australia
-Department of the Environment, Climate Change, Energy and Water
-Birds Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-SA Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Atherton and Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
-State Forests of NSW
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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12.6 Appendix VI - Wildlife online (flora)

Queensland Government

Wildlife Online Extract

Search Criteria: Species List for a Specified Point
Species: All
Type: All
Status: All
Records: All
Date: All
Latitude: 23.4388
Longitude: 146.3941
Distance: 25
Email: rob.friend23@gmail.com
Date submitted: Monday 27 Aug 2012 10:05:29
Date extracted: Monday 27 Aug 2012 10:10:24

The number of records retrieved = 454

Disclaimer

As the DERM is still in a process of collating and vetting data, it is possible the information given is not complete. The information provided should only be used for the project for which it was requested and it should be appropriately acknowledged as being derived from Wildlife Online when it is used.

The State of Queensland does not invite reliance upon, nor accept responsibility for this information. Persons should satisfy themselves through independent means as to the accuracy and completeness of this information.

No statements, representations or warranties are made about the accuracy or completeness of this information. The State of Queensland disclaims all responsibility for this information and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			16
animals	amphibians	Hylidae	*Cyclorana brevipes*	superb collared frog		C		10
animals	amphibians	Hylidae	*Litoria caerulea*	common green treefrog		C		17
animals	amphibians	Hylidae	*Litoria rubella*	ruddy treefrog		C		6
animals	amphibians	Hylidae	*Litoria inermis*	bumpy rocketfrog		C		1
animals	amphibians	Hylidae	*Cyclorana alboguttata*	greenstripe frog		C		1
animals	amphibians	Hylidae	*Cyclorana novaehollandiae*	eastern snapping frog		C		9
animals	amphibians	Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk		C		2
animals	amphibians	Limnodynastidae	*Notaden bennettii*	holy cross frog		C		28
animals	amphibians	Limnodynastidae	*Platyplectrum ornatum*	ornate burrowing frog		C		42
animals	amphibians	Limnodynastidae	*Neobatrachus sudellae*	meeowing frog		C		2
animals	amphibians	Limnodynastidae	*Limnodynastes peronii*	striped marshfrog		C		1
animals	amphibians	Limnodynastidae	*Neobatrachus sp.*					1
animals	amphibians	Myobatrachidae	*Pseudophryne major*	great brown broodfrog		C		2
animals	amphibians	Myobatrachidae	*Uperoleia rugosa*	chubby gungan		C		2
animals	birds	Acanthizidae	*Acanthiza nana*	yellow thornbill		C		3
animals	birds	Acanthizidae	*Gerygone fusca*	western gerygone		C		29
animals	birds	Acanthizidae	*Acanthiza apicalis*	inland thornbill		C		11
animals	birds	Acanthizidae	*Acanthiza chrysorrhoa*	yellow-rumped thornbill		C		51
animals	birds	Acanthizidae	*Smicrornis brevirostris*	weebill		C		89
animals	birds	Acanthizidae	*Gerygone albogularis*	white-throated gerygone		C		9
animals	birds	Acanthizidae	*Chthonicola sagittata*	speckled warbler		C		6
animals	birds	Acanthizidae	*Acanthiza uropygialis*	chestnut-rumped thornbill		C		2
animals	birds	Acanthizidae	*Acanthiza reguloides*	buff-rumped thornbill		C		3
animals	birds	Accipitridae	*Aviceda subcristata*	Pacific baza		C		6
animals	birds	Accipitridae	*Accipiter fasciatus*	brown goshawk		C		6
animals	birds	Accipitridae	*Lophoictinia isura*	square-tailed kite		NT		1
animals	birds	Accipitridae	*Elanus axillaris*	black-shouldered kite		C		7
animals	birds	Accipitridae	*Milvus migrans*	black kite		C		2
animals	birds	Accipitridae	*Aquila audax*	wedge-tailed eagle		C		11
animals	birds	Accipitridae	*Haliastur sphenurus*	whistling kite		C		9
animals	birds	Accipitridae	*Accipiter cirrocephalus*	collared sparrowhawk		C		1
animals	birds	Accipitridae	*Hieraaetus morphnoides*	little eagle		C		1
animals	birds	Aegothelidae	*Aegotheles cristatus*	Australian owlet-nightjar		C		25
animals	birds	Alaudidae	*Mirafra javanica*	Horsfield's bushlark		C		8
animals	birds	Anatidae	*Chenonetta jubata*	Australian wood duck		C		8
animals	birds	Anatidae	*Anas superciliosa*	Pacific black duck		C		8
animals	birds	Anatidae	*Aythya australis*	hardhead		C		7
