FLORA AND VEGETATION OF ACCESS ROAD MARBLE BAR -TELFER ROAD TO KINTYRE



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STATEMENT OF LIMITATIONS

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This report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Eleanor Bennett ("the Author"). In some circumstances a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services.

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SUMMARY

Dr Eleanor Bennett with assistance from Mr John Bennett undertook a vegetation and flora survey of the proposed road between Kintyre and the Telfer-Marble Bar road from 16th – 22nd August 2011. This survey occurred after excellent rainfall earlier in the year so many plants were in flower, although some annuals, particularly those growing in heavier soils had completed their life cycle. Access through the area between the current Telfer Road and the Telfer-Marble Bar Road was by careful 4-wheel driving or by foot. One day a helicopter dropped us off and collected us at the end of the day enabling a section of this area to be surveyed. Of the total length of this section about 6km were not driven or walked. Aerial interpretation was made from the helicopter and aerial maps provided prior to the field work.

Most of the vegetation was a grassland, predominantly *Triodia basedowii* and/or *Triodia schinzii* with emergent shrubs or trees. There were sand dunes, rivers, claypans and some rock outcrops where the vegetation changed slightly. The vegetation units described for the proposed access road are summarised below.

TREES

Hill slopes or Rocky Ground

- Open Woodland of *Eucalyptus leucophloia* over Tall Grass of *Triodia basedowii* or *Triodia schinzii*.
- Open Low Woodland A of *Corymbia aspersa* over Low Heath C of mixed shrub species over Tall Grass dominated by *Amphipogon caricinus* and *Eriachne mucronata*.

Sandy Soil, Flat Ground

- Open Woodland to Woodland of *Corymbia opaca* and/or *Eucalyptus victrix* over Mid-Dense to Dense Hummock Grass of *Triodia basedowii* or *Triodia schinzii.*
- Open Low Woodland A of *Acacia pachycarpa* over Tall Grass of *Chrysopogon pallidus* and **Cenchrus ciliaris*.

MALLEES

- Open Shrub Mallee of *Eucalyptus kingsmillii* and/or *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia basedowii*.
- Open Shrub Mallee of *Eucalyptus kingsmillii* and/or *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia schinzii*.
- Shrub Mallee of *Eucalyptus gamophylla* over Open Low Scrub A of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia schinzii.*

SHRUBS

Shrubs Greater than 3m tall

- Open Scrub of *Acacia coriacea* subsp. *pendens* over Low Heath C of mixed shrubs including *Scaevola parvifolia* subsp. *pilbare* and *Bonamia rosea* over Open Hummock Grass of *Triodia basedowii* and *Triodia schinzii*.
- Scrub of *Hakea lorea* over Mid-Dense to Dense Hummock Grass of *Triodia basedowii*.
- Scrub of *Acacia eriopoda* over Dwarf Scrub C of mixed taxa over Dense Hummock Grass of *Triodia basedowii*.

Shrubs Between 3m and 1m

- Scrub of *Acacia ancistrocarpa* over Dense Hummock Grass of *Triodia basedowii* occasionally *Triodia schinzii*.
- Scrub of *Acacia ligulata* over Dense Hummock Grass of *Triodia basedowii*.
- Thicket of *Grevillea stenostachya* or *Grevillea wickhamii* over Low Scrub A of *Acacia dictyophleba* over Dense Hummock Grass of *Triodia basedowii*.
- Scrub of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia basedowii*.
- Open Scrub of *Acacia synchronicia* over Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Eremophila forrestii* subsp. *forrestii* over Dense Hummock Grass of *Triodia basedowii.*

- Scrub of *Acacia wanyu* over Dwarf Scrub C of *Senna artemisioides* subsp. *oligophylla* over Dense Hummock Grass of *Triodia basedowii*.
- Low Scrub B of *Sida* sp. Sand Dunes over Open Dwarf Scrub of *Corchorus sidoides* subsp. *sidoides* over Hummock Grass of *Triodia basedowii* and Open Tall Grass of *Eragrostis eriopoda.*

Shrubs Less than 1m Tall

- Low Heath C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*.
- Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over herbs and grasses including **Cenchrus ciliaris*.
- Dwarf Scrub C dominated by *Dicrastylis dorrienii* and *Dampiera cinerea* over Hummock Grass of *Triodia schinzii* and Open Tall Grass of *Aristida holathera* and *Eriachne aristida*.

GRASSLAND

- Mid-Dense Hummock Grass of *Triodia pungens* and *Triodia basedowii* with scattered low shrubs.

AREAS WITH CLAYPANS

- Dwarf Scrub C of *Sclerolaena, Maireana* and *Frankenia* species over Dense Hummock Grass of *Triodia basedowii* in the clay pans.
- Scrub of *Acacia wanyu* over Open Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Low Heath D dominated by *Sclerolaena* and *Maireana* species.

CREEKS / DRAINAGE LINES

- Open Low Woodland B of *Corymbia opaca* over Dense Hummock Grass of *Triodia basedowii* or **Cenchrus ciliaris*.
- Thicket of *Acacia tumida, Grevillea wickhamii* and *Grevillea eriostachya* over Low Heath C dominated by *Jacksonia aculeata*.
- Low Woodland A of *Eucalyptus victrix* over Dense Tall Grass of *Sorghum plumosum* and **Cenchrus ciliaris*.
- Open Low Woodland A of *Eucalyptus camaldulensis* over Dense Tall Grass of **Cenchrus ciliaris*.
- Low Woodland A of *Eucalyptus camaldulensis* over Low Scrub A of *Acacia marramaba* over Very Open Tall Grass of *Sorghum plumosum*.

No Threatened or Priority Ecological Communities but two of the Beard vegetation units, suggested by Kendrick (2001) to be of reservation priority in this bioregion were recorded. These are:

- Shrubland, mulga scrub (Beard Vegetation Code 39) which has a high priority reservation status was only recorded where route C departs from the current Telfer Road; and
- Hummock grasslands, shrub steppe or mixed shrubs over spinifex between sandhills (Beard Vegetation Code 136) which has a medium reservation status were recorded between several of the large sand dune liness.

However as the road is relatively narrow the impact on these will be minimal.

No Threatened Flora but two Priority Flora were recorded. These were:

- Priority 2 flora, *Thysanotus* sp. Desert East of Newman (RP Hart 964) was recorded from 4 sites; and
- Priority 3 flora *Indigofera ammobia*, which was recorded from 1 site.

Three weeds were recorded during this survey. These are:

- **Aerva javanica* observed along several areas of the present Telfer to Kintyre Road;
- **Cenchrus ciliaris* abundant along the road verge and creek banks; and
- **Citrullus lanatus*, recorded once along the Telfer Road.

The vegetation condition of the proposed route, Option C was in excellent to very good condition except close to the Telfer-Marble Bar Road. The vegetation along the current Telfer Road varied considerably from excellent to degraded depending upon the presence and density of **Cenchrus ciliaris* and **Aerva javanica*.

Generally the impact of the proposed road will be minimal along the current Telfer Road but as the bushland traversed by Option C currently has no development the impact could be substantial. It is important that the company ensures that minimal damage occurs to the bushland outside of the proposed access road. This will require the following:

- Equipment utilised to construct the road along Option C are cleaned of all soil and vegetation prior to entering this area;
- If or as any weeds are observed along this section of the track they are removed immediately, especially before any flowering can occur;
- When creeks are crossed that some permanent construction, eg bridge or ford ensure that the river does not wash away the road and that the impact of the road on the creek is not increased; and
- Where sand dunes are crossed or reduced in size for road access that the 'cuts' are stabilised so that the sand does not move back over the access.

1 INTRODUCTION

1.1 BACKGROUND

Several surveys have been undertaken of the areas nominated for the proposed disturbance within the Kintyre lease to the north of Rudall River National Park (Bennett Environmental Consulting Pty Ltd., 2007, 2010 and 2011). Martinick and Associates (1986, 1987a,b,c,d) undertook a flora and vegetation and fauna surveyof a large area including the current Kintyre lease.

This current survey is to map the vegetation of the proposed road from the Marble Bar - Telfer Road to Kintyre. There were several proposed routes but a final one was selected and it was this route which was surveyed.

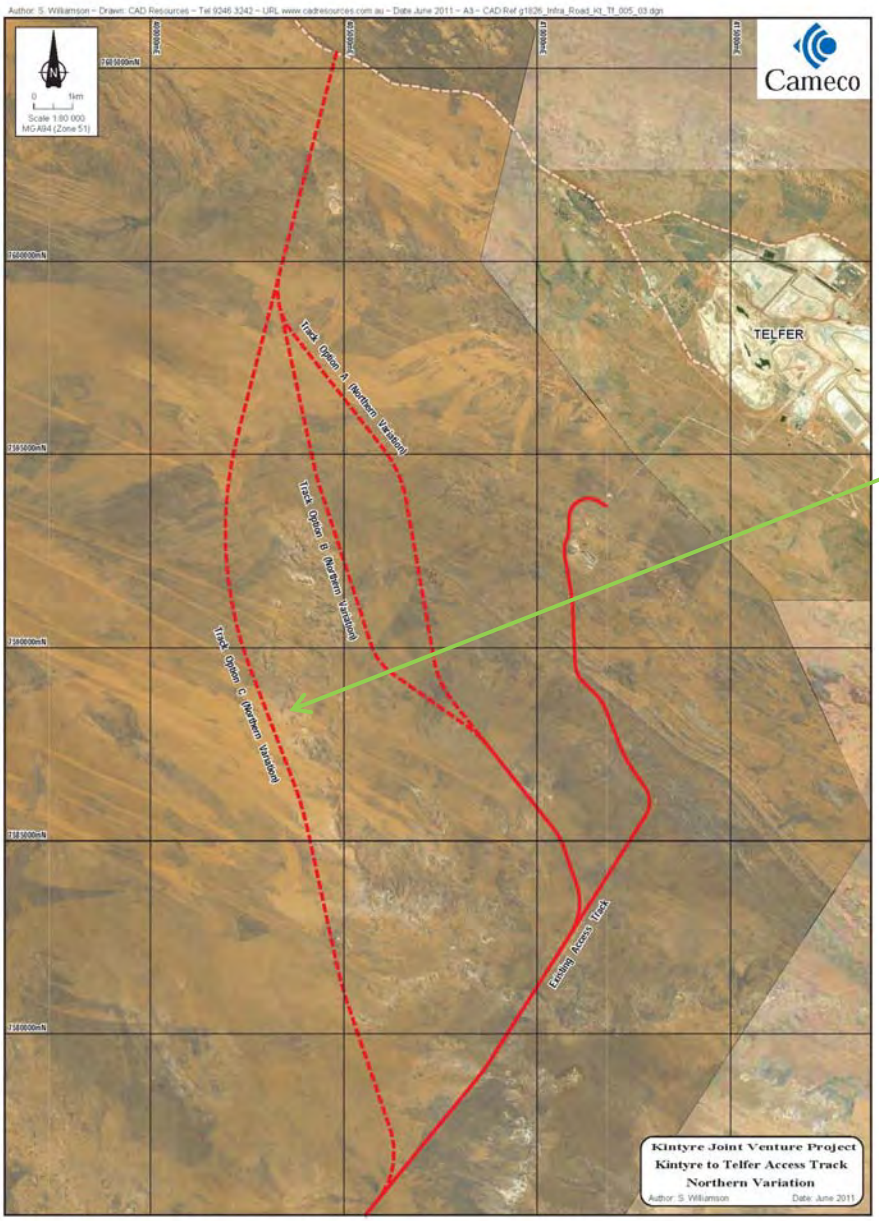

Diagram 1. Three alternatives for proposed road.

The most western road (option c) was the route selected and surveyed. To the south of the area illustrated the road follows the current track from Telfer to Kintyre

From Diagram 1 it can be observed that most of the proposed route traversed sandy soils, including sand dunes but does include a few, limited areas of rocky outcrops.

1.2 Scope of Work

The requirements for the current survey were to:

i. Conduct a targeted survey of the proposed route for:
   - Threatened Flora listed under the Commonwealth Environment Protection and Biodiversity Conservation Act (EPBC Act);
   - Declared Rare and Threatened Flora listed under the WA Wildlife Conservation (Rare Flora) Notice 2010;
   - Priority Flora recognised by Department of Environment and Conservation (DEC);
   - TECs listed under the Commonwealth EPBC Act;
   - TECs endorsed by the Minister of the Environment;
   - PECs recognised by DEC;
   - Declared weeds listed under the Agriculture and Related Resources Protection Act, 1976 and other environmental weed species. Co-ordinate locations and photographs of the above are to be provided and
   - Describe condition of the vegetation communities or areas using a published rating scale;

ii. Describe the vegetation units and record the associated flora of each unit using relevees;

iii. Record the vegetation condition along the proposed route; and

iv. Describe the representation in a regional context of each vegetation community.

2. Conservation Significance

The conservation significance of flora and ecological communities is classified at a Commonwealth, State and Local level on the basis of various Acts and Agreements (EPA *Guidance Statement No. 51*, EPA 2004).

Commonwealth Level:

- *EPBC Act 1999*: The Department of the Environment, Water, Heritage and the Arts (DEWHA) lists Threatened Flora and Ecological Communities, which are determined by the Threatened Species Scientific Committee according to criteria set out in the Act (DEWHA 2010). The Act lists flora that are considered to be of conservation significance under one of six categories.

State Level:

- *Wildlife Conservation Act 1950*: At a State level, native flora species are protected under the *Wildlife Conservation Act 1950 - Wildlife Conservation (Rare Flora) Notice.* A number of plant species are assigned an additional level of conservation significance based on a limited number of known populations and the perceived threats to these locations. Species of the highest conservation significance are gazetted Threatened Flora (TF) under subsection 2 of section 23F of the *Wildlife Conservation Act 1950.* It is an offence to take or damage DRF without Ministerial approval. Section 23F of the *Wildlife Conservation Act* (1950) defines 'to take' as "to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means" (Department of Environment and Conservation, 2011a).
- DEC Priority list: DEC produces a list of Priority species and ecological communities (PEC's) that have not been assigned statutory protection under the *Wildlife Conservation Act 1950*. Priority Flora are under consideration for declaration as 'Rare Flora', classified as in urgent need of further survey (Priority One to Three) or require monitoring every 5-10 years (Priority Four).

Local Level:

- Species may be considered of local conservation significance because of their patterns of distribution and abundance. Although not formally protected by legislation, such species are acknowledged to be in decline as a result of threatening processes, primarily habitat loss through land clearing.

2.1 Significant Flora

Prior to the field work being undertaken a search of the Department of Environment and Conservation Rare Flora Database was undertaken. This resulted in an extensive list as provided in Table 3. Those species recorded from within or close to the search area are highlighted in that table.

Table 1 presents the definitions of Declared Rare and the four Priority Flora ratings under the Wildlife Conservation Act (1950) as extracted from Department of Environment and Conservation (2011a). Table 2 presents the definitions of the threatened species under the Environmental Protection and Biodiversity Conservation Act, 1999 (Department of the Environment, Water, Heritage and the Arts, 2011).

Table 1. State Level - Code and description of Rare and Priority Flora

Code	Code Threatened and Priority Flora Categories
T	T (Threatened Flora) -Extant Taxa. Taxa, which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection.
X	DRF (Declared Rare Flora) -Presumed Extinct Taxa. Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently.
1	Priority One -Poorly Known Taxa. Taxa, which are known from one or a few (generally <5) populations, which are under threat.
2	Priority Two -Poorly Known Taxa. Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat.
3	Priority Three -Poorly Known Taxa. Taxa, which are known from several populations, at least some of which are not believed to be under immediate threat.
4	Priority Four -Rare Taxa. Taxa which are considered to have been adequately surveyed and which whilst being rare, are not currently threatened by any identifiable factors.