animals	birds	Anatidae	*Cygnus atratus*	black swan		C		1
animals	birds	Anatidae	*Dendrocygna eytoni*	plumed whistling-duck		C		1
animals	birds	Anatidae	*Dendrocygna arcuata*	wandering whistling-duck		C		1
animals	birds	Anatidae	*Anas gracilis*	grey teal		C		8
animals	birds	Anhingidae	*Anhinga novaehollandiae*	Australasian darter		C		3
animals	birds	Ardeidae	*Ardea pacifica*	white-necked heron		C		6
animals	birds	Ardeidae	*Ardea intermedia*	intermediate egret		C		1
animals	birds	Ardeidae	*Nycticorax caledonicus*	Nankeen night-heron		C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Ardeidae	*Ardea modesta*	eastern great egret		C		7
animals	birds	Artamidae	*Cracticus nigrogularis*	pied butcherbird		C		61
animals	birds	Artamidae	*Artamus superciliosus*	white-browed woodswallow		C		10
animals	birds	Artamidae	*Cracticus torquatus*	grey butcherbird		C		81
animals	birds	Artamidae	*Artamus cyanopterus*	dusky woodswallow		C		5
animals	birds	Artamidae	*Strepera graculina*	pied currawong		C		5
animals	birds	Artamidae	*Artamus personatus*	masked woodswallow		C		14
animals	birds	Artamidae	*Cracticus tibicen*	Australian magpie		C		72
animals	birds	Artamidae	*Artamus cinereus*	black-faced woodswallow		C		23
animals	birds	Artamidae	*Artamus minor*	little woodswallow		C		16
animals	birds	Burhinidae	*Burhinus grallarius*	bush stone-curlew		C		7
animals	birds	Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo		C		12
animals	birds	Cacatuidae	*Eolophus roseicapillus*	galah		C		33
animals	birds	Cacatuidae	*Nymphicus hollandicus*	cockatiel		C		18
animals	birds	Cacatuidae	*Calyptorhynchus banksii*	red-tailed black-cockatoo		C		3
animals	birds	Campephagidae	*Lalage sueurii*	white-winged triller		C		27
animals	birds	Campephagidae	*Coracina maxima*	ground cuckoo-shrike		C		4
animals	birds	Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike		C		6
animals	birds	Campephagidae	*Coracina tenuirostris*	cicadabird		C		6
animals	birds	Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike		C		69
animals	birds	Casuariidae	*Dromaius novaehollandiae*	emu		C		16
animals	birds	Charadriidae	*Elseyornis melanops*	black-fronted dotterel		C		1
animals	birds	Charadriidae	*Erythrogonys cinctus*	red-kneed dotterel		C		1
animals	birds	Charadriidae	*Vanellus miles miles*	masked lapwing (northern subspecies)		C		4
animals	birds	Charadriidae	*Vanellus miles*	masked lapwing		C		6
animals	birds	Charadriidae	*Vanellus tricolor*	banded lapwing		C		2
animals	birds	Ciconiidae	*Ephippiorhynchus asiaticus*	black-necked stork		NT		1
animals	birds	Climacteridae	*Climacteris picumnus*	brown treecreeper		C		109
animals	birds	Columbidae	*Geopelia humeralis*	bar-shouldered dove		C		4
animals	birds	Columbidae	*Geophaps scripta scripta*	squatter pigeon (southern subspecies)		V	V	2
animals	birds	Columbidae	*Geopelia cuneata*	diamond dove		C		8
animals	birds	Columbidae	*Phaps chalcoptera*	common bronzewing		C		10
animals	birds	Columbidae	*Ocyphaps lophotes*	crested pigeon		C		39
animals	birds	Columbidae	*Geopelia striata*	peaceful dove		C		9
animals	birds	Coraciidae	*Eurystomus orientalis*	dollarbird		C		15
animals	birds	Corcoracidae	*Struthidea cinerea*	apostlebird		C		43
animals	birds	Corcoracidae	*Corcorax melanorhamphos*	white-winged chough		C		2
animals	birds	Corvidae	*Corvus orru*	Torresian crow		C		40
animals	birds	Corvidae	*Corvus bennetti*	little crow		C		1
animals	birds	Corvidae	*Corvus coronoides*	Australian raven		C		46
animals	birds	Cuculidae	*Cacomantis pallidus*	pallid cuckoo		C		11
animals	birds	Cuculidae	*Chalcites osculans*	black-eared cuckoo		C		2
animals	birds	Cuculidae	*Cacomantis variolosus*	brush cuckoo		C		2
animals	birds	Cuculidae	*Chalcites basalis*	Horsfield's bronze-cuckoo		C		23
animals	birds	Cuculidae	*Eudynamys orientalis*	eastern koel		C		1
animals	birds	Cuculidae	*Scythrops novaehollandiae*	channel-billed cuckoo		C		4

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Cuculidae	*Centropus phasianinus*	pheasant coucal		C		2
animals	birds	Cuculidae	*Chalcites lucidus*	shining bronze-cuckoo		C		5
animals	birds	Dicruridae	*Dicrurus bracteatus*	spangled drongo		C		1
animals	birds	Estrildidae	*Neochmia modesta*	plum-headed finch		C		4
animals	birds	Estrildidae	*Taeniopygia bichenovii*	double-barred finch		C		38