Table 2. Commonwealth Level - Categories of Threatened Flora Species (Environmental Protection and Biodiversity Conservation Act, 1999)

Code	Categories
Ex	Extinct Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of this species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa which at any particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	Endangered Taxa, which is not critically endangered, and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

Code	Categories
CD	Conservation Dependent Taxa which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Table 3. Priority Flora provided by the Department of Environment and Conservation with those taxa recorded within or close to the study area highlighted

STATUS	TAXON	RECORDED DISTRIBUTION
T	*Lepidium catapycnon*	Wittenoom Gorge, Hamersley Range, Weeli Wolli, Newman
T	*Thryptomene wittweri*	Hamersley Range, Mt Augustus, Carnarvon Range, White Cliffs Stn, NT
1	*Abutilon pritzelianum*	Carnarvon, Port Headland, Lake McLeod
1	*Abutilon uncinatum* ms	Onslow, Yaraloola Stn
1	*Acacia aphanoclada*	Nullagine
1	*Acacia cyperophylla* var. *omearana*	Nullagine
1	*Acacia leeuweniana*	Spear Hill, Wodgina
1	*Acacia* sp. Marble Bar (J.G. & M.H. Simmons 3499)	Marble Bar
1	*Acacia* sp. Nullagine (B.R. Maslin 4955)	Nullagine
1	*Aluta quadrata*	Mt Channar, Paraburdoo
1	*Aristida jerichoensis* var. *subspinulifera*	East Angelas, Sylvania Stn, Newman
1	*Atriplex eremitis*	De Grey Stn
1	*Atriplex spinulosa*	Nullagine
1	*Barbula ehrenbergii*	Dale's Gorge, Hamersley Range
1	*Bothriochloa decipens* var. *cloncurrensis*	Hamersley Range
1	*Brachyscome* sp. Wanna Munna Flats (S. van Leeuwen 4662)	Tom Price, Newman
1	*Brunonia* sp. Long hairs (D.E. Symon 2440)	Schwerin Mural Crescent, Newman
1	*Calotis squamigera*	Wittenoom, Hamersley Range
1	*Cyperus victoriensis*	Oobagooma, Onslow
1	*Desmodium pullenii*	Shay Gap,Mitchell Plateau
1	*Dicrastylis mitchellii*	Killara Stn, Turee Creek
1	*Eragrostis* sp.Mt Robinson (S.van Leeuwen 4109)	Hamersley Range
1	*Eremophila appressa*	Kumarina, Bulloo Downs
1	*Eremophila humilis*	Mulgul Stn, Mt Vernon Stn
1	*Eremophila maculata* subsp. *filifolia*	Muccan Stn
1	*Eremophila pilosa*	Roy Hill, Jigalong Community
1	*Eremophila* sp. West Angelas (S. van Leeuwen 4086)	West Angelas Hill, Opthalmia, Hamersley Range
1	*Eremophila* sp.Snowy Mountain (S. van. Leeuwen 3737)	Hamersley Range
1	*Eremophila spongiocarpa*	Mt Marsh, Chichester Range, Marillana Station, Mulga Downs Station
1	*Eremophila tenella*	Paterson Range
1	*Eucalyptus lucens*	Hamersley Range
1	*Eucalyptus semota*	Marymia Hill, Doolgunna Stn., Little Sandy Desert
1	*Euphorbia parvicaruncula*	Cavenagh Range, Balfour Downs Stn, South Australia, Northern Territory
1	*Fimbristylis* sp. Shay Gap (KR Newbey 10293)	Shay Gap

STATUS	TAXON	RECORDED DISTRIBUTION
1	*Goodenia lyrata*	Laverton, Newman
1	*Goodenia pallida*	Fortescue
1	*Goodenia pedicellata*	Telfer
1	*Gunniopsis* sp. Fortescue (M Trudgen 11019)	South Fortescue Pipeline
1	*Helichrysum oligochaetum*	Port Walcott, Ashburton Downs
1	*Heliotropium muticum*	Port Headland, Pippingarra Stn
1	*Heliotropium parviantrum*	De Grey River, Derby
1	*Josephinia* sp. Marandoo (M Trudgen 1554)	Marandoo, West Angelas
1	*Lepidium amelum*	Tanguin Hill
1	*Maireana* sp. Patience (C. P. Campbell 1052)	Gibson Desert
1	*Mimulus clementii*	Between Ashburton and De Grey Rivers
1	*Myriocephalus scalpellus*	Roy Hill
1	*Nicotiana heterantha*	Broome, Dampier Peninsula, Roy Hill, Mandora, Anna Plains
1	*Peplidium* sp. Fortescue marsh (S. van Leeuwen 4865	Roy Hill
1	*Pityrodia* sp. Marble Bar (G. Woodman & D. Coultas GWDC Opp 4)	Marble Bar
1	*Ptilotus appendiculatus* var. *minor*	Port Hedland, Boodardee
1	*Ptilotus mitchellii*	Mt Boggola
1	*Rhodanthe ascendens*	Gascoyne Junction, Middalya Station, Karijini N.P.
1	*Rothia indica* subsp. *australis*	Derby
1	*Scaevola* sp. Isabella Range (R.D. Royce 1918)	Isabella Range
1	*Senna* sp. Millstream (E. Leyland s.n. 30/8/1990)	Millstream
1	*Sida* sp. Hamersley Range (K. Newbey 10692)	Hamersley Range, Lawloit Range
1	*Sporobolus pulchellus*	Pyramid Stn
1	*Stemodia* sp. Battle Hill (A.L. Payne 1006)	Roy Hill Stn
1	*Tecticornia* sp. Christmas Creek (K.A. Shepherd and T. Colmer et al. KS 1063)	Fortescue Marsh, Roy Hill Stn
1	*Tecticornia* sp. Fortescue Marsh (KA Shepherd et. al. KS1055)	Fortescue Marsh
1	*Tephrosia andrewii*	Port Hedland-Broome
1	*Tephrosia rosea* var. *venulosa* ms	Peeawah River, Finucane Is.
1	*Tetratheca fordiana* ms	West Angelas, Hamersley Range
1	*Tribulus minutus*	Nullagine
1	*Triodia triticoides*	Ord River, Kununurra, Newman
1	*Vittadinia* sp. Coondewanna Flats (s. van Leeuwen 4684)	Hamersley Range
2	*Abutilon* sp. Quobba (H Demarz 3858)	Quobba, Cape Range, Minilya
2	*Abutilon* sp.Cape Range (A.S. George 1312)	Cape Range, Yardie Creek, Learmonth
2	*Acacia auripila*	Rudall River
2	*Acacia ryaniana*	Cape Cuvier, Quobba, Coral Bay, Cape Range N.P.
2	*Acanthocarpus rupestris*	Cape Range, Shark Bay
2	*Adiantum capillus-veneris*	Hamersley Range, Karijini N.P., Peppermint Grove
2	*Aristida calycina* var. *calycina*	Karijini N.P., Eastern States
2	*Aristida lazaridis*	Karijini N.P., Queensland
2	*Carpobrotus* sp. Thevenard Island (MR	Thevenard Island

	White 050)	
2	*Cladium procerum*	Karijini N.P., Millstream-Chichester N.P.
2	*Crinum flaccidum*	Yardie Creek, Minilya, Cape Range, Eastern States
2	*Cucumis* sp. Barrow Island (D.W. Goodall 1264)	Barrow Island
2	*Daviesia pleurophylla*	Cape Range
2	*Dicladanthera glabra*	Wittenoom, Robe River, Hamersley Gorge, Marandoo, Mt Mossenson
2	*Eremophila forrestii* subsp. Pingandy (M.E. Trudgen 2662)	Karijini NP, Hamersley Range NP, Turee Creek Stn
2	*Eremophila occidens*	Cape Range, Kalbarri
2	*Euphorbia clementii*	Port Hedland area, Yarrie
2	*Euphorbia* sp. Mt Bruce Flats (S. van Leeuwen 3861)	Karijini NP
2	*Gompholobium karijini*	Wittenoom
2	*Gomphrena cucullata*	Derby, King Sound, Pt Hedland, Lennard River
2	*Gomphrena pusilla*	Dampier Peninsula, Pt Hedland
2	*Goodenia hartiana*	Rudall River, Telfer, Jimblebar, Warrawagine Stn
2	*Harnieria kempeana* subsp. *rhadinophylla*	Cape Range
2	*Indigofera ixocarpa*	Marandoo, Tom Price, Nullagine, Karijini NP
2	*Isotropis parviflora*	East Angelas, Karijini N.P., Tanami Desert
2	*Oxalis* sp. Pilbara (M.E. Trudgen 12725)	Karijini N.P., Hamersley Range
2	*Paspalidium retiglume*	Halls Creek, Chichester Range
2	*Pilbara trudgenii*	Hamersley Range
2	*Ptilotus marduguru*	Southesk Tablelands
2	*Rhodanthe frenchii*	Mt Augustus, Capricorn Range, Barlee Range, Williambury Station
2	*Scaevola* sp. Hamersley Range basalts (S. van Leeuwen 3675)	Hamersley Range
2	*Senna* sp. Barlee Range (S. van Leeuwen 1520)	Barlee Range NR
2	*Spartothamnella puberula*	Mt Bruce, Hamersley Range, West Angelas, NT
2	*Stylidium weeliwolli*	Mt Augustus, Barlee Range
2	*Thysanotus* sp. Desert East of Newman (R.P. Hart 964)	Warburton, Gibson Desert, Collier Range, Rudall River
2	*Tinospora esiangkara*	Cape Range, NT, Qld
2	*Verticordia serotina*	Cape Range N.P.
2	*Vigna* sp. Central (M.E. Trudgen 1626)	Karijini N.P., Nyang Stn, Warrawagine Stn
3	*Acacia alexandri*	Cape Range, Exmouth
3	*Acacia daweana*	Hamersley Range, Karijini N.P.
3	*Acacia effusa*	Mt Bruce, Hamersley Ra., Karijini N.P., Juna Downs
3	*Acacia fecunda*	Nullagine, Skull Springs, Oakover River
3	*Acacia glaucocaesia*	Karratha, Port Hedland, Mardie, Roebourne, De Grey
3	*Acacia levata*	Marble Bar, Woodstock H/S, Hillside
3	*Acacia startii*	Cape Range, Rough Range, Minilya River, Bullara Station
3	*Acacia subtiliformis*	Hamersley Ranges, Hancock Range, Ophthalmia Range, Hope Down North, Marillana Stn
3	*Amaranthus centralis*	Newman
3	*Ampelopteris prolifera*	Barlee Range N.R., Doongan Stn, Karijini N.P., Prince Regent River
3	*Astrebla lappacea*	Hamersley Stn, NT, Eastern States
3	*Atriplex flabelliformis*	Roy Hill Stn, Gordon Downs Stn, Marillana Stn
3	*Atriplex lindleyi* subsp. *conduplicata*	Credo Stn, Norseman, Karratha Stn, Balfour Downs Stn
3	*Calotis latiuscula*	Giles, Warburton, Blackstone Range, Rawlinson Range, Hamersley Range

STATUS	TAXON	RECORDED DISTRIBUTION
3	*Calytrix praecipua*	Melita Station, Laverton, Youno Downs, Wanjarri, Marymia, Erong Hmstd, Niagara Dam
3	*Comesperma pallidum*	Great Sandy Desert, Little Sandy Desert, Canning Stock Route
3	*Corchorus congener*	Exmouth, Ningaloo Station, Barrow Is.
3	*Crotalaria smithiana*	Sturt Creek Stn, Ethel Creek Stn, Roy Hill Stn, Eastern States
3	*Dampiera anonyma* ms	Mt Bruce, Mt Nameless, Hamersley Ranges, Mt Sheila, Karijini NP
3	*Dampiera atriplicina*	Gregory Range, Jupiter Well, Gibson Desert, Little Sandy Desert, Canning Stock Route
3	*Dampiera metallorum* ms	Hamersley Range, Mt Meharry, West Angelas, Karijini NP
3	*Daviesia arthropoda*	Warburton, Anne Range, Carnarvon Range, Little Sandy Desert, NT, SA
3	*Eragrostis crateriformis*	Balgo Hill, Warralong Stn, Yanrey Stn, Chichester Range, NT
3	*Eragrostis lanicaulis*	Gibson Desert, Karratha
3	*Eremophila coacta*	Mt Vernon, Ashburton Downs
3	*Eremophila forrestii* subsp. *capensis*	Cape Range N.P.
3	*Eremophila forrestii* subsp. *viridis*	Hamersley Range, Onslow, Canning Stock Route
3	*Eremophila gracillima*	Mt Vernon, Paroo, Wonganoo Station
3	*Eremophila magnifica* subsp. *velutina*	Hamersley Ranges, Newman, Marandoo
3	*Eremophila rigens*	SE Ashburton Downs
3	*Eremophila rigida*	Milgun Stn., Woodlands, Prairie Downs Stn, Bulloo Downs Stn.
3	*Eremophila shonae* subsp. *diffusa*	Doolgunna Stn, Carnarvon Range, Nambi Stn, Yarlarweelor Stn, Paraburdoo
3	*Eriochloa fatmensis*	Cooyapooya, Derby, Wyndham
3	*Euphorbia inappendiculata*	Tambrey Stn, Mt Edgar, Lyndon Stn, Millstream, Barlee Range, Warralong Stn, Fortescue River
3	*Euphorbia stevenii*	Karijini N.P., Kununurra
3	*Fimbristylis sieberiana*	Hamersley Range, Millstream, Fitzroy Crossing, King Leopold Range, Halls Creek, Little Sandy Desert
3	*Fuirena incrassata*	Oakover River (Wandanya), Edgar Ranges, Deep Creek, NT, Qld, NSW
3	*Geijera salicifolia*	Mt Samson, Mt Howieson, Tom Price, Hamersley Ranges, Qld, NT
3	*Glycine falcata*	Chichester, Hamersley Station, Mulga Downs Station, Bungle Bungle NP
3	*Gomphrena leptophylla*	Yandeyarra, Nerrima Stn, Marble Bar
3	*Goodenia modesta*	Stansmore Range, Gibson Desert, Denison Range, Sir Frederick Range, Little Sandy Desert
3	*Goodenia purpurascens*	Mitchell Plateau, Rudall River, Carlton Hill Stn
3	*Goodenia* sp. East Pilbara (AA Mitchell PRP 727)	Weeli Wolli, Mulga Downs, Nullagine, NW of Newman
3	*Grevillea calcicola*	Cape Range, Learmonth, Yardie Creek Stn
3	*Gymnanthera cunninghamii*	Minilya, Dampier Archipelago, Boodarie, 80 Mile Beach, NT, Qld
3	*Heliotropium murinum*	Yarrie Stn, Meetheena Stn, Corunna Downs Stn, Warralong Stn
3	*Indigofera ammobia*	Telfer, Great Sandy Desert, Wolfe Creek, Shay Gap
3	*Indigofera gilesii* subsp. *gilesii*	Hamersley Range, Meekatharra, West Angelas
3	*Indigofera* sp.Bungaroo Creek (S. van Leeuwen 4301)	Hamersley Range, Tom Price
3	*Iotasperma sessilifolium*	Ethel Creek Stn, Coolawanya Stn, Juna Downs Stn, Hamersley Range
3	*Maireana prosthecochaeta*	Meekatharra, Cue, Mt Phillips Station, Marymia, Bulloo Downs
3	*Nicotiana umbratica*	Newman, Karijini N.P., Marble Bar, Woodstock, Abydos
3	*Oldenlandia* sp. Hamersley Station (A.A. Mitchell PRP 1479)	Millstream-Chichester N.P., Hamersley Range, Caoolawanyah Stn

STATUS	TAXON	RECORDED DISTRIBUTION
3	*Olearia mucronata*	Hamersley and Chichester Range area, West Angelas, Paraburdoo, Mt Margaret, Mt Keith, Wiluna
3	*Owenia acidula*	Mardie Stn, Millstream, Collier Range, Winning Stn., Minilya Stn, Boolathana Stn, Qld, NSW
3	*Phragmites karka*	Millstream, Doongan Stn., Dampier Peninsula, Kununurra, Charnley River
3	*Phyllanthus aridus*	West Kimberley, Chichester Range, West Angelas, Pardoo, Shay Gap, Doongan Homestead, Durack River
3	*Polymeria distigma*	Hamersley Stn, Anna Plains Stn, Great Sandy Desert, Dampier Downs Stn, Tom Price
3	*Pterocaulon* sp. A Kimberley Flora (B.J. Carter 599)	Broome, Anna Plains, Anjo Peninsula, South Headland, Dampier Peninsula
3	*Ptilotus subspinescens*	Brockman, Rocklea Stn, Hamersley Stn
3	*Rhagodia* sp.Hamersley (M. Trudgen 17794)	Hamersley Ranges
3	*Rostellularia adscendens* var.*latifolia*	Hamersley Ranges
3	*Sauropus arenosus*	Gregory Range, Canning Stock Route, Great Sandy Desert
3	*Schoenus punctatus*	Nurrup Peninsula, Broome, Mt Barnett Stn
3	*Sida* sp. Barlee Range (S. van Leeuwen 1642)	Barlee Range, Turee Creek, Paraburdoo, Hamersley Range
3	*Stackhousia clementii*	Warburton, Wiluna, Karratha, Little Sandy Desert, NT, SA, Gnaraloo Stn, Burrup Peninsula
3	*Stackhousia umbellata*	Cape Range
3	*Swainsona* sp. Hamersley Station (A.A. Mitchell 196)	Tom Price, Coolawanya, Millstream, Karijin NP, Hamersley Stn
3	*Tecticornia* sp. Roy Hill (H Pringle 62)	Roy Hill, Fortescue Marsh
3	*Tecticornia* sp. Sunshine Lake (K.A. Shepherd et al. KS 867)	Little Sandy Desert
3	*Tephrosia bidwillii*	Yarrie Stn, Yarraloola Stn, Karratha, Callawa Stn, Mt Edgar Stn, Carnarvon
3	*Terminalia supranitifolia*	Robe River, Burrup Peninsula, Dolphin Is., Bungaroo Creek, Yannery River, Harding Dam
3	*Themeda* sp. Hamersley Station (ME Trudgen 11431)	Karratha, Millstream, Hamersley Stn, West Angelas, Coondewanna Flats
3	*Triodia* sp. Mt. Ella (M.E. Trudgen 12739)	Hamersley Range, Mt Ella
3	*Triodia* sp. Robe River (M..E. Trudgen et al. MET 12367)	Yarraloola Stn, Yalleen Stn., Red Hill Stn., Mt Stuart Stn., Hamersley Range
3	*Triumfetta echinata*	Peedamulla Stn, Varoo Stn
3	*Vigna* sp. Rockpiles (R. Butcher *et al*. RB 1400)	Karratha, Roebourne
3	*Whiteochloa capillipes*	Kununurra, Madora Stn, Hamersley Stn, Lacrosse Island
3	*Wurmbea saccata*	Barlee Range
3	*Xanthoparmelia nashii*	King Rocks, Lorna Glen Stn., Karolin Rock, Eurady Stn., Hammersley Range N.P., Wiluna
4	*Acacia bromilowiana*	Tom Price, Balfour Downs Stn, West Angelas, Hope Downs, Hamersley Ranges, Marillana Stn, Ophthalmia Range
4	*Brachychiton obtusilobus*	Cape Range
4	*Bulbostylis burbidgeae*	Mount Edgar, Gorge Creek, Abydos-Woodstock
4	*Comesperma viscidulum*	Queen Victoria Springs, Little Sandy Desert, Carnarvon Range, Great Victoria Desert
4	*Eremophila magnifica* subsp. *magnifica*	Hamersley Ranges, Tom Price, Marandoo, Wittenoom
4	*Eremophila youngii* subsp. *lepidota*	S Cape Range, Roy Hill, N Mt Vernon, Paraburdoo, Muggon Stn

STATUS	TAXON	RECORDED DISTRIBUTION
4	*Goodenia nuda*	Weeli Wolli, Roy Hill, Mt Stuart
4	*Livistona alfredii*	Millstream, Cave Creek, Cape Range
4	*Ptilotus mollis*	Warralong Station, Mt Channar, Bamboo, Rudall River, Ripon Hills, Mt Bruce
4	*Ptilotus trichocephalus*	Mt James Stn, Paraburdoo
4	*Rhynchosia bungarensis*	Hamersley Ranges, Chichester Ranges, Yardie Creek, Robe River, Tom Price, Ashburton, East Lewis Island, Burrup Peninsula, Dampier Archipelago

2.2 Significant Ecological Communities

The potential threatened ecological communities that occur in the Pilbara were checked on the website of the Department of Environment and Conservation (2011b). Two Threatened Ecological Communities (TEC) are listed for the Pilbara Region but neither occur in the vicinity of Kintyre. Twenty nine Priority Ecological Communities (PEC) are listed for the Pilbara of which one: 'Riparian vegetation including phreatophytic species associated with creek lines and watercourses of Rudall River. It occurs in the semi permanent pools along courses of Rudall River. Threats: weed invasion, altered hydrological flows, inappropriate fire regimes.' This is listed as a Priority 3 PEC.

Priority 3 communities are known ecological communities
(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or;

(ii) communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;

(iii) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes.

Although not listed as Threatened or Priority Ecological Communities, Kendrick (2001) listed three wetland vegetation units for the Little Sandy Desert Bioregion. These are:
(i) Upper Rudall River draining into Lake Dora;
(ii) Small permanent rockhole wetlands associated with hills and ranges; and
(iii) Small artificial water sources constructed along the Canning Stock Route.

In addition Kendrick (2001) listed the Beard vegetation units, which are of reservation priority in this bioregion (Table 4).

Table 4. Reservation Priority of Beard Vegetation Units

Beard Veg Code	Ecosystem Description	Reservation Priority
39	Shrubland, mulga scrub	H
98	Hummock grasslands, shrub steppe; kanji over soft spinifex and *Triodia basedowii*	L
99	Hummock grasslands, shrub steppe; *Acacia coriacea* and *Hakea* over *Triodia basedowii*	L
117	Hummock grasslands, shrub steppe; soft spinifex	L
125	Bare areas, salt lakes	H
134	Mosaic; Hummock grasslands, open tree steppe; desert bloodwood and feathertop spinifex (on) sandhills/Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills	H
136	Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills	M

Beard Veg Code	Ecosystem Description	Reservation Priority
152	Hummock grasslands, shrub steppe; soft and hard spinifex, soft spinifex	M
157	Hummock grasslands, shrub steppe; hard spinifex *Triodia wiseana*	M
1251	Low woodland; coolabah and paperbark (*Melaleuca* sp.)	H

H = High Priority; M = Moderate Priority; L = Low Priority

3. METHODS

The current track between Kintyre and Telfer was driven and when a change in vegetation was observed a site was surveyed. Once the proposed route veered off the current track, the track driven by the fauna survey team a few months previously was followed. One day a helicopter flying Indigenous people to view the site dropped the flora team at a selected site, the area was then traversed on foot using a hand-held GPS until the helicopter collected the team at the end of the day. The area between where it was possible to drive and where the helicopter had dropped the flora team was traversed on foot. This resulted in an area of approximately 6kms not being surveyed on foot but viewed from the air.

Where a change in vegetation was observed a site was recorded. Each relevee was surveyed at a radius of 50m from a central point (recorded easting and northing in Appendix B). All taxa was recorded, including those in the surrounding but same vegetation (Opportunistic species). The use of relevees was agreed to by S. van Leeuwen (email, 7th March 2011). Where species were unknown in the field they were collected, pressed and identified with the collection at the Western Australian Herbarium, but at present only the Reference Herbarium is available for public identification. This proved a problem with several plants where there was no collection present, the collection was so poor that it was not ideal to use for comparison or the collection in the Reference Herbarium was different to that collected. Where there was a botanical description available for the species this was also used to determine the final name.

Where there was a possibility that a priority flora was recorded this was checked with Mr Mike Hislop. The Priority 3 Flora recorded was confirmed by Dr T. MacFarlane who is working on the group. The Priority 2 Flora could not be confirmed as there was no botanist working on that group.

4. RESULTS

Field work was undertaken between 16th and 22nd August 2011. Good rainfall had been recorded earlier in the year prior to this survey although several annual taxa had completed flowering and fruiting. A total of 65 relevees were assessed during the survey, with detailed information being provided for each in Appendix B. There was a distance of about 6km between S25 and S65. Where the vegetation units were only assessed from the low level helicopter flight an assessment made of the previously recorded on-ground vegetation units from the area and from the aerial mapping provided.

4.1 Vegetation Units

The vegetation units recorded during the survey were described using the vegetation classification of Muir (1977) as described in Table 5.

Table 5. Vegetation Classification (from Muir 1977)

LIFE FORM / HEIGHT CLASS	Canopy Cover			
	DENSE 70 % - 100%	**MID DENSE 30% - 70%**	**SPARSE 10% - 30%**	**VERY SPARSE 2% - 10%**
Trees > 30m	Dense Tall Forest	Tall Forest	Tall Woodland	Open Tall Woodland
Trees 15 – 30m	Dense Forest	Forest	Woodland	Open Woodland
Trees 5 – 15m	Dense Low Forest A	Low Forest A	Low Woodland A	Open Low Woodland A
Trees < 5m	Dense Low Forest B	Low Forest B	Low Woodland B	Open Low Woodland B
Mallee tree form	Dense Tree Mallee	Tree Mallee	Open Tree Mallee	Very Open Tree Mallee
Mallee shrub form	Dense Shrub Mallee	Shrub Mallee	Open Shrub Mallee	Very Open Shrub Mallee
Shrubs > 2m	Dense Thicket	Thicket	Scrub	Open Scrub
Shrubs 1.5 – 2m	Dense Heath A	Heath A	Low Scrub A	Open Low Scrub A
Shrubs 1 - 1.5m	Dense Heath B	Heath B	Low Scrub B	Open Low Scrub B
Shrubs 0.5 – 1m	Dense Low Heath C	Low Heath C	Dwarf Scrub C	Open Dwarf Scrub C
Shrubs 0 - 0.5m	Dense Low Heath D	Low Heath D	Dwarf Scrub D	Open Dwarf Scrub D
Mat plants	Dense Mat Plants	Mat Plants	Open Mat Plants	Very Open Mat Plants
Hummock grass	Dense Hummock Grass	Mid-Dense Hummock Grass	Hummock Grass	Open Hummock Grass
Bunch grass > 0.5m	Dense Tall Grass	Tall Grass	Open Tall Grass	Very Open Tall Grass
Bunch grass < 0.5m	Dense Low Grass	Low Grass	Open Low Grass	Very Open Low Grass
Herbaceous spp.	Dense Herbs	Herbs	Open Herbs	Very Open Herbs
Sedges > 0.5m	Dense Tall Sedges	Tall Sedges	Open Tall Sedges	Very Open Tall Sedges
Sedges < 0.5m	Dense Low Sedges	Low Sedges	Open Low Sedges	Very Open Low Sedges
Ferns	Dense Ferns	Ferns	Open Ferns	Very Open Ferns
Mosses, liverworts	Dense Mosses	Mosses	Open Mosses	Very Open Mosses

A PATN analysis was undertaken to determine the relationships between the vegetation of the different sites. This resulted in the dendrogram not making major distinctions between the site data collected. This was also obvious from the air when the helicopter flew the proposed road route. Mostly it would be classified as grassland with scattered to dense shrubs. However there were variations in the shrubs/trees noted as the field work was undertaken and these variations are described below and mapped along the proposed route (Appendix c).

TREES

Hill slopes or Rocky Ground

Open Woodland of *Eucalyptus leucophloia* over Tall Grass of *Triodia basedowii* or *Triodia schinzii*. This was represented by sites S36 and S38.

Open Low Woodland A of *Corymbia aspersa* over Low Heath C of mixed shrub species over Tall Grass dominated by *Amphipogon caricinus* and *Eriachne mucronata*. This was represented by site S53.

Sandy Soil, Flat Ground

Open Woodland to Woodland of *Corymbia opaca* and/or *Eucalyptus victrix* over Mid-Dense to Dense Hummock Grass of *Triodia basedowii* or *Triodia schinzii.* Often where this vegetation unit was recorded beside the current Telfer Track there was a high cover of **Cenchrus ciliaris*. This was represented by sites S18, S33, S35, S48, S58 and S60.

Open Low Woodland A of *Acacia pachycarpa* over Tall Grass of *Chrysopogon pallidus* and **Cenchrus ciliaris*. This was represented by Site S31.

MALLEES

Open Shrub Mallee of *Eucalyptus kingsmillii* and/or *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia basedowii*. This was represented by Sites S37, S47 and S59.

Open Shrub Mallee of *Eucalyptus kingsmillii* and/or *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia schinzii*. This was represented by Sites S23, S39 and S61.

Shrub Mallee of *Eucalyptus gamophylla* over Open Low Scrub A of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia schinzii*. This was represented by site S34.

SHRUBS

Shrubs Greater than 3m tall

Open Scrub of *Acacia coriacea* subsp. *pendens* over Low Heath C of mixed shrubs including *Scaevola parvifolia* subsp. *pilbare* and *Bonamia rosea* over Open Hummock Grass of *Triodia basedowii* and *Triodia schinzii*. This was represented by Site S44.

Scrub of *Hakea lorea* over Mid-Dense to Dense Hummock Grass of *Triodia basedowii*. This was represented by Sites S03, S16, S27 and S49.

Scrub of *Acacia eriopoda* over Dwarf Scrub C of mixed taxa over Dense Hummock Grass of *Triodia basedowii*. This was represented by Site S42 and S46.

Shrubs Between 3m and 1m

Scrub of *Acacia ancistrocarpa* over Dense Hummock Grass of *Triodia basedowii* occasionally *Triodia schinzii*. This was represented by Site S02, S09, S12, S15, S28, S41,and S43. At S12 Triodia schinzii was the dominant grass.

Scrub of *Acacia ligulata* over Dense Hummock Grass of *Triodia basedowii*. Occasionally *Acacia ancistrocarpa* was a dominant in this vegetation unit eg S10. This was represented by Sites S05, S10, S11, S52 and S57.

Thicket of *Grevillea stenostachya* or *Grevillea wickhamii* over Low Scrub A Scrub of *Acacia dictyophleba* over Dense Hummock Grass of *Triodia basedowii*. This was represented by Sites S54 and S55.

Scrub of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia basedowii*. This was represented by Site S56.

Open Scrub of *Acacia synchronicia* over Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Eremophila forrestii* subsp. *forrestii* over Dense Hummock Grass of *Triodia basedowii.* This was represented by Site S14.

Scrub of *Acacia wanyu* over Dwarf Scrub C of *Senna artemisioides* subsp. *oligophylla* over Dense Hummock Grass of *Triodia basedowii*. This was represented by Site S13.

Low Scrub B of *Sida* sp. Sand Dunes over Open Dwarf Scrub D of *Corchorus sidoides* subsp. *sidoides* over Hummock Grass of *Triodia basedowii* and Open Tall Grass of *Eragrostis eriopoda*. This was recorded from Site S64 but it did extend to either side of the proposed route.

Shrubs Less than 1m Tall

Low Heath C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*. This was represented by Site S04, S17, S22, S26, S29, S45 and S63.

Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over herbs and grasses including **Cenchrus ciliaris*. This was represented by Site S50 and S51. Emergent *Acacia synchronicia* and *Scaevola spinescens*.

Dwarf Scrub C dominated by *Dicrastylis dorrienii* and *Dampiera cinerea* over Hummock Grass of *Triodia schinzii* and Open Tall Grass of *Aristida holathera* and *Eriachne aristida*. This was represented by Sites S06, S07 and S08.

GRASSLAND

Mid-Dense Hummock Grass of *Triodia pungens* and *Triodia basedowii* with scattered low shrubs. This was represented by Site S25.

AREAS WITH CLAYPANS

Dwarf Scrub C of *Sclerolaena, Maireana and Frankenia* species over Dense Hummock Grass of *Triodia basedowii* in the clay pans. This was represented by Site S01.

Scrub of *Acacia wanyu* over Open Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Low Heath D dominated by *Sclerolaena* and *Maireana* species . This was represented by Site S30.

CREEKS / DRAINAGE LINES

Open Low Woodland B of *Corymbia opaca* over Dense Hummock Grass of *Triodia basedowii* or **Cenchrus ciliaris*. This was represented by Sites S20, S24 and S32.

Thicket of *Acacia tumida, Grevillea wickhamii* and *Grevillea eriostachya* over Low Heath C dominated by *Jacksonia aculeata*. This was represented by Site S62 where the proposed route crosses several drainage lines.

Low Woodland A of *Eucalyptus victrix* over Dense Tall Grass of *Sorghum plumosum* and **Cenchrus ciliaris*. This was a narrow creek represented by Site S19.

Open Low Woodland A of *Eucalyptus camaldulensis* over Dense Tall Grass of **Cenchrus ciliaris*. This was represented by Site S21.