animals	birds	Estrildidae	*Poephila cincta cincta*	black-throated finch (white-rumped subspecies)		E	E	1
animals	birds	Estrildidae	*Taeniopygia guttata*	zebra finch		C		19
animals	birds	Falconidae	*Falco berigora*	brown falcon		C		27
animals	birds	Falconidae	*Falco cenchroides*	nankeen kestrel		C		22
animals	birds	Falconidae	*Falco peregrinus*	peregrine falcon		C		3
animals	birds	Falconidae	*Falco subniger*	black falcon		C		7
animals	birds	Gruidae	*Grus rubicunda*	brolga		C		7
animals	birds	Halcyonidae	*Dacelo leachii*	blue-winged kookaburra		C		1
animals	birds	Halcyonidae	*Todiramphus macleayii*	forest kingfisher		C		3
animals	birds	Halcyonidae	*Todiramphus sanctus*	sacred kingfisher		C		28
animals	birds	Halcyonidae	*Todiramphus pyrrhopygius*	red-backed kingfisher		C		11
animals	birds	Halcyonidae	*Dacelo novaeguineae*	laughing kookaburra		C		18
animals	birds	Hirundinidae	*Petrochelidon nigricans*	tree martin		C		11
animals	birds	Hirundinidae	*Cheramoeca leucosterna*	white-backed swallow		C		4
animals	birds	Hirundinidae	*Petrochelidon ariel*	fairy martin		C		7
animals	birds	Maluridae	*Malurus melanocephalus*	red-backed fairy-wren		C		24
animals	birds	Maluridae	*Malurus lamberti*	variegated fairy-wren		C		22
animals	birds	Maluridae	*Malurus cyaneus*	superb fairy-wren		C		1
animals	birds	Megaluridae	*Cincloramphus mathewsi*	rufous songlark		C		48
animals	birds	Megaluridae	*Cincloramphus cruralis*	brown songlark		C		4
animals	birds	Meliphagidae	*Melithreptus gularis*	black-chinned honeyeater		NT		3
animals	birds	Meliphagidae	*Ptilotula keartlandi*	grey-headed honeyeater		C		2
animals	birds	Meliphagidae	*Nesoptilotis leucotis*	white-eared honeyeater		C		1
animals	birds	Meliphagidae	*Philemon corniculatus*	noisy friarbird		C		49
animals	birds	Meliphagidae	*Manorina melanocephala*	noisy miner		C		2
animals	birds	Meliphagidae	*Philemon citreogularis*	little friarbird		C		42
animals	birds	Meliphagidae	*Ptilotula penicillatus*	white-plumed honeyeater		C		35
animals	birds	Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater		C		30
animals	birds	Meliphagidae	*Melithreptus albogularis*	white-throated honeyeater		C		4
animals	birds	Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater		C		33
animals	birds	Meliphagidae	*Melithreptus brevirostris*	brown-headed honeyeater		C		2
animals	birds	Meliphagidae	*Lichmera indistincta*	brown honeyeater		C		3
animals	birds	Meliphagidae	*Gavicalis virescens*	singing honeyeater		C		45
animals	birds	Meliphagidae	*Epthianura tricolor*	crimson chat		C		3
animals	birds	Meliphagidae	*Ptilotula plumulus*	grey-fronted honeyeater		C		40
animals	birds	Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater		C		22
animals	birds	Meliphagidae	*Manorina flavigula*	yellow-throated miner		C		124
animals	birds	Meropidae	*Merops ornatus*	rainbow bee-eater		C		33
animals	birds	Monarchidae	*Grallina cyanoleuca*	magpie-lark		C		52
animals	birds	Monarchidae	*Myiagra inquieta*	restless flycatcher		C		33

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Monarchidae	*Myiagra rubecula*	leaden flycatcher		C		9
animals	birds	Motacillidae	*Anthus novaeseelandiae*	Australasian pipit		C		6
animals	birds	Nectariniidae	*Dicaeum hirundinaceum*	mistletoebird		C		12
animals	birds	Neosittidae	*Daphoenositta chrysoptera*	varied sittella		C		11
animals	birds	Oriolidae	*Oriolus sagittatus*	olive-backed oriole		C		11
animals	birds	Oriolidae	*Sphecotheres vieilloti*	Australasian figbird		C		2
animals	birds	Otididae	*Ardeotis australis*	Australian bustard		C		13
animals	birds	Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush		C		24
animals	birds	Pachycephalidae	*Oreoica gutturalis*	crested bellbird		C		52
animals	birds	Pachycephalidae	*Pachycephala rufiventris*	rufous whistler		C		102
animals	birds	Pardalotidae	*Pardalotus rubricatus*	red-browed pardalote		C		3
animals	birds	Pardalotidae	*Pardalotus striatus*	striated pardalote		C		107
animals	birds	Passeridae	*Passer domesticus*	house sparrow	Y			2
animals	birds	Pelecanidae	*Pelecanus conspicillatus*	Australian pelican		C		1
animals	birds	Petroicidae	*Microeca fascinans*	jacky winter		C		75
animals	birds	Petroicidae	*Petroica goodenovii*	red-capped robin		C		2
animals	birds	Petroicidae	*Melanodryas cucullata*	hooded robin		C		54