Low Woodland A of *Eucalyptus camaldulensis* over Low Scrub A of *Acacia marramaba* over Very Oepn Tall Grass of *Sorghum plumosum*. This was represented by Site S40, Duck Creek.

4.2 Vegetation Condition

The vegetation condition recorded for each of the quadrats is included in Appendix B.

Table 6. Explanation of Vegetation Condition Rating (Keighery, 1994)

Rating	Description	Explanation
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure covers repeated fire, aggressive weeds, dieback, logging, grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure covers frequent fires, aggressive weeds at high density, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure includes frequent fires, presence of very aggressive weeds, partial clearing, dieback and grazing.

Table 7 provides a summary of the vegetation condition recorded using the vegetation rating provided in Table 6. Due to fire frequency and severity and presence of feral animals the highest rating that could be applied was 2, excellent.

Table 7. Vegetation Condition recorded during the survey

Rating	Description	Quadrat Reference
2	Excellent	S01; S02; S06; S07; S45; S47; S54; S62; S65
2-3	Excellent to very good	S03; S09; S13; S14; S22; S23; S24; S25; S26; S27; S28; S29; S30; S35; S39; S40; S42; S44; S48; S49; S50; S52; S53; S55; S57; S58; S59; S61; S64

2-4	Excellent to good	S21
3	Very good	S04; S05; S08; S10; S11; S12; S15: S16; S17; S18; S34; S36; S37; S38; S41; S43; S46; S51; S56; S60; S63
3-4	Very good to good	S19; S32; S33
4	Good	S31
4-5	Good to degraded	S20
5	Degraded	Verge along current Kintyre - Telfer Road

As there were very few weeds recorded from the site the vegetation condition of the area was typically excellent to very good. There were occasional areas, especially along the edge of the Telfer Road and some creeks where **Cenchrus ciliaris* was dense and the condition then was degraded but these were typically contained small areas. **Aerva peruviana* also occurred in patches along the Telfer Road, but the proposed new access section where currently there is no road, recorded no weeds.

Fire through the area appears to be relatively frequent and severe, killing many plants which then regenerate from seed or underground stems. In addition there was a great deal of evidence of camels and donkeys through the area in the form of scats and hoof prints. These animals eat the plants and contribute to the transportation of weeds through the area.

It is essential with the proposed access road that care is taken to ensure additional weeds are not introduced. This should ensure that the very good vegetation condition is retained. All vehicles entering the new section of the access road must be cleaned of all soil and seeds as it is essential that the current condition of the area is maintained.

4.3 Significant Ecological Communities

No Threatened Ecological or Priority Ecological Communities are recorded for the study area. The PEC that occurs in the Rudall River National Park occurs in permanent pools along the river. No permanent pools were recorded in any creeks during the 2011 survey.

Three of the ten Beard (1975) communities listed by Kendrick (2001) as of reservation status for the region were recorded during the surveys. These are:

- Shrubland, mulga scrub which has the Beard Vegetation Code 39. This unit was found where the new access road branches off from the current Telfer Road (site S13);
- Hummock grasslands, shrub steppe; Acacia coriacea (S02 and S44) and Hakea (S03, S16, S27. S49, S57 and S58) over *Triodia basedowii*. This has the Beard Vegetation Code 99; and
- Mixed Shrub Steppe between sandhills with *Triodia schinzii* which has the Beard Vegetation Code of 136.

4.4 Taxa

Once MAX is updated this section will be completed

4.5 Significant Taxa

Two significant taxa were recorded during the survey.

- Priority 2 Flora, *Thysanotus* sp. Desert East of Newman (RP Hart 964) was recorded from S22, S37, S48 and S57. This is a new record for this priority flora previously having been recorded from Warburton, Gibson Desert, Collier Range and Rudall River. The identity of this taxon was confirmed by Dr Macfarlane.
  This species is a perennial, herb (with tuberous roots), distinguished by the long, equal anthers and pseudo-cymose branching. It has been recorded from red-brown loamy sand or red sand, sometimes silty.
- Priority 3 Flora, *Indigofera ammobia,* was recorded from S07. This also is a new record for this priority flora having previously been recorded from Telfer, Great Sandy Desert, Wolfe Creek and Shay Gap. This was a vegetative collection and there was only a poor collection of this taxon in the Reference Herbarium, but there is a description and photograph on Florabase (Western Australian Herbarium 2011a).

This species is a many-stemmed shrub, to 0.5 m high. Its leaves are very narrow. It is recorded in red sand and from sand dunes.

In addition there were other collections made which has increased the distribution of taxa. These are:

- *Acacia pachycarpa*, a magnificent weeping tree, which formed dense stands along the current Telfer Road at site S31;
- *Amphipogon* sp. collected at S55, which was very hairy and appeared totally different from the nearly glabrous plants collected previously; and
- *Jacksonia aculeata*, white flowered form collected at S62.

4.6 Introduced Taxa

A total of 3 weeds were recorded during the current survey. All have been determined as weeds by the Western Australian Herbarium (2011a) and Department of Environment and Conservation (2011c). Several criteria have been used to determine the invasiveness and potential for control (Department of Environment and Conservation, 2011c). These are discussed below for each of the three weeds.

Aerva javanica.* **Potential distribution: Low; **Current distribution** - Moderate; **Ecological impact** - High; **Abundance** - Abundant; **Invasiveness** – Rapid; **Feasibility of control** – High to medium; **Distribution** - Increasing.
This species was recorded along several sections of the current Telfer Road. As it is not common it should be possible to control plants where it currently occurs. It is essential that none of these plants area spread into the northern section of the proposed road where it traverses the currently undisturbed bushland. If plants are seen along this section it is essential that they are removed.

Cenchrus ciliaris.* **Potential distribution: High; **Current distribution** - High; **Ecological impact** - High; **Abundance** – Abundant; **Invasiveness** – Rapid; **Feasibility of co ntrol** – Low; **Distribution** – Increasing.
Care must be taken to ensure this is not spread any further especially into the northern section of the proposed road where it traverses currently undisturbed bushland. As the locations of this weed were only spasmodic it may be possible to control it along the sections of the road where it currently occurs.

*C*itrullus lanatus.* **Potential distribution**: Low; **Current distribution** - Low; **Ecological impact** - Low; **Invasiveness** – Rapid; **Feasibility of control** – Low; **Distribution** – Unknown.
Only one area of this weed was recorded along the current Telfer Road. The fruit had been split open and the seed distributed by animals making it difficult to control. As the fruits are large and therefore obvious it is recommended that the plants are removed prior fruit maturation.

5. DISCUSSION

The route selected by Cameco for the proposed road follows the current Telfer Road deviating and following route C as illustrated in Diagram 1. The current Telfer Road will have some of the sharp bends and difficult sections realigned but they will be minor changes from the current route.

Route C traverses bushland that has no access. The condition of the bushland through that area was very good to excellent with no weeds being recorded. Every effort should be taken to ensure that weeds are not introduced into this area but with the development of the road it will be nearly impossible to prevent Buffel Grass (**Cenchrus ciliaris*) becoming established. Any plants of the common weed, Kapok Plant (**Aerva peruviana*) should be removed if and once they are observed. To attempt to keep the area as weed free as possible all vehicles working on the road construction should be cleaned of all soil and vegetation before going into the area. This should occur from the Telfer Road and Telfer – Marble Bar Road accesses. If and as weeds are observed they should be removed.

Most of the vegetation units along the proposed route are relatively widespread. The *Acacia pachycarpa* stand of trees at S31 have not been recorded from this area previously. They are a magnificent weeping

tree which really impact on the landscape. Unfortunately the understorey has been replaced by weeds, mainly Buffel Grass. Every care should be taken to ensure that none or very few of these trees are impacted.

The area on the east side of the current Telfer Road at S50 is a sump which had very dense vegetation with varied species. Many finches were nesting in the bushes at this site. From the ground covering annuals and ephemerals it is inferred that the area becomes and stays wet most years (Diagram 2). If it is essential that the road be widened at this point thent it is the western side which is already impacted that should be disturbed.



Diagram 2. Photograph illustrating a finch nest in an *Acacia tetragonophylla* shrub. The photograph below shows the density of the *Senna* shrubs, plus the open ground which had been covered in dense annuals when the area was wet. It was a small haven for flora and fauna.



There are a few creeks which need to be crossed. Duck Creek the largest of the creeks is in good to very good condition and currently this section of the current Telfer Road becomes impassable during wet periods and sand pushed up. Good drainage should be installed or a small culvert bridge built to ensure the creek, which only runs spasmodically, is not impacted any further.

The areas of claypans at S01 and S30 should be developed with care. Area S01 had small claypans scattered through the grassland but at S30 the claypans were larger and more extensive. The claypans at

S30 are readily seen on the aerial photographs. These claypans had vegetation which had not been recorded often during previous surveys undertaken on the lease or during this current survey.

Very few rocky outcrops are included along the proposed route most occurring along the current Telfer Track where they have already been impacted. Any clearing of the rocks should be minimal especially on the east side of the current Telfer Road at S37. The west side at this site was a sand dune.

The Shrubland, mulga scrub (Beard Vegetation Code 39), which has a high priority reservation status was only recorded where Option C departs from the current Telfer Road. It should be possible to minimise disturbance of this vegetation unit.

Several areas of Hummock grasslands, shrub steppe or mixed shrubs over spinifex between sandhills (Beard Vegetation Code 136) which has a medium reservation status were recorded but as the road will be up to 30m in width the percentage of each of these units impacted will be minimal.

There are several sand dunes, some of which are steep, that will need to be crossed. It would be impossible to drive over them so the anticipated cutting into these dunes will need to be stablised to ensure that the sand dune is not eroded and the road continually having to be cleared of sand. If sand is removed it should not be dumped on the vegetation below the dune but utlilised somewhere along the road to fill in low areas.

The vegetation condition of the proposed Option C was in excellent to very good condition except close to the Telfer-Marble Bar Road. As weeds are observed along this section they should be removed immediately, especially prior to fruiting. The vegetation along the current Telfer Road varied considerably from excellent to degraded depending upon the presence and density of **Cenchrus ciliaris* and **Aerva javanica*. The condition of the survey sites is summarised in Table 7 and described in Appendix B.

Two priority flora were recorded. A priority 2 flora, *Thysanotus* sp. Desert East of Newman (R.P. Hart 964) was recorded from 4 sites. This species has not been recorded from this area previously. The other was priority 3 flora *Indigofera ammobia,* which was recorded from 1 site only. Both these species blend in with the surrounding bushland when not in flower. *Indigofera ammobia* was collected in fruit but may be found more commonly if a search was undertaken when the plants were flowering. The *Thysanotus* sp. Desert East was in flower at the time of the survey. Where possible the locations where these plants were recorded should be avoided.

Generally the impact of the proposed road will be minimal along the current Telfer Road but as the bushland traversed by Option C currently has no development the impact could be substantial. It is important that the Company ensures that minimal damage occurs to the bushland outside of the proposed access road.

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APPENDICES

A. Taxa listed under vascular plant family
B. Site data
C. Maps

APPENDIX A

Taxa listed under vascular plant family

NB. Where a taxon is listed both as a single specific name and a variety of the same name it is because the varieties are only identifiable from flowering examples. For example – *Hibiscus sturtii* (vegetative only), *Hibiscus sturtii* var. *campylochlamys* and *Hibiscus sturtii* var. *platychlamys* both were in flower.

LEGEND

ABBREVIATION	DESCRIPTION
sp.	Species, used where the plant is vegetative
subsp.	Subspecies
forma	Forma
var.	Variety
*	Weed
affin.	Closest to that species
?	Unsure if that is the correct species
x	Hybrid

VASCULAR PLANT FAMILY	*TAXON*
Aizoaceae	
	Trianthema pilosa
	Trianthema triquetra
Amaranthaceae	
	**Aerva javanica*
	Alternanthera nodiflora
	Gomphrena canescens subsp. *canescens*
	Ptilotus aervoides
	Ptilotus aphyllus
	Ptilotus arthrolasius
	Ptilotus astrolasius var. *astrolasius*
	Ptilotus axillaris
	Ptilotus calostachyus
	Ptilotus exaltatus
	Ptilotus gaudichaudii var. *gaudichaudii*
	Ptilotus macrocephalus
	Ptilotus obovatus
	Ptilotus polystachyus
Araliaceae	
	Trachymene oleracea subsp. *oleracea*
Asparagaceae	
	Thysanotus sp. Desert East of Newman (R.P. Hart 964)
Asteraceae	
	Blumea tenella
	Calocephalus knappii
	Calotis hispidula
	Calotis plumulifera
	Centipeda minima subsp. *macrocephala*
	Chrysocephalum eremaeum
	Pluchea rubelliflora
	Pluchea tetranthera
	Pterocaulon serrulatum
	Pterocaulon sphacelatum
	Rhodanthe humboldtiana
	Rutidosis helichrysoides
	Streptoglossa liatroides
Boraginaceae	
	Halgania solanacea var. *solanacea*
	Halgania solanacea var. Mt. Doreen (G.M. Chippendale 4206)
	Heliotropium ovalifolium
	Heliotropium transforme
	Trichodesma zeylanicum var. *grandiflorum*

VASCULAR PLANT FAMILY	*TAXON*
Brassicaceae	
	Lepidium phlebopetalum
	Stenopetalum anfractum
Byblidaceae	
	Byblis liniflora
Campanulaceae	
	Wahlenbergia tumidifructa
Caryophyllaceae	
	Polycarpaea corymbosa
Celastraceae	
	Macgregoria racemigera
	Stackhousia intermedia
Chenopodiaceae	
	Atriplex codonocarpa
	Dysphania plantaginella
	Dysphania rhadinostachya subsp. *rhadinostachya*
	Enchylaena tomentosa
	Maireana georgei
	Maireana tomentosa subsp. *tomentosa*
	Maireana villosa
	Rhagodia eremaea
	Salsola australis
	Sclerolaena bicornis var. *bicornis*
	Sclerolaena cornishiana
	Sclerolaena crenata
	Sclerolaena cuneata
	Sclerolaena deserticola
	Sclerolaena diacantha
	Sclerolaena glabra
	Sclerolaena lanicuspis
Cleomaceae	
	Cleome viscosa
Convolvulaceae	
	Bonamia alatisemina
	Bonamia linearis
	Bonamia pannosa
	Bonamia rosea
	Evolvulus alsinoides var. *decumbens*
	Evolvulus alsinoides var. *villosicalyx*
	Ipomoea muelleri
	Ipomoea polymorpha
	Polymeria ambigua

VASCULAR PLANT FAMILY	*TAXON*
Cucurbitaceae	
	Cucumis maderaspatanus
	**Cucumis melo* subsp. *agrestis*
Cyperaceae	
	Bulbostylis barbata
	Cyperus cunninghamii subsp. *cunninghamii*
	Fimbristylis dichotoma
	Fimbristylis oxystachya
Droseraceae	
	Drosera indica
Elatinaceae	
	Bergia ammannioides
	Bergia perennis subsp. *exigua*
Euphorbiaceae	
	Euphorbia alsiniflora
	Euphorbia australis
	Euphorbia boophthona
	Euphorbia drummondii
	Euphorbia tannensis subsp. *eremophila*
Fabaceae	
	Acacia adoxa var. *adoxa*
	Acacia ancistrocarpa
	Acacia colei
	Acacia coriacea subsp. *pendens*
	Acacia dictyophleba
	Acacia elachantha
	Acacia eriopoda
	Acacia hilliana
	Acacia ligulata
	Acacia macraneura
	Acacia marramamaba
	Acacia melleodora
	Acacia pachycarpa
	Acacia pruinocarpa
	Acacia retivenea subsp. *clandestina*
	Acacia stellaticeps
	Acacia synchronicia
	Acacia tetragonophylla
	Acacia tumida var. *pilbarensis*
	Acacia wanyu
	Aeschynomene indica
	Gompholobium polyzygum
	Crotalaria cunninghamii