animals	birds	Phalacrocoracidae	*Microcarbo melanoleucos*	little pied cormorant		C		3
animals	birds	Phalacrocoracidae	*Phalacrocorax varius*	pied cormorant		C		2
animals	birds	Phalacrocoracidae	*Phalacrocorax carbo*	great cormorant		C		1
animals	birds	Phalacrocoracidae	*Phalacrocorax sulcirostris*	little black cormorant		C		1
animals	birds	Phasianidae	*Coturnix ypsilophora*	brown quail		C		7
animals	birds	Podargidae	*Podargus strigoides*	tawny frogmouth		C		7
animals	birds	Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe		C		3
animals	birds	Podicipedidae	*Podiceps cristatus*	great crested grebe		C		1
animals	birds	Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler		C		107
animals	birds	Psittacidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet		C		31
animals	birds	Psittacidae	*Platycercus adscitus*	pale-headed rosella		C		75
animals	birds	Psittacidae	*Melopsittacus undulatus*	budgerigar		C		12
animals	birds	Psittacidae	*Northiella haematogaster*	blue bonnet		C		1
animals	birds	Psittacidae	*Aprosmictus erythropterus*	red-winged parrot		C		26
animals	birds	Psittacidae	*Trichoglossus chlorolepidotus*	scaly-breasted lorikeet		C		1
animals	birds	Ptilonorhynchidae	*Ptilonorhynchus maculatus*	spotted bowerbird		C		17
animals	birds	Rallidae	*Fulica atra*	Eurasian coot		C		1
animals	birds	Recurvirostridae	*Himantopus himantopus*	black-winged stilt		C		1
animals	birds	Rhipiduridae	*Rhipidura leucophrys*	willie wagtail		C		98
animals	birds	Rhipiduridae	*Rhipidura albiscapa*	grey fantail		C		33
animals	birds	Strigidae	*Ninox boobook*	southern boobook		C		20
animals	birds	Threskiornithidae	*Threskiornis molucca*	Australian white ibis		C		1
animals	birds	Threskiornithidae	*Threskiornis spinicollis*	straw-necked ibis		C		1
animals	birds	Threskiornithidae	*Platalea regia*	royal spoonbill		C		1
animals	birds	Turnicidae	*Turnix pyrrhothorax*	red-chested button-quail		C		4
animals	birds	Turnicidae	*Turnix velox*	little button-quail		C		4
animals	birds	Tytonidae	*Tyto javanica*	eastern barn owl		C		6
animals	insects	Nymphalidae	*Danaus plexippus plexippus*	monarch				1
animals	mammals	Bovidae	*Bos taurus*	European cattle	Y			49

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Canidae	*Canis lupus familiaris*	dog	Y			1
animals	mammals	Canidae	*Canis lupus dingo*	dingo				3
animals	mammals	Dasyuridae	*Sminthopsis murina*	common dunnart		C		1
animals	mammals	Dasyuridae	*Sminthopsis macroura*	stripe-faced dunnart		C		12
animals	mammals	Emballonuridae	*Saccolaimus flaviventris*	yellow-bellied sheathtail bat		C		7
animals	mammals	Equidae	*Equus caballus*	horse	Y			2
animals	mammals	Felidae	*Felis catus*	cat	Y			8
animals	mammals	Leporidae	*Oryctolagus cuniculus*	rabbit	Y			66
animals	mammals	Macropodidae	*Macropus rufus*	red kangaroo		C		67
animals	mammals	Macropodidae	*Wallabia bicolor*	swamp wallaby		C		2
animals	mammals	Macropodidae	*Macropus robustus*	common wallaroo		C		8
animals	mammals	Macropodidae	*Lagorchestes conspicillatus*	spectacled hare-wallaby		C		6
animals	mammals	Macropodidae	*Macropus giganteus*	eastern grey kangaroo		C		130
animals	mammals	Molossidae	*Tadarida australis*	white-striped freetail bat		C		5
animals	mammals	Molossidae	*Mormopterus sp.*					1
animals	mammals	Muridae	*Pseudomys delicatulus*	delicate mouse		C		58
animals	mammals	Muridae	*Leggadina forresti*	Forrest's mouse		C		2
animals	mammals	Muridae	*Mus musculus*	house mouse	Y			34
animals	mammals	Muridae	*Pseudomys desertor*	desert mouse		C		26
animals	mammals	Petauridae	*Petaurus breviceps*	sugar glider		C		1
animals	mammals	Phalangeridae	*Trichosurus vulpecula*	common brushtail possum		C		3
animals	mammals	Phascolarctidae	*Phascolarctos cinereus*	koala		C	V	7
animals	mammals	Potoroidae	*Aepyprymnus rufescens*	rufous bettong		C		11
animals	mammals	Pseudocheiridae	*Petauroides volans*	greater glider		C		1
animals	mammals	Suidae	*Sus scrofa*	pig	Y			4
animals	mammals	Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna		C		41
animals	mammals	Vespertilionidae	*Nyctophilus bifax*	northern long-eared bat		C		1
animals	mammals	Vespertilionidae	*Chalinolobus morio*	chocolate wattled bat		C		2
animals	mammals	Vespertilionidae	*Chalinolobus gouldii*	Gould's wattled bat		C		5
animals	mammals	Vespertilionidae	*Scotorepens balstoni*	inland broad-nosed bat		C		1
animals	mammals	Vespertilionidae	*Vespadelus vulturnus*	little forest bat		C		1
animals	mammals	Vespertilionidae	*Scotorepens greyii*	little broad-nosed bat		C		6
animals	reptiles	Agamidae	*Pogona barbata*	bearded dragon		C		22
animals	reptiles	Agamidae	*Diporiphora nobbi*	nobbi		C		2
animals	reptiles	Agamidae	*Ctenophorus nuchalis*	central netted dragon		C		9/2
animals	reptiles	Agamidae	*Amphibolurus gilberti*	Gilbert's dragon		C		1
animals	reptiles	Agamidae	*Diporiphora australis*			C		10
animals	reptiles	Carphodactylidae	*Nephrurus asper*	spiny knob-tailed gecko		C		4
animals	reptiles	Chelidae	*Chelodina longicollis*	eastern snake-necked turtle		C		1
animals	reptiles	Colubridae	*Boiga irregularis*	brown tree snake		C		2
animals	reptiles	Diplodactylidae	*Rhynchoedura ornata sensu lato*	beaked gecko		C		2
animals	reptiles	Diplodactylidae	*Diplodactylus conspicillatus*	fat-tailed diplodactylus		C		11
animals	reptiles	Diplodactylidae	*Lucasium steindachneri*	Steindachner's gecko		C		6
animals	reptiles	Diplodactylidae	*Strophurus williamsi*	soft-spined gecko		C		11
animals	reptiles	Diplodactylidae	*Amolosia rhombifer*	zig-zag gecko		C		4
animals	reptiles	Diplodactylidae	*Oedura monilis*			C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	reptiles	Elapidae	*Cryptophis boschmai*	Carpentaria whip snake		C		4
animals	reptiles	Elapidae	*Brachyurophis australis*	coral snake		C		2
animals	reptiles	Elapidae	*Hoplocephalus bitorquatus*	pale-headed snake		C		6
animals	reptiles	Elapidae	*Suta suta*	myall snake		C		7
animals	reptiles	Elapidae	*Demansia psammophis*	yellow-faced whip snake		C		10
animals	reptiles	Elapidae	*Suta dwyeri*			C		5/1
animals	reptiles	Elapidae	*Furina ornata*	orange-naped snake		C		4
animals	reptiles	Elapidae	*Pseudechis australis*	king brown snake		C		1
animals	reptiles	Gekkonidae	*Gehyra catenata*			C		55
animals	reptiles	Gekkonidae	*Gehyra dubia*			C		1
animals	reptiles	Gekkonidae	*Heteronotia binoei*	Bynoe's gecko		C		74
animals	reptiles	Pygopodidae	*Pygopus schraderi*			C		1
animals	reptiles	Pygopodidae	*Lialis burtonis*	Burton's legless lizard		C		2
animals	reptiles	Scincidae	*Cryptoblepharus virgatus sensu lato*			C		2
animals	reptiles	Scincidae	*Eremiascincus richardsonii*	broad-banded sand swimmer		C		2
animals	reptiles	Scincidae	*Eremiascincus fasciolatus*	narrow-banded sand swimmer		C		2
animals	reptiles	Scincidae	*Cryptoblepharus pannosus*	ragged snake-eyed skink		C		70
animals	reptiles	Scincidae	*Morethia taeniopleura*	fire-tailed skink		C		1
animals	reptiles	Scincidae	*Ctenotus pantherinus*			C		26
animals	reptiles	Scincidae	*Morethia boulengeri*			C		22
animals	reptiles	Scincidae	*Ctenotus leonhardii*			C		8
animals	reptiles	Scincidae	*Tiliqua scincoides*	eastern blue-tongued lizard		C		5
animals	reptiles	Scincidae	*Ctenotus robustus*			C		57
animals	reptiles	Scincidae	*Lerista fragilis*			C		28
animals	reptiles	Scincidae	*Carlia munda*			C		2
animals	reptiles	Scincidae	*Menetia greyii*			C		43
animals	reptiles	Typhlopidae	*Ramphotyphlops unguirostris*			C		2
animals	reptiles	Varanidae	*Varanus tristis*	black-tailed monitor		C		31
plants	conifers	Cupressaceae	*Callitris glaucophylla*	white cypress pine		C		1/1
plants	conifers	Cupressaceae	*Callitris*			C		1
plants	ferns	Adiantaceae	*Cheilanthes sieberi subsp. sieberi*			C		2/2
plants	higher dicots	Amaranthaceae	*Gomphrena celosioides*	gomphrena weed	Y			1/1
plants	higher dicots	Amaranthaceae	*Gomphrena lanata*			C		1/1
plants	higher dicots	Amaranthaceae	*Ptilotus polystachyus*			C		2/2
plants	higher dicots	Apocynaceae	*Carissa ovata*	currantbush		C		1
plants	higher dicots	Asteraceae	*Vittadinia sulcata*	native daisy		C		2/2
plants	higher dicots	Asteraceae	*Vittadinia pustulata*			C		2/2
plants	higher dicots	Asteraceae	*Calotis xanthosioidea*			C		2/2
plants	higher dicots	Asteraceae	*Coronidium glutinosum*			C		2/2
plants	higher dicots	Asteraceae	*Podolepis longipedata*	tall copper-wire daisy		C		1/1
plants	higher dicots	Asteraceae	*Chrysocephalum apiculatum*	yellow buttons		C		1/1
plants	higher dicots	Asteraceae	*Centipeda minima subsp. minima*			C		2/2
plants	higher dicots	Asteraceae	*Pterocaulon serrulatum var. velutinum*			C		1/1
plants	higher dicots	Asteraceae	*Pterocaulon serrulatum var. serrulatum*			C		1/1