VASCULAR PLANT FAMILY	*TAXON*
Fabaceae (cont.)	
	Crotalaria medicaginea var. *neglecta*
	Cullen leucanthum
	Cullen martinii
	Indigofera ammobia
	Indigofera boviperda subsp. *boviperda*
	Indigofera brevidens
	Indigofera colutea
	Indigofera georgei
	Indigofera linifolia
	Indigofera monophylla
	Isotropis atropurpurea
	Jacksonia aculeata
	Otion simplicifolium
	Petalostylis cassioides
	Petalostylis labicheoides
	Rhynchosia minima
	Senna artemisioides subsp. *helmsii*
	Senna artemisioides subsp. *oligophylla*
	Senna curvistyla
	Senna glutinosa subsp. *glutinosa*
	Senna glutinosa subsp. *pruinosa*
	Senna notabilis
	Senna sericea
	Senna venusta
	Swainsona formosa
	Swainsona laciniata
	Tephrosia arenicola
	Tephrosia sp. B Kimberley Flora (C.A. Gardner 7300)
	Vigna lanceolata
	Zornia albiflora
Frankeniaceae	
	Frankenia cordata
Goodeniaceae	
	Brunonia australis
	Dampiera candicans
	Dampiera cinerea
	Goodenia armitiana
	Goodenia azurea subsp. *hesperia*
	Goodenia microptera
	Goodenia stobbsiana
	Goodenia triodiophila
	Goodenia vilmoriniae

VASCULAR PLANT FAMILY	*TAXON*
Goodeniaceae (cont.)	
	Scaevola browniana subsp. *browniana*
	Scaevola parvifolia subsp. *pilbarae*
	Scaevola spinescens
	Velleia connata
Gyrostemonaceae	
	Codonocarpus cotinifolius
	Gyrostemon tepperi
Haloragaceae	
	Gonocarpus eremophilus
	Haloragis gossei
Hypericaceae	
	Hypericum gramineum
Lamiaceae	
	Clerodendrum floribundum
	Dicrastylis cordifolia
	Dicrastylis doranii
	Newcastelia bracteosa
	Newcastelia cladotricha
	Newcastelia roseoazurea
Lauraceae	
	Cassytha capillaris
	Cassytha filiformis
Loganiaceae	
	Logania centralis
Lythraceae	
	Ammannia baccifera
	Rotala diandra
Malvaceae	
	Abutilon lepidum
	Abutilon otocarpum
	Abutilon oxycarpum
	Corchorus parviflorus
	Corchorus sidoides subsp. *sidoides*
	Gossypium australe
	Hibiscus burtonii
	Hibiscus coatesii
	Hibiscus leptocladus
	Hibiscus sturtii var. *platychlamys*
	Keraudrenia velutina subsp. *velutina*
	Malvastrum americanum
	Melhania oblongifolia
	Sida ammophila
	Sida arenicola

VASCULAR PLANT FAMILY	*TAXON*
Malvaceae (cont.)	
	Sida cardiophylla
	Sida echinocarpa
	Sida platycalyx
	Sida sp. Rabbit Flat (B.J. Carter 626)
	Sida sp. Sand dune (A.A. Mitchell PRP1208)
	Sida sp. Spiciform panicles (E. Leyland s.n. 14/8/90)
	Triumfetta chaetocarpa
	Waltheria virgata
Marsileaceae	
	Marsilea hirsuta
Molluginaceae	
	Mollugo molluginis
Myrtaceae	
	Aluta maisonneuvei subsp. *maisonneuvei*
	Calytrix carinata
	Corymbia aspera
	Corymbia opaca
	Eucalyptus camaldulensis
	Eucalyptus kingsmillii subsp. *kingsmillii*
	Eucalyptus leucophloia subsp. *leucophloia*
	Eucalyptus odontocarpa
	Eucalyptus victrix
	Lamarchea sulcata
	Melaleuca lasiandra
Nyctaginaceae	
	Boerhavia coccinea
Orobanchaceae	
	Buchnera linearis
	Striga squamigera
Poaceae	
	Amphipogon caricinus
	Amphipogon sp. hairy
	Aristida contorta
	Aristida holathera var. *holathera*
	Aristida inaequiglumis
	Aristida latifolia
	Brachyachne prostrata
	**Cenchrus ciliaris*
	Chrysopogon pallidus
	Dactyloctenium radulans
	Enneapogon polyphyllus
	Eragrostis cumingii
	Eragrostis dielsii

VASCULAR PLANT FAMILY	TAXON
Poaceae (cont.)	*Eragrostis eriopoda*
	Eragrostis laniflora
	Eragrostis tenellula
	Eragrostis xerophila
	Eriachne aristidea
	Eriachne ciliata
	Eriachne lanata
	Eriachne mucronata
	Eriachne obtusa
	Eriachne sulcata
	Paraneurachne muelleri
	Paspalidium rarum
	Schizachyrium fragile
	Setaria surgens
	Sorghum plumosum
	Sporobolus australasicus
	Triodia basedowii
	Triodia pungens
	Triodia schinzii
	Whiteochloa cymbiformis
Polygalaceae	*Polygala isingii*
Portulacaceae	*Calandrinia ptychosperma*
	Calandrinia pumila
	Portulaca pilosa
Proteaceae	*Grevillea eriostachya*
	Grevillea pterosperma
	Grevillea stenobotrya
	Grevillea wickhamii subsp. *aprica*
	Grevillea wickhamii subsp. *hispidula*
	Hakea lorea
Rubiaceae	*Oldenlandia crouchiana*
	Oldenlandia pterospora
	Synaptantha tillaeacea
Santalaceae	*Anthobolus leptomerioides*
	Exocarpos sparteus
	Santalum lanceolatum

VASCULAR PLANT FAMILY	*TAXON*
Sapindaceae	
	Dodonaea coriacea
Scrophulariaceae	
	Eremophila decipiens subsp. *decipiens*
	Eremophila forrestii subsp. *forrestii*
	Eremophila latrobei var. *latrobei*
	Eremophila longifolia
	Eremophila tietkensii
Solanaceae	
	Solanum centrale
	Solanum diversiflorum
	Solanum lasiophyllum
Stylidiaceae	
	Stylidium desertorum
	Stylidium humphreysii
Surianaceae	
	Stylobasium spathulatum
Violaceae	
	Hybanthus aurantiacus
Zygophyllaceae	
	Tribulopis angustifolia
	Tribulus hirsutus
	Tribulus macrocarpus
	Tribulus occidentalis
	Tribulus suberosus

APPENDIX B

Site Data

NB. Where a taxon is listed both as a single specific name and a variety of the same name it is because the varieties are only identifiable from flowering examples. For example – *Hibiscus sturtii* (vegetative only), *Hibiscus sturtii* var. *campylochlamys* and *Hibiscus sturtii* var. *platychlamys* both were in flower.

LEGEND

ABBREVIATION	DESCRIPTION
sp.	Species, used where the plant is vegetative
subsp.	Subspecies
forma	Forma
var.	Variety
*	Weed
affin.	Closest to that species
?	Unsure if that is the correct species
x	Hybrid

QUADRAT S01

Location: C019 on provided aerial
Datum: 406233E; 7577371N
Soil: Red sandy loam
Litter: Leaves 20%
Topography: Flat
Vegetation Description: Open Dwarf Scrub C of *Acacia stellaticeps* and *Acacia ligulata* over Dense Hummock Grass dominated by *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Burnt about 3 years. There were lower muddy areas scattered throughout this unit and these were dominated by *Sclerolaena* species and *Frankenia cordata*



SPECIES	HEIGHT (cm)	% COVER
Acacia ligulata	90	3-10
Acacia stellaticeps	60	10
Aristida contorta	50	<1
Atriplex codonocarpa	50	<1
Corchorus sidoides subsp. *sidoides*	60	<1
Eremophila forrestii	100	<1
Eriachne aristidea	40	<1
Eriachne obtusa	60	<1
Fimbristylis dichotoma	70	<1
Frankenia cordata	20	0-25
Heliotropium ovalifolium	50	3

SPECIES	HEIGHT (cm)	% COVER
Indigofera boviperda subsp. *boviperda*	30	<1
Maireana villosa	50	10
Pluchea tetranthera	50	<1
Portulaca pilosa	10	<1
Ptilotus exaltatus	80	<1
Ptilotus obovatus	80	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Sclerolaena cuneata	20	<1
Sclerolaena deserticola	20	<1
Sclerolaena glabra	20	<1
Senna artemisioides subsp. *helmsii*	60	1
Senna artemisioides subsp. *oligophylla*	40	<1
Sida echinocarpa	50	<1
Sporobolus australis	25	<1
Stylobasium spathulatum	120	0-5
Trianthema pilosa	50	<1
Trianthema triquetrum	30	<1
Triodia basedowii	80	90
Acacia ancistrocarpa	Opportunistic	
Bonamia rosea	Opportunistic	
Hakea lorea	Opportunistic	
Halgania solanacea var. *solanacea*	Opportunistic	
Ptilotus arthrolasius	Opportunistic	
Ptilotus calostachyus	Opportunistic	

QUADRAT S02

Location: North of S01
Datum: 406000E; 7578180N
S02A: 404754E; 7481949N
S02B: 406295E; 7576952N
Soil: Red sandy loam with gravel <1cm on the surface
Litter: Twigs 2%; Logs 2%
Topography: Flat
Vegetation Description: Open Low Woodland A of *Acacia coriacea* over Low Scrub A of *Acacia ancistrocarpa* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: At S02A occasional *Acacia ligulata*



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	175	10-20
Acacia coriacea	600	0-5
Acacia stellaticeps	80	<1
Amphipogon caricinus	80	1
Aristida contorta	35	<1
Aristida latifolia	85	<1

SPECIES	HEIGHT (cm)	% COVER
Boerhavia gardneri	twiner	<1
Bonamia rosea	75	5
Bulbostylis barbata	15	<1
Cleome viscosa	70	<1
Dicrastylis cordifolia	50	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	50	<1
Eragrostis eriopoda	80	<1
Eriachne aristidea	50	<1
Eriachne ciliata	15	<1
Evolvulus alsinoides var. villosicalyx	30	<1
Grevillea eriostachya	100	<1
Halgania solanacea var. Mt. Doreen	60	5
Indigofera boviperda subsp. *boviperda*	35	<1
Oldenlandia pterospora	40	2
Paraneurachne muelleri	80	3
Paspalidium rarum	20	<1
Ptilotus arthrolasius	60	<1
Ptilotus arthrolasius	60	<1
Ptilotus calostachyus	90	<1
Ptilotus exaltatus	50	<1
Rhagodia eremaea	50	<1
Scaevola parvifolia subsp. *pilbarae*	35	1
Sclerolaena deserticola	40	<1
Senna artemisioides subsp. *helmsii*	60	<1
Sida arenicola	50	<1
Sida sp. Sand Dunes	75	<1
Sporobolus australis	30	<1
Tephrosia arenicola	50	2
Triodia basedowii	80	75
Acacia ligulata	Opportunistic	
Acacia synchronicia	Opportunistic	
Byblis linifolia	Opportunistic	
Calytrix carinata	Opportunistic	
Enchylaena tomentosa	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Hakea lorea	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Sida cardiophylla	Opportunistic	
Stylidium humphreysii	Opportunistic	
Triodia schinzii	Opportunistic	

QUADRAT S03

Location: North of S02
Datum: 405608E; 7579291N
Soil: Red sand with small laterite pebbles
Litter:
Topography: Flat
Vegetation Description: Low Woodland B of *Hakea lorea* over Dense Hummock Grass of *Amphipogon carinata* and *Triodia basedowii*
Vegetation Condition: Excellent to Very good
Other Notes:



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	50	<1
Amphipogon caricinus	60	25
Bonamia rosea	50	3
Calytrix carinata	50	<1
Dampiera candicans	80	2-5
Dicrastylis cordifolia	60	2
Eriachne aristidea	50	<1

SPECIES	HEIGHT (cm)	% COVER
Goodenia armitiana	35	<1
Grevillea stenobotrya	70	<1
Hakea lorea	200	20
Halgania solanacea var. Mt. Doreen	60	2
Indigofera boviperda subsp. *boviperda*	30	3
Ptilotus calostachyus	100	5
Ptilotus polystachyus	120	<1
Scaevola parvifolia subsp. *pilbarae*	50	1
Sida arenicola	80	1
Sida cardiophylla	80	50
Sida sp. Sand Dunes	65	2
Solanum centrale	60	25
Sporobolus australis	15	<1
Tephrosia arenicola	60	2-5
Tribulus hirsutus	2	<1
Tribulus macrocarpus	5	<1
Triodia basedowii	80	50
Triumfetta chaetocarpa	50	<1
Acacia stellaticeps	Opportunistic	
Eragrostis eriopoda	Opportunistic	
Jacksonia aculeata	Opportunistic	
Ptilotus arthrolasius	Opportunistic	

QUADRAT S04

Location: North of S03
Datum: 405376E; 7579955N
S04A; 404013E; 7585548N
S04B: 404931E; 7581352N
Soil: Red sand
Topography: Flat
Vegetation Description: Low Heath C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes



SPECIES	HEIGHT (cm)	% COVER
Acacia ligulata	100	2
Acacia stellaticeps	60	40
Bonamia rosea	60	2
Dicrastylis cordifolia	50	<1
Halgania solanacea var. Mt. Doreen	60	<1
Indigofera boviperda subsp. *boviperda*	50	<1
Jacksonia aculeata	50	<1
Ptilotus arthrolasius	30	<1-5

SPECIES	HEIGHT (cm)	% COVER
Ptilotus calostachyus	60	<1
Ptilotus exaltatus	75	<1
Ptilotus polystachyus	120	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Tephrosia arenicola	70	<1
Triodia basedowii	70	75
Acacia eriopoda	Opportunistic	
Goodenia triodiophila	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Ptilotus axillaris	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT S05

Location: North of S04
Datum: 405234E; 7580400N
S05A: 404995E; 7581129N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Low Scrub B of *Acacia ligulata* over Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Dwarf Scrub D dominated by *Indigofera monophylla* and *Sclerolaena deserticola*
Vegetation Condition: Very good
Other Notes: The patches of *Senna* species are occasionally dense



SPECIES	HEIGHT (cm)	% COVER
Acacia ligulata	20	1
Aristida contorta	50	<1
Aristida holathera var. *holathera*	70	5
Boerhavia gardneri	twiner	<1
Bulbostylis barbata	10	<1
Chrysopogon pallidus	120	5
Cleome viscosa	70	<1

SPECIES	HEIGHT (cm)	% COVER
Eragrostis cumingii	50	<1
Eragrostis dielsii	50	5
Eragrostis eriopoda	60	5
Eremophila forrestii	70	<1
Eremophila latrobei	70	<1
Eremophila longifolia	50	<1
Eriachne aristidea	30	<1
Eriachne polyphyllus	30	5-20
Euphorbia australis	5	<1
Evolvulus alsinoides var. villosicalyx	20	<1
Fimbristylis dichotoma	90	<1
Gossypium australe	80	10
Heliotropium ovalifolium	50	1
Indigofera georgei	30	<1
Indigofera monophylla	50	10-20
Polycarpaea corymbosa	15	<1
Ptilotus exaltatus	90	<1
Ptilotus obovatus	100	5
Sclerolaena cuneata	40	1
Sclerolaena deserticola	50	5-10
Senna artemisioides subsp. *helmsii*	90	5-20
Senna artemisioides subsp. *oligophylla*	70	1
Sida platycalyx	40	1
Sida sp. Sand Dunes	90	<1
Tribulus macrocarpus	twiner	<1
Triodia basedowii	90	50
Acacia ancistrocarpa	Opportunistic	

QUADRAT S06

Location: North of S05
Datum: 403605E; 7586786N
S06A: 402070E; 7591438N
S06B: 403403E; 7587399N
Soil: Red sand
Litter: Leaves 2%; Twigs 3%
Topography: Flat
Vegetation Description: Open Dwarf Scrub C of *Jacksonia aculeata* over Open Dwarf Scrub D of *Dicrastylis doranii* over Mid-Dense Hummock Grass of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: Excellent
Other Notes: Sand flat between hills



SPECIES	HEIGHT (cm)	% COVER
Amphipogon caricinus	50	5
Aristida holathera var. *holathera*	50	1
Bonamia alatisemina	5	<1
Bonamia rosea	60	<1
Dampiera cinerea	50	<1