plants	higher dicots	Asteraceae	*Calotis squamigera*			C		1/1
plants	higher dicots	Asteraceae	*Calotis cuneifolia*	burr daisy		C		2/2

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plants	higher dicots	Asteraceae	*Olearia xerophila*			C		2/2
plants	higher dicots	Asteraceae	*Camptacra barbata*			C		1/1
plants	higher dicots	Asteraceae	*Rutidosis leucantha*			C		4/4
plants	higher dicots	Boraginaceae	*Ehretia*			C		1
plants	higher dicots	Boraginaceae	*Heliotropium cunninghamii*			C		1/1
plants	higher dicots	Boraginaceae	*Heliotropium moorei*			C		2/2
plants	higher dicots	Cactaceae	*Opuntia stricta*		Y			1
plants	higher dicots	Caesalpiniaceae	*Lysiphyllum*			C		1
plants	higher dicots	Caesalpiniaceae	*Senna artemisioides*			C		1/1
plants	higher dicots	Caesalpiniaceae	*Petalostylis labicheoides*			C		2/2
plants	higher dicots	Capparaceae	*Capparis*			C		1
plants	higher dicots	Caryophyllaceae	*Polycarpaea corymbosa*			C		1/1
plants	higher dicots	Chenopodiaceae	*Dysphania melanocarpa forma melanocarpa*			C		1/1
plants	higher dicots	Chenopodiaceae	*Sclerolaena birchii*	galvanised burr		C		1/1
plants	higher dicots	Chenopodiaceae	*Dysphania kalpari*			C		1/1
plants	higher dicots	Convolvulaceae	*Convolvulus angustissimus subsp. angustissimus*			C		1/1
plants	higher dicots	Convolvulaceae	*Evolvulus alsinoides var. villosicalyx*			C		1/1
plants	higher dicots	Convolvulaceae	*Evolvulus alsinoides var. decumbens*			C		1/1
plants	higher dicots	Convolvulaceae	*Bonamia media var. media*			C		1/1
plants	higher dicots	Convolvulaceae	*Bonamia media*			C		1/1
plants	higher dicots	Convolvulaceae	*Polymeria sp. (Greenvale A.R.Bean 18928)*			C		1/1
plants	higher dicots	Erythroxylaceae	*Erythroxylum australe*	cocaine tree		C		1
plants	higher dicots	Euphorbiaceae	*Euphorbia drummondii*			C		1/1
plants	higher dicots	Euphorbiaceae	*Ricinocarpos linearifolius*			C		1/1
plants	higher dicots	Fabaceae	*Daviesia filipes*			C		1/1
plants	higher dicots	Fabaceae	*Zornia muriculata subsp. angustata*			C		1/1
plants	higher dicots	Fabaceae	*Crotalaria brevis*			C		1/1
plants	higher dicots	Fabaceae	*Hovea tholiformis*			C		1/1
plants	higher dicots	Fabaceae	*Glycine tomentella*	woolly glycine		C		1/1
plants	higher dicots	Fabaceae	*Indigofera colutea*	sticky indigo		C		1/1
plants	higher dicots	Fabaceae	*Aeschynomene indica*	budda pea		C		1/1
plants	higher dicots	Fabaceae	*Leptosema chapmanii*			C		1/1
plants	higher dicots	Fabaceae	*Stylosanthes scabra*		Y			1/1
plants	higher dicots	Fabaceae	*Desmodium brachypodum*	large ticktrefoil		C		1/1
plants	higher dicots	Fabaceae	*Desmodium macrocarpum*			NT		4/3
plants	higher dicots	Fabaceae	*Indigofera haplophylla*			C		1/1
plants	higher dicots	Fabaceae	*Jacksonia rhadinoclona*	Miles dogwood		C		1/1
plants	higher dicots	Fabaceae	*Gompholobium foliolosum*	fern-leaved burtonia		C		2/2
plants	higher dicots	Fabaceae	*Hovea parvicalyx*			C		1/1
plants	higher dicots	Goodeniaceae	*Dampiera discolor*			C		3/3
plants	higher dicots	Goodeniaceae	*Goodenia viridula*			C		1/1
plants	higher dicots	Goodeniaceae	*Goodenia hirsuta*			C		1/1
plants	higher dicots	Goodeniaceae	*Goodenia*			C		2/2
plants	higher dicots	Goodeniaceae	*Goodenia glabra*			C		3/3
plants	higher dicots	Goodeniaceae	*Goodenia goodeniacea*			C		1/1
plants	higher dicots	Lamiaceae	*Prostanthera collina*			C		1/1

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plants	higher dicots	Lamiaceae	*Chloanthes parviflora*			C		2/2
plants	higher dicots	Loranthaceae	*Amyema conspicua subsp. conspicua*			C		1/1
plants	higher dicots	Loranthaceae	*Amyema quandang var. bancroftii*	broad-leaved grey mistletoe		C		1/1
plants	higher dicots	Loranthaceae	*Lysiana subfalcata*			C		1/1
plants	higher dicots	Loranthaceae	*Lysiana spathulata subsp. spathulata*			C		1/1
plants	higher dicots	Lythraceae	*Ammannia multiflora*	jerry-jerry		C		1/1
plants	higher dicots	Malvaceae	*Sida*			C		1
plants	higher dicots	Malvaceae	*Sida corrugata*			C		1/1
plants	higher dicots	Malvaceae	*Sida brachypoda*			C		1/1
plants	higher dicots	Malvaceae	*Abutilon otocarpum*			C		1/1
plants	higher dicots	Malvaceae	*Sida hackettiana*			C		1
plants	higher dicots	Malvaceae	*Hibiscus burtonii*			C		2/2
plants	higher dicots	Malvaceae	*Sida atherophora*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia decora*	pretty wattle		C		4/4