SPECIES	HEIGHT (cm)	% COVER
Dicrastylis cordifolia	60	<1
Dicrastylis doranii	30	5
Eragrostis eriopoda	50	<1
Goodenia armitiana	35	<1
Goodenia azurea subsp. *hesperia*	70	2
Grevillea eriostachya	100	<1
Halgania solanacea var. Mt. Doreen	40	<1
Jacksonia aculeata	70	5
Scaevola parvifolia subsp. *pilbarae*	40	1
Solanum centrale	35	<1
Stackhousia intermedia	70	<1
Tephrosia arenicola	60	2
Triodia basedowii	100	30
Triodia schinzii	180	30
Acacia ancistrocarpa	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT S07

Location: North of S06
Datum: 403667E; 7586402
S07A: 402051E; 7591387N
S07B: 401965E; 7593496N
S07C: 403168E; 7588111N
S07D 403008E; 7588387N
S07E: 402590E; 7589479N
S07F; 402255E; 7590549N
S07G: 402179E; 7591004N
Soil: Red sand
Topography: Sand dune
Vegetation Description: Open Low Scrub B of *Grevillea stenobotrya* over Dwarf Scrub D dominated by *Dicrastylis doranii* and *Dampiera cinerea* over Hummock Grass of *Triodia schinzii* over Open Tall Grass dominated by *Eriachne aristidea* and *Aristida holathera* var. *holathera*
Vegetation Condition: Excellent
Other Notes: This vegetation was common on the slopes and crest of sand dunes



SPECIES	HEIGHT (cm)	% COVER
Acacia coriacea	60	<1
Acacia dictyophleba	60	1
Aristida holathera var. *holathera*	70	10
Bonamia rosea	50	2
Calytrix carinata	50	<1
Chrysocephalum eremaeum	50	3

SPECIES	HEIGHT (cm)	% COVER
Dampiera cinerea	80	10
Dicrastylis doranii	70	10
Eragrostis eriopoda	50	3
Eriachne aristidea	60	15
Eucalyptus victrix	700	<1
Grevillea stenobotrya	130	5
Indigofera ammobia	50	<1
Jacksonia aculeata	50	1
Otion simplicifolia	60	5
Ptilotus arthrolasius	50	1
Rhagodia eremaea	15	<1
Sida sp. Sand Dunes	120	5
Stenopetalum anfractum	50	<1
Trianthema pilosa	30	<1
Triodia schinzii	150	5
Acacia stellaticeps	Opportunistic	
Grevillea eriostachya	Opportunistic	
Newcastelia cladotricha	Opportunistic	
Stackhousia intermedia	Opportunistic	
Swainsona laciniata	Opportunistic	

QUADRAT S08

Location: North of S07
Datum: 403835E; 7586204N
Soil: Red sand
Topography: South side of dune in flat at the edge of the rise
Vegetation Description: Open Scrub dominated by *Grevillea wickhamii* subsp. *aprica, Acacia ancistrocarpa* and *Acacia tumida* var. *pilbarensis* over Dwarf Scrub D of mixed taxa over Tall Grass dominated by *Eriachne aristidea, Triodia schinzii* and *Aristida holathera* var. *holathera*
Vegetation Condition: Very good
Other Notes: This unit was not recorded below any other dunes



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	5
Acacia ligulata	120	2
Acacia melleodora	175	<1
Acacia tumida var. *pilbarensis*	300	2
Aristida holathera var. *holathera*	80	15
Bonamia rosea	30	5%
Corchorus sidoides subsp. *sidoides*	50	3

SPECIES	HEIGHT (cm)	% COVER
Cucumis maderaspatensis	twiner	<1
Dicrastylis doranii	50	3
Eriachne aristidea	70	15
Grevillea wickhamii subsp. *aprica*	320	2
Jacksonia aculeata	50	<1
Paraneurachne muelleri	70	2
Scaevola parvifolia subsp. *pilbarae*	50	2
Sida sp. Rabbit Flat	10	<1
Solanum centrale	50	1
Tephrosia arenicola	75	1
Trianthema pilosa	10	<1
Triodia schinzii	150	15
Triumfetta chaetocarpa	120	2

QUADRAT S09

Location: North of S08
Datum: 403888E; 7585855N
S09A: 404037E; 7585440N
S09B: 403397E; 7587823N
Soil: Red sand with stones up to 50cm
Topography: Flat
Vegetation Description: Dwarf Scrub C of mixed taxa dominated by *Acacia ancistrocarpa* and *Grevillea stenobotrya* over Dwarf Scrub D dominated by *Jacksonia aculeata, Bonamia rosea, Indigofera boviperda* subsp. *boviperda* and *Dicrastylis cordifolia* over Tall Grass dominated by *Aristida holathera* var. *holathera* and *Triodia schinzii*
Vegetation Condition: Excellent to very good
Other Notes: Flat plain below hill. Edge of fire about 2 years ago. Scattered through the unit are areas of *Acacia ancistrocarpa* with a cover up to 20%



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	60	1
Aristida holathera var. *holathera*	70	30
Bonamia rosea	60	10
Corchorus sidoides subsp. *sidoides*	40	1
Dampiera candicans	50	<1

SPECIES	HEIGHT (cm)	% COVER
Dicrastylis cordifolia	70	5
Eragrostis eriopoda	70	5
Euphorbia australis	5	<1
Evolvulus alsinoides var. *decumbens*	15	<1
Grevillea eriostachya	100	<1
Grevillea stenobotrya	175	1
Halgania solanacea var. *solanacea*	60	1
Hibiscus burtonii	50	<1
Indigofera boviperda subsp. *boviperda*	30	10
Jacksonia aculeata	60	5
Newcastelia cladotricha	70	1
Oldenlandia pterospora	10	<1
Paraneurachne muelleri	50	5
Polygala isingii	10	<1
Senna artemisioides subsp. *oligophylla*	60	<1
Senna curvistyla	10	<1
Senna notabilis	40	<1
Sida cardiophylla	50	<1
Stackhousia intermedia	70	<1
Tephrosia arenicola	50	5
Tephrosia sp. B Kimberley Flora	15	<1
Triodia basedowii	50	2
Triodia schinzii	150	5
Zornia albiflora	30	<1
Acacia stellaticeps	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Ptilotus axillaris	Opportunistic	
Sida arenicola	Opportunistic	
Sida echinocarpa	Opportunistic	

QUADRAT S10

Location: North of S09
Datum: 404142E; 7584925N
S10A: 404331E; 7584063N
Soil: Red loamy sand with rocks less than 5cm
Topography: Flat
Vegetation Description: Low Scrub A dominated by *Acacia ligulata* or *Acacia ancistrocarpa* over Dense Tall Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Area burnt less than 5 years



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	70	1-15
Acacia ligulata	175	1-15
Acacia stellaticeps	60	<1
Acacia wanyu	250	1
Bulbostylis barbata	15	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	50	1
Eragrostis dielsii	25	<1
Eremophila tietkensii	60	<1

SPECIES	HEIGHT (cm)	% COVER
Eriachne aristidea	50	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia vilmoriniae	30	<1
Gossypium australe	70	<1
Grevillea wickhamii subsp. *aprica*	250	<1
Hibiscus burtonii	60	<1
Indigofera monophylla	90	1
Maireana georgei	50	<1
Maireana tomentosa subsp. *tomentosa*	60	1
Paraneurachne muelleri	50	1
Pluchea tetranthera	50	<1
Polycarpaea corymbosa	15	<1
Portulaca pilosa	20	<1
Pterocaulon serrulatum	70	<1
Ptilotus exaltatus	50	<1
Ptilotus obovatus	50	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Sclerolaena cornishiana	30	1
Senna artemisioides subsp. *helmsii*	60	1-10
Senna artemisioides subsp. *oligophylla*	50	1-10
Senna glutinosa subsp. *glutinosa*	70	<1
Senna notabilis	50	<1
Sida arenicola	70	<1
Sida platycalyx	50	<1
Sporobolus australis	25	<1
Trianthema triquetrum	5	<1
Tribulus macrocarpus	5	<1
Triodia basedowii	70	75
Acacia pachycarpa	Opportunistic	
Bonamia alatisemina	Opportunistic	
Eremophila forrestii	Opportunistic	
Ptilotus polystachyus	Opportunistic	
Rhagodia eremaea	Opportunistic	
Sida sp. Spiciform Panicles	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Waltheria virgata	Opportunistic	

QUADRAT S11

Location: North of S11
Datum: 404378E; 7583907N
S11A: 404378E; 7583810N
S11B: 404228E; 7573656N
Soil: Red sand
Topography: Slight rise
Vegetation Description: Scrub of *Acacia ligulata, Grevillea wickhamii* subsp. *aprica, Stylobasium spathulatum* and *Hakea lorea* over Open Dwarf Scrub D dominated by *Dicrastylis doranii* over Dense Hummock Grass dominated by *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Area burnt about 3 years



SPECIES	HEIGHT (cm)	% COVER
Acacia dictyophleba	120	<1
Acacia ligulata	200	5
Aristida contorta	50	1
Bonamia rosea	40	1
Calytrix carinata	50	<1
Dicrastylis doranii	50	5

SPECIES	HEIGHT (cm)	% COVER
Euphorbia boophthona	50	<1
Grevillea eriostachya	120	1
Grevillea wickhamii subsp. *aprica*	350	5
Hakea lorea	300	5
Ptilotus arthrolasius	50	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Solanum centrale	50	1
Stackhousia intermedia	40	<1
Stylobasium spathulatum	100	5
Triodia basedowii	100	85
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Gossypium australe	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Halgania solanacea var. *solanacea*	Opportunistic	
Indigofera monophylla	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Ptilotus polystachyus	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Triodia schinzii	Opportunistic	
Waltheria virgata	Opportunistic	

QUADRAT S12

Location: North of S12
Datum: 404573E; 7582929N
S12A: 403477E; 7587147N
Soil: Red sand
Topography: Flat
Vegetation Description: Scrub of *Acacia ancistrocarpa* and *Grevillea wickhamii* subsp. *aprica* over Open Dwarf Scrub D of *Bonamia rosea* over Dense Tall Grass of *Triodia schinzii*
Vegetation Condition: Very good
Other Notes: Where the area has been burnt there are many low shrubs, grasses and dead *Acacia* branches



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	0-20
Acacia dictyophleba	100	1
Bonamia rosea	60	5
Corymbia opaca	300	<1
Dicrastylis cordifolia	20	<1
Eriachne aristidea	50	<1
Fimbristylis dichotoma	50	<1

SPECIES	HEIGHT (cm)	% COVER
Fimbristylis oxystachya	20	1
Grevillea wickhamii subsp. *aprica*	300	<1-20
Halgania solanacea var. *solanacea*	50	1
Indigofera boviperda subsp. *boviperda*	50	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Triodia basedowii	130	10
Triodia schinzii	150	80
Waltheria virgata	50	1
Acacia coriacea	Opportunistic	
Calytrix carinata	Opportunistic	
Dicrastylis doranii	Opportunistic	
Grevillea eriostachya	Opportunistic	
Hakea lorea	Opportunistic	
Macgregoria racemosa	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	

QUADRAT S13

Location: South of S12
Datum: 406264E; 7576748N
S13A: 404999E; 7574593N
Soil: Red sandy loam with many surface stones to 80cm
Topography: Flat
Vegetation Description: Open Low Woodland B of *Acacia macraneura* over scrub of *Acacia wanyu* over Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Ends at Telfer track. Near tracks several shrubs of *Acacia synchronicia* which continue to the current Telfer track. At S13A there are no *Acacia macraneura* or *Acacia synchronicia*



SPECIES	HEIGHT (cm)	% COVER
Abutilon otocarpum	70	<1
Abutilon oxycarpum	20	<1
Acacia ancistrocarpa	120	<1
Acacia macraneura	300	2
Acacia wanyu	300	15
Chrysopogon pallidus	120	<1

SPECIES	HEIGHT (cm)	% COVER
Cleome viscosa	70	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	50	<1
Eragrostis xerophila	50	<1
Euphorbia australis	2	<1
Grevillea stenobotrya	100	<1
Hibiscus burtonii	90	<1
Indigofera monophylla	70	3
Maireana tomentosa subsp. *tomentosa*	50	2
Polycarpaea corymbosa	10	<1
Portulaca pilosa	5	1
Pterocaulon sphacelatum	20	<1
Ptilotus exaltatus	60	<1
Ptilotus obovatus	70	<1
Rhagodia eremaea	70	<1
Sclerolaena cornishiana	70	3
Senna artemisioides subsp. *helmsii*	100	<1
Senna artemisioides subsp. *oligophylla*	60	10-20
Swainsona formosa	20	<1
Trianthema triquetrum	5	<1
Triodia basedowii	90	75
Acacia synchronicia	Opportunistic	
Eremophila forrestii	Opportunistic	
Eremophila latrobei	Opportunistic	
Eriachne aristidea	Opportunistic	
Euphorbia boophthona	Opportunistic	
Ptilotus polystachyus	Opportunistic	
Solanum lasiophyllum	Opportunistic	

QUADRAT S14

Location: South of S13
Datum: 405953E; 7578811N
S14A: 404851E; 7574475N
Soil: Red sand with pebbles less than 5mm
Topography: Flat
Vegetation Description: Scrub of *Acacia synchronicia* over Dwarf Scrub C dominated by *Senna artemisioides* subsp. *helmsii* and *Eremophila forrestii* subsp. *forrestii* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good but beside current Telfer Road condition very good to good
Other Notes: Occasional patches of **Cenchrus ciliaris* along road verge



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	600	2
Acacia synchronicia	300	5-10
Aristida holathera var. *holathera*	70	<1
Bulbostylis barbata	15	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Eremophila forrestii subsp. *forrestii*	100	1-10
Eremophila latrobei	70	<1

SPECIES	HEIGHT (cm)	% COVER
Eriachne aristidea	50	<1
Eriachne polyphyllus	10	<1
Euphorbia boophthona	90	<1
Gomphrena canescens subsp. *canescens*	50	<1
Goodenia microptera	50	<1
Gossypium australe	90	3
Ptilotus exaltatus	90	2
Scaevola parvifolia subsp. *pilbarae*	50	<1
Sclerolaena cornishiana	50	<1
Senna artemisioides subsp. *helmsii*	100	1-20
Senna artemisioides subsp. *oligophylla*	70	2
Senna notabilis	30	<1
Solanum lasiophyllum	50	<1
Sporobolus australis	15	<1
Stackhousia intermedia	30	<1
Swainsona formosa	20	<1
Trianthema pilosa	10	<1
Triodia basedowii	80	90
Acacia macraneura	Opportunistic	
**Cenchrus ciliaris*	Opportunistic	
Chrysopogon pallidus	Opportunistic	
Eragrostis eriopoda	Opportunistic	

QUADRAT S15

Location: On current Telfer Track and south of S14
Datum: 404584E; 7574109N
Soil: Red sand
Topography: Flat
Vegetation Description: Scrub of *Acacia ancistrocarpa* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Occasionally *Acacia ligulata* reasonably common



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	5-20
Acacia synchronicia	150	<1
Aristida holathera var. *holathera*	50	2
Boerhavia gardneri	60	<1
Bonamia rosea	90	5
**Cenchrus ciliaris*	40	2
Cleome viscosa	60	<1
Corchorus sidoides subsp. *sidoides*	50	2
Cullen martinii	70	<1

SPECIES	HEIGHT (cm)	% COVER
Dicrastylis cordifolia	70	<1
Eragrostis eriopoda	50	1
Euphorbia australia	15	<1
Gossypium australe	70	2
Halgania solanacea var. *solanacea*	60	1
Indigofera monophylla	60	<1
Ptilotus arthrolasius	50	<1
Ptilotus exaltatus	70	1
Ptilotus polystachyus	100	2
Scaevola parvifolia subsp. *pilbarae*	50	3
Sclerolaena cornishiana	60	<1
Senna artemisioides subsp. *oligophylla*	80	1
Senna notabilis	60	<1
Sida echinocarpa	120	<1
Sida sp. Sand Dunes	100	1
Tephrosia arenicola	70	<1
Trianthema pilosa	5	<1
Trianthema triquetrum	20	<1
Tribulus macrocarpus	5	<1
Triodia basedowii	90	85
Triodia schinzii	100	1
Acacia ligulata	Opportunistic	
Acacia stellaticeps	Opportunistic	

QUADRAT S16

Location: On current Telfer Road
Datum: 404045E; 7573388N
S16A: 403158E; 7572087N
Soil: Red sand with several stones to 5mm on surface
Topography: Flat
Vegetation Description: Open Scrub of *Hakea lorea* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Only a small area at S16A