plants	higher dicots	Mimosaceae	*Acacia spania*			NT		3/3
plants	higher dicots	Mimosaceae	*Acacia angusta*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia gnidium*			C		2/2
plants	higher dicots	Mimosaceae	*Acacia salicina*	doolan		C		2/2
plants	higher dicots	Mimosaceae	*Acacia shirleyi*	lancewood		C		4/4
plants	higher dicots	Mimosaceae	*Acacia complanata*	flatstem wattle		C		1/1
plants	higher dicots	Mimosaceae	*Acacia elachantha*			C		2/2
plants	higher dicots	Mimosaceae	*Acacia melleodora*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia platycarpa*			C		4/4
plants	higher dicots	Mimosaceae	*Acacia dietrichiana*			C		2/2
plants	higher dicots	Mimosaceae	*Acacia leptostachya*	Townsville wattle		C		3/3
plants	higher dicots	Mimosaceae	*Acacia longispicata*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia sericophylla*			C		1/1
plants	higher dicots	Mimosaceae	*Archidendropsis basaltica*	red lancewood		C		2
plants	higher dicots	Mimosaceae	*Acacia crassa subsp. crassa*			C		3/3
plants	higher dicots	Mimosaceae	*Acacia sp. (Comet L.Pedley 4091)*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia leiocalyx subsp. leiocalyx*			C		1/1
plants	higher dicots	Mimosaceae	*Acacia julifera subsp. curvinervia*			C		4/4
plants	higher dicots	Mimosaceae	*Acacia sp. (Jericho G.R.Beeston 1065C)*			C		2/2
plants	higher dicots	Myoporaceae	*Eremophila mitchellii*			C		1
plants	higher dicots	Myoporaceae	*Eremophila latrobei subsp. glabra*			C		1/1
plants	higher dicots	Myoporaceae	*Eremophila latrobei subsp. latrobei*			C		1/1
plants	higher dicots	Myrtaceae	*Ochrosperma adpressum*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus cambageana*	Dawson gum		C		1/1
plants	higher dicots	Myrtaceae	*Corymbia leichhardtii*	rustyjacket		C		3/3
plants	higher dicots	Myrtaceae	*Corymbia lamprophylla*			C		3/3
plants	higher dicots	Myrtaceae	*Micromyrtus gracilis*			C		1/1
plants	higher dicots	Myrtaceae	*Corymbia tessellaris*	Moreton Bay ash		C		1
plants	higher dicots	Myrtaceae	*Corymbia brachycarpa*			C		5/5
plants	higher dicots	Myrtaceae	*Eucalyptus populnea*	poplar box		C		2
plants	higher dicots	Myrtaceae	*Calytrix microcoma*			C		1/1
plants	higher dicots	Myrtaceae	*Eucalyptus melanophloia*			C		1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	higher dicots	Myrtaceae	*Eucalyptus drepanophylla*			C		9/9
plants	higher dicots	Myrtaceae	*Lysicarpus angustifolius*	budgeroo		C		1/1
plants	higher dicots	Myrtaceae	*Micromyrtus rotundifolia*			V		1/1
plants	higher dicots	Nyctaginaceae	*Boerhavia pubescens*			C		1/1
plants	higher dicots	Pentapetaceae	*Melhania oblongifolia*			C		1/1
plants	higher dicots	Phyllanthaceae	*Phyllanthus fuernrohrii*			C		1/1
plants	higher dicots	Phyllanthaceae	*Phyllanthus virgatus*			C		1/1
plants	higher dicots	Phyllanthaceae	*Phyllanthus*			C		2/2
plants	higher dicots	Phyllanthaceae	*Phyllanthus maderaspatensis var. maderaspatensis*			C		1/1
plants	higher dicots	Polygalaceae	*Comesperma pallidum*			C		1/1
plants	higher dicots	Polygalaceae	*Polygala linariifolia*			C		1/1
plants	higher dicots	Proteaceae	*Hakea lorea subsp. lorea*			C		1/1
plants	higher dicots	Proteaceae	*Grevillea parallela*			C		4/4
plants	higher dicots	Proteaceae	*Grevillea striata*	beefwood		C		1
plants	higher dicots	Proteaceae	*Hakea*			C		1
plants	higher dicots	Proteaceae	*Grevillea pteridifolia*	golden parrot tree		C		3/3
plants	higher dicots	Proteaceae	*Grevillea decora subsp. decora*			C		2/2
plants	higher dicots	Rhamnaceae	*Alphitonia excelsa*	soap tree		C		2/2
plants	higher dicots	Rubiaceae	*Psydrax oleifolia*			C		1
plants	higher dicots	Rubiaceae	*Spermacoce brachystema*			C		1/1
plants	higher dicots	Rutaceae	*Geijera parviflora*	wilga		C		1
plants	higher dicots	Rutaceae	*Boronia odorata*			C		2/2
plants	higher dicots	Rutaceae	*Boronia occidentalis*			C		2/2
plants	higher dicots	Santalaceae	*Anthobolus leptomerioides*			C		1/1
plants	higher dicots	Santalaceae	*Exocarpos sparteus*	slender cherry		C		1/1
plants	higher dicots	Sapindaceae	*Atalaya hemiglauca*			C		1
plants	higher dicots	Sapindaceae	*Dodonaea filifolia*			C		1/1
plants	higher dicots	Sapindaceae	*Dodonaea peduncularis*			C		1/1
plants	higher dicots	Sapindaceae	*Dodonaea stenophylla*			C		1/1