SPECIES	HEIGHT (cm)	% COVER
Cassytha filiformis	twiner	<1
Dicrastylis cordifolia	50	1
Eriachne aristidea	50	<1
Euphorbia drummondii	50	2
Fimbristylis oxystachya	20	<1
Gonocarpus eremophilus	30	<1
Goodenia triodiophila	70	<1
Hakea lorea	300	5-10

SPECIES	HEIGHT (cm)	% COVER
Halgania solanacea var. *solanacea*	60	<1
Hybanthus aurantiacus	50	<1
Indigofera boviperda subsp. *boviperda*	60	<1
Ipomoea polymorpha	10	<1
Paspalidium rarum	5	<1
Pluchea rubelliflora	40	<1
Ptilotus axillaris	5	<1
Ptilotus calostachyus	60	5
Ptilotus polystachyus	90	2
Sida ammophila	50	<1
Sida cardiophylla	50	<1
Sida echinocarpa	90	<1
Solanum centrale	50	<1
Tephrosia arenicola	60	5
Triodia basedowii	100	85
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Petalostylis cassioides	Opportunistic	

QUADRAT S17

Location: South of S16
Datum: 402827E; 7571763N
Soil: Red sand with numerous pebbles less than 5mm on the surface
Topography: Flat
Vegetation Description: Dwarf Scrub C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Reasonably common through this area



SPECIES	HEIGHT (cm)	% COVER
Acacia stellaticeps	90	15-20
Aristida latifolia	70	<1
Bulbostylis barbata	10	<1
Calytrix carinata	70	<1
Goodenia armitiana	30	<1
Hakea lorea	120	<1
Halgania solanacea var. *solanacea*	60	<1
Heliotropium ovalifolium	50	5
Hibiscus burtonii	20	<1

SPECIES	HEIGHT (cm)	% COVER
Indigofera boviperda subsp. *boviperda*	40	<1
Petalostylis cassioides	50	2
Ptilotus arthrolasius	60	3
Ptilotus calostachyus	70	<1
Ptilotus exaltatus	50	<1
Scaevola parvifolia subsp. *pilbarae*	50	3
Senna notabilis	50	<1
Stylobasium spathulatum	200	<1
Tephrosia arenicola	70	<1
Triodia basedowii	90	80

QUADRAT S18

Location: On current Telfer Track
Datum: 408010E; 7535358N
S18A: 406964E; 7537191N
Soil: Red silty sand
Topography: Flat
Vegetation Description: Open Woodland of *Eucalyptus victrix* and *Corymbia opaca* over Dense Hummock Grass of *Triodia schinzii*
Vegetation Condition: Very good
Other Notes: Occasionally *Eucalyptus victrix* or *Corymbia opaca* up to 20% cover but typically mixed



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	120	2
Acacia dictyophleba	150	10
Acacia eriopoda	250	2
Aristida holathera var. *holathera*	70	5
Aristida latifolia	80	3
Bonamia rosea	5	<1
**Cenchrus ciliaris*	70	<1

SPECIES	HEIGHT (cm)	% COVER
Chrysocephalum eremaeum	50	<1
Cleome viscosa	80	<1
Clerodendrum floribundum	130	<1
Corchorus sidoides subsp. *sidoides*	50	0-50
Corymbia opaca	1800	18
Cullen leucantha	70	<1
Eragrostis eriopoda	70	1
Eriachne lanata	70	5
Eucalyptus victrix	2000	3
Euphorbia australis	5	<1
Euphorbia tannensis subsp. *eremophila*	40	<1
Evolvulus alsinoides var. *decumbens*	10	<1
Goodenia stobbsiana	50	<1
Indigofera georgei	80	<1
Ipomoea muelleri	twiner	<1
Melhania oblongifolia	50	<1
Newcastelia roseoazurea	69	<1
Polycarpaea corymbosa	30	<1
Polymeria ambigua	5	<1
Pterocaulon serrulatum	80	<1
Ptilotus obovatus	70	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Sida sp. Rabbit Flat	50	<1
Trichodesma zeylanicum var. *grandiflorum*	85	<1
Triodia basedowii	90	5
Triodia schinzii	120	75
Acacia ligulata	Opportunistic	
Crotalaria cunninghamii	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Hakea lorea	Opportunistic	
Salsola australis	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT S19

Location: North of S18 on current Telfer Road
Datum: 406964E; 7437131N
Soil: Red loam
Topography: Minor creek
Vegetation Description: Low Woodland A of *Eucalyptus victrix* over Dense Tall Grass of *Sorghum plumosum* and **Cenchrus ciliaris*
Vegetation Condition: Very good to good
Other Notes: Very narrow creek. Several seedlings had germinated./ Eastern side more degraded than the western side



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	100	<1
Acacia eriopoda	175	1
**Aerva peruviana*	20	<1
Aeschynomene indica	90	<1
Aristida latifolia	70	<1
Buchnera linearis	50	<1

SPECIES	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	70	10-50
Centipeda minima subsp. *macrocephala*	10	<1
Cullen leucantha	130	<1
Dactyloctenium radulans	20	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	35	<1
Eragrostis tenellula	30	<1
Eucalyptus victrix	800	20
Euphorbia tannensis subsp. *eremophila*	30	<1
Ipomoea muelleri	twiner	1
Pluchea tetranthera	25	<1
Polymeria ambigua	60	<1
Portulaca pilosa	20	<1
Pterocaulon serrulatum	50	<1
Ptilotus obovatus	40	<1
Sclerolaena cornishiana	30	<1
Senna artemisioides subsp. *helmsii*	30	<1
Senna artemisioides subsp. *oligophylla*	70	2
Sorghum plumosum	175	80
Sporobolus australis	30	<1
Trichodesma zeylanicum var. *grandiflorum*	50	<1
Triodia pungens	90	1
Triodia schinzii	130	<1
Vigna lanceolata	twiner	<1
Wahlenbergia tumidifructa	40	<1

QUADRAT S20

Location: North of S19
Datum: 406647E; 7537116N
S20A 406253E; 7437097N
S20B: 406000E; 7537125N
Soil: Red sand with scattered rocks to 15cm
Topography: Flat
Vegetation Description: Open Low Woodland A of *Corymbia opaca* over Scrub of *Acacia ligulata* and *Acacia dictyophleba* over Dense Low Grass of **Cenchrus ciliaris*
Vegetation Condition: Good to Degraded
Other Notes: ***Aerva peruviana* at 406564E; 7537110N extends for some distance



SPECIES	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia ancistrocarpa	300	3
Acacia dictyophleba	200	10
Acacia eriopoda	600	5
Acacia ligulata	200	2-10
Amyema hilliana	parasite	<1
Bulbostylis barbata	10	<1

SPECIES	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	50	95
Chrysocephalum eremaeum	50	<1
Cleome viscosa	90	<1
Corchorus sidoides subsp. *sidoides*	50	<1
Corymbia opaca	1000	5-10
Cullen leucantha	50	<1
Eriachne obtusa	70	<1
Gomphrena canescens subsp. *canescens*	30	<1
Indigofera colutea	70	<1
Polycarpaea corymbosa	15	<1
Polymeria ambigua	10	<1
Pterocaulon serrulatum	80	<1
Ptilotus obovatus	70	<1
Rhagodia eremaea	70	<1
Salsola australis	90	<1
Sclerolaena cornishiana	60	<1
Senna artemisioides subsp. *helmsii*	120	3
Solanum lasiophyllum	60	<1
Trianthema pilosa	5	<1
Triodia pungens	80	2
Vigna lanceolata	twiner	<1
Acacia colei	Opportunistic	
**Aerva peruviana*	Opportunistic	

QUADRAT S21

Location: North of S20
Datum: 406315E; 7537108N
Soil: Coarse red sand with rocks
Topography: Creek
Vegetation Description: Low Woodland A of *Eucalyptus camaldulensis* over bare ground in the creek and over Dense Low grass of **Cenchrus ciliaris* on the bank
Vegetation Condition: Excellent in the creek and good on the edge.
Other Notes: Duck Creek about 100m wide. **Cenchrus ciliaris* common on the bank



SPECIES	HEIGHT (cm)	% COVER
Alternanthera nodiflora	40	2
Ammannia baccifera	60	<1
Calotis plumulifera	30	<1
**Cenchrus ciliaris*	40	100 on bank
Centipeda minima subsp. *macrocephala*	20	5
Cucumis maderaspatensis	twiner	<1
Dysphania plantagineum	20	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	20	<1

SPECIES	HEIGHT (cm)	% COVER
Eragrostis speciosa	35	<1
Eucalyptus camaldulensis	1000	25
Ipomoea muelleri	twiner	<1
Polygala isingii	5	<1
Pterocaulon serrulatum	50	<1
Sorghum plumosum	120	1
Sporobolus australis	60	<1
Striga squamigera	30	<1
Synaptantha tillaeacea	10	<1
Wahlenbergia tumidifructa	70	1

QUADRAT S22

Location: North of S06C
Datum: 402036E; 7591610
S22A 402707E; 7589010N
S22B: 403147E; 7588093N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Low Scrub A to Low Scrub A of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Predominantly a Dense Hummock Grassland with occasional dense areas of *Acacia stellaticeps* or *Acacia ancistrocarpa*



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	<1
Acacia stellaticeps	120	0-20
Bonamia rosea	50	<1
Brunonia australis	25	<1
Dampiera candicans	60	<1
Dicrastylis cordifolia	50	<1

SPECIES	HEIGHT (cm)	% COVER
Eriachne aristidea	10	<1
Gonocarpus eremophilus	35	<1
Goodenia azurea subsp. *hesperia*	40	<1
Goodenia triodiophila	40	<1
Grevillea eriostachya	250	<1
Grevillea wickhamii subsp. *aprica*	300	<1
Hakea lorea	300	<1
Indigofera boviperda subsp. *boviperda*	30	<1
Jacksonia aculeata	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna notabilis	40	<1
Stackhousia intermedia	70	<1
Thysanotus sp. Desert East of Newman	25	<1
Triodia basedowii	80	75
Acacia eriopoda	Opportunistic	
Amphipogon caricinus	Opportunistic	
Bonamia alatisemina	Opportunistic	
Byblis linifolia	Opportunistic	
Calytrix carinata	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Corymbia opaca	Opportunistic	
Dodonaea coriacea	Opportunistic	
Dysphania rhadinostachya subsp. *rhadinostachya*	Opportunistic	
Euphorbia tannensis subsp. *eremophila*	Opportunistic	
Fimbristylis oxystachya	Opportunistic	
Goodenia stobbsiana	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Keraudrenia velutina subsp. *elliptica*	Opportunistic	
Mollugo molluginea	Opportunistic	
Newcastelia cladotricha	Opportunistic	
Ptilotus calostachyus	Opportunistic	
Ptilotus gaudichaudii var. *gaudichaudii*	Opportunistic	
Sida echinocarpa	Opportunistic	
Sida sp. Spiciforme Panicles	Opportunistic	
Tephrosia arenicola	Opportunistic	
Triodia schinzii	Opportunistic	

QUADRAT S23

Location: North of S22
Datum: 402229E; 7595431N
Soil: Red sandy loam with a few pebbles
Topography: Flat
Vegetation Description: Low Woodland B of *Eucalyptus kingsmillii* subsp. *kingsmillii* over Dense Hummock Grass of *Triodia schinzii*
Vegetation Condition: Excellent to very good
Other Notes: Burnt about 3-5 years



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	100	<1
Aristida holathera var. *holathera*	60	<1
Bonamia rosea	60	1
Byblis linifolia	10	<1
Dicrastylis cordifolia	40	<1
Eriachne aristidea	15	<1
Eucalyptus kingsmillii subsp. *kingsmillii*	130	10
Fimbristylis oxystachya	25	<1

SPECIES	HEIGHT (cm)	% COVER
Heliotropium ovalifolium	50	<1
Jacksonia aculeata	50	<1
Macgregoria racemosa	10	<1
Polygala isingii	10	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Sida sp. Sand Dunes	70	1
Trianthema pilosa	5	<1
Triodia basedowii	70	1
Triodia schinzii	120	80
Acacia colei	Opportunistic	
Acacia dictyophleba	Opportunistic	
Amphipogon caricinus	Opportunistic	
Corymbia opaca	Opportunistic	
Dampiera candicans	Opportunistic	
Dodonaea coriacea	Opportunistic	
Euphorbia drummondii	Opportunistic	
Goodenia armitiana	Opportunistic	
Goodenia azurea subsp. *hesperia*	Opportunistic	
Grevillea eriostachya	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Hakea lorea	Opportunistic	
Indigofera boviperda subsp. *boviperda*	Opportunistic	
Ptilotus aervoides	Opportunistic	
Ptilotus polystachyus	Opportunistic	
Sida sp. Rabbit Flat	Opportunistic	
Tephrosia arenicola	Opportunistic	

QUADRAT 24

Location: North of S23
Datum: 402493E; 7596489N
S24A: 403119E; 7588208N
S24B: 402949E; 7588527N
Soil: Red coarse sand
Topography: Flat
Vegetation Description: Open Low Woodland B of *Corymbia opaca* over Dense Hummock Grass of *Triodia basedowii* over Very Open Low Grass of *Amphipogon caricinus*
Vegetation Condition: Excellent to very good
Other Notes: Occasionally *Grevillea wickhamii* subsp. *aprica* common. Burnt recently



SPECIES	HEIGHT (cm)	% COVER
Amphipogon caricinus	80	10
Anthobolus leptomerioides	100	1
Bonamia alatisemina	2	<1
Bulbostylis barbata	15	<1
Corymbia opaca	400	5
Dampiera candicans	50	1
Dicrastylis cordifolia	60	1

SPECIES	HEIGHT (cm)	% COVER
Dysphania rhadinostachya subsp. *rhadinostachya*	50	<1
Gonocarpus eremophilus	20	<1
Goodenia armitiana	25	<1
Grevillea wickhamii subsp. *aprica*	150	3
Hakea lorea	300	<1
Halgania solanacea var. *solanacea*	50	<1
Heliotropium ovalifolium	60	<1
Indigofera boviperda subsp. *boviperda*	30	<1
Jacksonia aculeata	60	<1
Pluchea tetranthera	50	<1
Ptilotus exaltatus	70	<1
Senna notabilis	50	<1
Senna sericea	50	<1
Solanum diversiflorum	twiner	<1
Tephrosia arenicola	50	5
Tribulus hirsutus	5	<1
Triodia basedowii	90	80
Abutilon otocarpum	Opportunistic	
Acacia ancistrocarpa	Opportunistic	
Acacia stellaticeps	Opportunistic	
Bonamia rosea	Opportunistic	
Calytrix carinata	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Portulaca pilosa	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Sida arenicola	Opportunistic	
Sporobolus australis	Opportunistic	
Trianthema pilosa	Opportunistic	

QUADRAT S25

Location: North of S24
Datum: 402524E; 7596551N
Soil: Red sandy loam
Topography: Flat
Vegetation Description: Dense Hummock Grass of *Triodia pungens* or *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Occasional low scattered shrubs



SPECIES	HEIGHT (cm)	% COVER
Acacia ligulata	60	<1
Acacia stellaticeps	70	<1
Bulbostylis barbata	5	<1
Dampiera candicans	70	3
Dicrastylis cordifolia	60	1
Gonocarpus eremophilus	5	<1
Goodenia armitiana	50	<1
Halgania solanacea var. Mt. Doreen	50	<1
Heliotropium ovalifolium	50	2-5

SPECIES	HEIGHT (cm)	% COVER
Macgregoria racemosa	10	<1
Polygala isingii	70	<1
Portulaca pilosa	20	<1
Ptilotus arthrolasius	50	<1
Ptilotus exaltatus	90	<1
Senna sericea	70	0-3
Sida arenicola	100	<1
Sporobolus australis	50	<1
Streptoglossa liatroides	60	<1
Stylobasium spathulatum	150	<1
Tephrosia arenicola	60	5
Triodia basedowii	80	2-20
Triodia schinzii	120	10
Fimbristylis dichotoma	Opportunistic	
Polycarpaea corymbosa	Opportunistic	
Ptilotus axillaris	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Sida sp. Rabbit Flat	Opportunistic	
Solanum diversiflorum	Opportunistic	
Tribulus hirsutus	Opportunistic	
Triodia pungens	Opportunistic	