plants	higher dicots	Scrophulariaceae	*Glossostigma diandrum*			C		1/1
plants	higher dicots	Solanaceae	*Solanum ferocissimum*			C		1/1
plants	higher dicots	Solanaceae	*Solanum cleistogamum*			C		1/1
plants	higher dicots	Stackhousiaceae	*Stackhousia viminea*	slender stackhousia		C		1/1
plants	higher dicots	Stylidiaceae	*Stylidium eglandulosum*			C		2/2
plants	higher dicots	Stylidiaceae	*Stylidium eriorhizum*			C		1/1
plants	higher dicots	Thymelaeaceae	*Pimelea trichostachya*	flaxweed		C		1/1
plants	higher dicots	Verbenaceae	*Verbena halei*		Y			1
plants	monocots	Cyperaceae	*Schoenoplectus laevis*			C		1/1
plants	monocots	Cyperaceae	*Bulbostylis barbata*			C		1/1
plants	monocots	Cyperaceae	*Cyperus nervulosus*			C		1/1
plants	monocots	Cyperaceae	*Cyperus dactylotes*			C		1/1
plants	monocots	Hemerocallidaceae	*Dianella longifolia var. stupata*			C		1/1
plants	monocots	Laxmanniaceae	*Lomandra leucocephala subsp. leucocephala*			C		3/3
plants	monocots	Laxmanniaceae	*Lomandra leucocephala*			C		1/1
plants	monocots	Poaceae	*Aristida lignosa*			C		1/1
plants	monocots	Poaceae	*Themeda triandra*	kangaroo grass		C		2/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	monocots	Poaceae	*Triraphis mollis*	purple plumegrass		C		2/2
plants	monocots	Poaceae	*Aristida calycina*			C		1/1
plants	monocots	Poaceae	*Cenchrus ciliaris*		Y			1/1
plants	monocots	Poaceae	*Digitaria brownii*			C		1/1
plants	monocots	Poaceae	*Enneapogon virens*			C		1/1
plants	monocots	Poaceae	*Paspalidium rarum*			C		2/2
plants	monocots	Poaceae	*Setaria apiculata*			C		1/1
plants	monocots	Poaceae	*Eragrostis sororia*			C		3/3
plants	monocots	Poaceae	*Eriachne aristidea*			C		3/3
plants	monocots	Poaceae	*Eriachne mucronata*			C		1/1
plants	monocots	Poaceae	*Triodia mitchellii*	buck spinifex		C		2/2
plants	monocots	Poaceae	*Cymbopogon ambiguus*	lemon grass		C		1/1
plants	monocots	Poaceae	*Digitaria ammophila*	silky umbrella grass		C		3/3
plants	monocots	Poaceae	*Eragrostis elongata*			C		1/1
plants	monocots	Poaceae	*Eragrostis speciosa*			C		3/3
plants	monocots	Poaceae	*Digitaria longiflora*			C		1/1
plants	monocots	Poaceae	*Eragrostis lacunaria*	purple lovegrass		C		1/1
plants	monocots	Poaceae	*Cymbopogon bombycinus*	silky oilgrass		C		2/2
plants	monocots	Poaceae	*Eragrostis lanicaulis*			C		2
plants	monocots	Poaceae	*Heteropogon contortus*	black speargrass		C		1
plants	monocots	Poaceae	*Schizachyrium fragile*	firegrass		C		2/2
plants	monocots	Poaceae	*Aristida caput-medusae*			C		1/1
plants	monocots	Poaceae	*Arundinella nepalensis*	reedgrass		C		1/1
plants	monocots	Poaceae	*Bothriochloa decipiens*			C		1
plants	monocots	Poaceae	*Thyridolepis xerophila*			C		1/1
plants	monocots	Poaceae	*Urochloa subquadripara*		Y			1/1
plants	monocots	Poaceae	*Dactyloctenium radulans*	button grass		C		1/1
plants	monocots	Poaceae	*Eragrostis spartinoides*			C		1/1
plants	monocots	Poaceae	*Enneapogon robustissimus*			C		1/1
plants	monocots	Poaceae	*Aristida calycina var. calycina*			C		2/2
plants	monocots	Poaceae	*Dinebra decipiens var. decipiens*			C		1/1
plants	monocots	Poaceae	*Aristida holathera var. holathera*			C		2/2
plants	monocots	Poaceae	*Eriachne mucronata forma (Alpha C.E.Hubbard 7882)*			C		1/1
plants	monocots	Poaceae	*Aristida ingrata*			C		1/1
plants	monocots	Poaceae	*Triodia pungens*			C		2/2
plants	monocots	Poaceae	*Setaria surgens*			C		2/2
plants	monocots	Poaceae	*Panicum effusum*			C		1/1
plants	monocots	Poaceae	*Melinis repens*	red natal grass	Y			1/1
plants	monocots	Poaceae	*Eulalia aurea*	silky browntop		C		1/1
plants	monocots	Poaceae	*Aristida*			C		2
plants	monocots	Poaceae	*Perotis rara*	comet grass		C		1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.* The codes are Extinct in the Wild (PE), Endangered (E), Vulnerable (V), Near Threatened (NT), Least Concern (C) or Not Protected ( ).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.* The values of EPBC are Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Extinct in the Wild (XW) and Vulnerable (V).

Records – The first number indicates the total number of records of the taxon for the record option selected (i.e. All, Confirmed or Specimens).
This number is output as 99999 if it equals or exceeds this value. The second number located after the / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.