QUADRAT S26

Location: North of S25
Datum: 402186E; 7590818N
S26A: 402585E; 7589550N
S26B: 402244E; 7590615N
S26C: 402135E; 7591120N
S26D: 402046E; 7591239N
Soil: Red sand
Topography: Flat
Vegetation Description: Low Heath C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Lot of open areas between *Triodia* plants



SPECIES	HEIGHT (cm)	% COVER
Acacia stellaticeps	90	50
Bonamia rosea	70	1
Calytrix carinata	80	<1
Fimbristylis oxystachya	30	<1
Goodenia azurea subsp. *hesperia*	50	<1

SPECIES	HEIGHT (cm)	% COVER
Grevillea eriostachya	100	1
Grevillea stenobotrya	170	1
Hakea lorea	300	1
Jacksonia aculeata	50	<1
Macgregoria racemosa	20	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Stackhousia intermedia	70	<1
Triodia basedowii	90	75
Triodia schinzii	120	5
Velleia connata	20	<1
Acacia ancistrocarpa	Opportunistic	
Aristida holathera var. *holathera*	Opportunistic	
Dicrastylis cordifolia	Opportunistic	
Dodonaea coriacea	Opportunistic	
Euphorbia australis	Opportunistic	
Euphorbia boophthona	Opportunistic	
Goodenia armitiana	Opportunistic	
Halgania solanacea var. *solanacea*	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Indigofera monophylla	Opportunistic	
Ptilotus aervoides	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Sida arenicola	Opportunistic	
Stylobasium spathulatum	Opportunistic	
Trianthema pilosa	Opportunistic	

QUADRAT S27

Location: Started from where S17 ended
Datum: 404045E; 7573387N
S27A: 403032E; 7571899N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Scrub of *Hakea lorea* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Area burnt about 5 years. *Hakeas* flowering



SPECIES	HEIGHT (cm)	% COVER
Aristida contorta	70	2
Cleome viscosa	90	<1
Dampiera candicans	70	<1
Dicrastylis cordifolia	50	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Eragrostis eriopoda	50	<1
Eriachne aristidea	70	1

SPECIES	HEIGHT (cm)	% COVER
Euphorbia australis	20	<1
Fimbristylis dichotoma	70	<1
Fimbristylis oxystachya	20	<1
Hakea lorea	300	5-10
Halgania solanacea var. *solanacea*	60	1
Indigofera boviperda subsp. *boviperda*	30	3
Oldenlandia pterospora	10	<1
Pterocaulon serrulatum	70	<1
Ptilotus aervoides	50	<1
Ptilotus axillaris	5	<1
Ptilotus calostachyus	75	<1
Ptilotus polystachyus	80	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Sida arenicola	120	<1
Sida sp. Sand Dunes	75	1
Tephrosia arenicola	70	5
Tribulus hirsutus	twiner	<1
Triodia basedowii	90	90
Acacia eriopoda	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Petalostylis cassioides	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT S28

Location: Along current Telfer Road
Datum: 403071E; 7571958N
Soil: Red silty sand with pebbles about 5cm
Topography: Flat
Vegetation Description: Scrub of *Grevillea wickhamii* subsp. *aprica* over Heath B of *Acacia ancistrocarpa* and *Petalostylis cassioides* over Mid-Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Small area of dense shrubs



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	120	20
Amphipogon caricinus	70	5
Aristida holathera var. *holathera*	60	5
Aristida inaequiglumis	75	<1
Bonamia rosea	50	2
Corchorus sidoides subsp. *sidoides*	50	1
Dicrastylis cordifolia	70	2
Dodonaea coriacea	60	<1

SPECIES	HEIGHT (cm)	% COVER
Dysphania rhadinostachya subsp. *rhadinostachya*	35	<1
Eragrostis eriopoda	70	<1
Eriachne aristidea	50	2
Euphorbia drummondii	30	<1
Goodenia armitiana	50	<1
Goodenia azurea subsp. *hesperia*	55	<1
Grevillea wickhamii subsp. *aprica*	300	15
Hakea lorea	200	<1
Halgania solanacea var. Mt. Doreen	60	<1
Hybanthus aurantiacus	50	<1
Indigofera boviperda subsp. *boviperda*	50	2
Paraneurachne muelleri	50	2
Petalostylis cassioides	120	20
Ptilotus arthrolasius	50	<1
Ptilotus axillaris	5	<1
Ptilotus calostachyus	70	<1
Ptilotus exaltatus	70	2
Ptilotus polystachyus	70	1
Scaevola parvifolia subsp. *pilbarae*	30	2
Senna notabilis	50	<1
Sida arenicola	120	<1
Solanum centrale	60	1
Stylobasium spathulatum	120	<1
Tephrosia arenicola	70	3
Triodia basedowii	90	30
Triodia schinzii	120	3

QUADRAT S29

Location: Along current Telfer Road
Datum: 402864E; 7571664N
Soil: Red sand with numerous pebbles less than 5mm
Topography: Flat
Vegetation Description: Dwarf Scrub C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Occasional shrubs of *Acacia ligulata* and *Hakea lorea*



SPECIES	HEIGHT (cm)	% COVER
Acacia ligulata	90	<1
Acacia stellaticeps	70	5-30
Amphipogon caricinus	70	1
Bonamia rosea	60	<1
Bulbostylis barbata	10	<1
Dicrastylis cordifolia	60	<1
Goodenia stobbsiana	40	<1
Goodenia triodiophila	60	<1
Grevillea stenobotrya	100	<1

SPECIES	HEIGHT (cm)	% COVER
Halgania solanacea var. *solanacea*	50	<1
Heliotropium ovalifolium	40	1
Indigofera boviperda subsp. *boviperda*	30	2
Petalostylis cassioides	70	2
Ptilotus arthrolasius	50	3
Ptilotus axillaris	twiner	<1
Ptilotus calostachyus	90	<1
Scaevola parvifolia subsp. *pilbarae*	50	3
Sida arenicola	90	<1
Tephrosia arenicola	70	<1
Triodia basedowii	80	75
Eremophila forrestii	Opportunistic	
Hakea lorea	Opportunistic	
Portulaca pilosa	Opportunistic	

QUADRAT S30

Location: Current Telfer Road
Datum: 402531E; 7571118N
S30A: 400209E; 7567281N
Soil: Red loam with numerous small pebbles less tan 1mm
Topography: Flat
Vegetation Description: Scrub of *Acacia wanyu* over Open Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Low Heath D dominated by shrubs of *Maireana* species and *Sclerolaena* species
Vegetation Condition: Excellent to very good
Other Notes: A few *Triodia pungens* plants at S30A



SPECIES	HEIGHT (cm)	% COVER
Acacia wanyu	200	30
Aristida contorta	20	<1
Boerhavia gardneri	twiner	<1
Brachyachne prostrata	5	3
**Cenchrus ciliaris*	70	<1
Cleome viscosa	70	<1

SPECIES	HEIGHT (cm)	% COVER
Eragrostis xerophila	50	<1
Eremophila forrestii	100	5
Euphorbia australis	10	<1
Goodenia armitiana	35	<1
Lepidium phlebopetalum	20	<1
Maireana georgei	50	10
Maireana tomentosa subsp. *tomentosa*	100	40
Pluchea tetranthera	50	1
Portulaca pilosa	15	<1
Ptilotus aervoides	twiner	<1
Ptilotus exaltatus	70	1
Ptilotus obovatus	50	5
Salsola australis	70	10
Sclerolaena cornishiana	50	5
Sclerolaena diacantha	30	5
Senna artemisioides subsp. *helmsii*	70	5
Senna artemisioides subsp. *oligophylla*	75	5
Senna glutinosa subsp. *glutinosa*	130	1
Sida sp. Spiciforme Panicles	60	<1
Solanum lasiophyllum	70	<1
Streptoglossa liatroides	50	<1
Trianthema triquetrum	5	2
Tribulus hirsutus	twiner	<1
Tribulus macrocarpus	2	<1
Triodia basedowii	90	1
Triodia pungens	Opportunistic	

QUADRAT S31

Location: On current Telfer Road
Datum: 402135E; 7570642N
S31A: 400294E; 7567768N
S31B: 401321E; 7569540N
Soil: Red loam
Topography: Flat
Vegetation Description: Open Low Woodland A of *Acacia pachycarpa* over Dense Tall Grass dominated by *Chrysopogon pallidus* and **Cenchrus ciliaris*
Vegetation Condition: Good
Other Notes: *Acacia pachycarpa* has not previously been recorded as far south as this location. Lot of **Cenchrus ciliaris* at the road edge. At S31B there were a few *Acacia macraneura*



SPECIES	HEIGHT (cm)	% COVER
Abutilon otocarpum	70	<1
Acacia pachycarpa	700	0-5
Aristida contorta	30	<1
Boerhavia gardneri	twiner	<1
**Cenchrus ciliaris*	70	50
Chrysopogon pallidus	100	20

SPECIES	HEIGHT (cm)	% COVER
Corchorus sidoides subsp. *sidoides*	30	<1
Crotalaria medicaginea subsp. *neglecta*	40	<1
Dactyloctenium radulans	10	<1
Enneapogon polyphyllus	40	<1
Eragrostis dielsii	20	<1
Eragrostis xerophila	20	<1
Eremophila forrestii	60	<1
Eremophila tietkensii	70	<1
Euphorbia alsiniflora	50	<1
Euphorbia boophthona	25	<1
Indigofera colutea	10	<1
Indigofera linophylla	10	<1
Indigofera monophylla	30	<1
Maireana georgei	50	<1
Maireana tomentosa subsp. *tomentosa*	50	<1
Pluchea tetranthera	50	<1
Polycarpaea corymbosa	20	<1
Ptilotus obovatus	70	<1
Rhagodia eremaea	70	<1
Rhynchosia minima	twiner	<1
Salsola australis	70	<1
Sclerolaena bicornis var. *bicornis*	50	<1
Sclerolaena cornishiana	50	<1
Sclerolaena crenata	30	<1
Sclerolaena diacantha	40	<1
Senna artemisioides subsp. *oligophylla*	90	5
Solanum lasiophyllum	50	<1
Acacia macraneura	Opportunistic	
Acacia synchronicia	Opportunistic	

QUADRAT 32

Location: Beyond Duck Creek
Datum: 405822E; 7537385N
Soil: Red to brown loam
Topography: Flat
Vegetation Description: Low Scrub A of *Acacia ancistrocarpa, Acacia ligulata* and *Acacia dictyophleba* over Dense Tall Grass dominated by *Sorghum plumosum* and **Cenchrus ciliaris*
Vegetation Condition: Very good to good
Other Notes: Dense areas of **Cenchrus ciliaris* along road edge. **Aerva peruviana* located at 405698E; 7537614E. Few trees of *Eucalyptus victrix* beyond the survey area



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	220	5-10
Acacia colei	120	<1
Acacia dictyophleba	150	<1-20
Acacia eriopoda	250	1
Acacia ligulata	120	1-20
Aristida holathera var. *holathera*	70	5
Aristida latifolia	120	5

SPECIES	HEIGHT (cm)	% COVER
Boerhavia gardneri	twiner	<1
Bonamia rosea	50	<1
**Cenchrus ciliaris*	50	85
Chrysopogon pallidus	150	3
Cullen leucantha	80	0-5
Dysphania rhadinostachya subsp. *rhadinostachya*	25	<1
Eriachne aristidea	70	<1
Eriachne obtusa	30	<1
Hakea lorea	150	<1
Indigofera georgei	60	1
Ipomoea muelleri	twiner	<1
Paraneurachne muelleri	80	3
Pluchea tetranthera	60	<1
Portulaca pilosa	15	<1
Pterocaulon serrulatum	10	<1
Ptilotus obovatus	60	<1
Scaevola parvifolia subsp. *pilbarae*	50	2
Sclerolaena cornishiana	50	<1
Senna artemisioides subsp. *helmsii*	50	<1
Senna artemisioides subsp. *oligophylla*	90	5
Sorghum plumosum	250	5
Sporobolus australis	30	<1
Trianthema triquetrum	10	<1
Trichodesma zeylanicum var. *grandiflorum*	120	<1
Triodia basedowii	70	3
Whiteochloa cymbiformis	250	5
**Cucumis melo*	Opportunistic	
Cullen martinii	Opportunistic	
Dicrastylis cordifolia	Opportunistic	
Eucalyptus victrix	Opportunistic	
Gossypium australe	Opportunistic	
Ptilotus polystachyus	Opportunistic	
Rhagodia eremaea	Opportunistic	
Salsola australis	Opportunistic	
Senna notabilis	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT S33

Location: On current Telfer Road
Datum: 405287E; 7539301N
Soil: Red sandy loam
Topography: Flat
Vegetation Description: Open Low Woodland A of *Eucalyptus victrix* over Dense Hummock Grass of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: Very good to good
Other Notes: Where site recorded the area is damp when it rains. On the east side of the road adjacent to swamp vegetation the trees and shrubs are dense



SPECIES	HEIGHT (cm)	% COVER
Acacia colei	250	2
Acacia dictyophleba	175	3
Acacia eriopoda	120	<1
**Aerva peruviana*	60	<1
Alternanthera nodiflora	40	<1
Aristida holathera var. *holathera*	70	1
Aristida latifolia	120	<1

SPECIES	HEIGHT (cm)	% COVER
Blumea tenella	50	<1
**Cenchrus ciliaris*	50	3
Chrysocephalum eremaeum	50	<1
Cucumis maderaspatensis	twiner	<1
Cyperus cunninghamii subsp. *cunninghamii*	60	<1
Dicrastylis cordifolia	30	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	60	<1
Eragrostis dielsii	5	<1
Eragrostis xerophila	50	3
Eriachne aristidea	70	<1
Eucalyptus victrix	800	5
Euphorbia alsiniflora	30	<1
Euphorbia australis	30	<1
Euphorbia tannensis subsp. *eremophila*	60	<1
Evolvulus alsinoides var. *villosicalyx*	20	<1
Grevillea wickhamii subsp. *aprica*	300	<1
Haloragis gossei	50	<1
Heliotropium ovalifolium	30	<1
Indigofera boviperda subsp. *boviperda*	50	<1
Isotropis atropurpurea	50	<1
Jacksonia aculeata	50	<1
Melaleuca lasiandra	250	<1
Pluchea tetranthera	50	1
Portulaca pilosa	45	<1
Ptilotus polystachyus	50	<1
Salsola australis	60	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Solanum lasiophyllum	10	<1
Sorghum plumosum	200	3
Sporobolus australis	50	3
Stackhousia intermedia	30	<1
Synaptantha tillaeacea	5	<1
Trichodesma zeylanicum var. *grandiflorum*	50	<1
Triodia basedowii	50	1
Triodia schinzii	150	70
Wahlenbergia tumidifructa	30	<1
Whiteochloa cymbiformis	100	<1
Zornia albiflora	30	<1
Calocephalus knappii	Opportunistic	
Crotalaria cunninghamii	Opportunistic	
Eriachne obtusa	Opportunistic	

QUADRAT S34

Location: Along current Telfer Road
Datum: 405126E; 7540143N
Soil: Red sand
Topography: Flat
Vegetation Description: Low Woodland B of *Eucalyptus gamophylla* over Open Low Scrub B of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia schinzii*
Vegetation Condition: Very good
Other Notes: On the west side of the road the vegetation is open but on the east side is under the influence of a damp area



SPECIES	HEIGHT (cm)	% COVER
Acacia eriopoda	300	<1
Acacia melleodora	150	5-10
Amphipogon caricinus	70	1
Aristida holathera var. *holathera*	50	<1
Bonamia rosea	60	<1
Dicrastylis doranii	60	5
Eragrostis eriopoda	70	1

SPECIES	HEIGHT (cm)	% COVER
Eucalyptus gamophylla	300	5-40
Grevillea stenobotrya	150	<1
Hakea lorea	120	1
Halgania solanacea var. *solanacea*	45	<1
Indigofera boviperda subsp. *boviperda*	50	<1
Newcastelia roseoazurea	50	<1
Otion simplicifolia	60	5
Petalostylis cassioides	70	<1
Ptilotus arthrolasius	50	2
Ptilotus polystachyus	90	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Senna artemisioides subsp. *oligophylla*	120	<1
Sida sp. Rabbit Flat	5	<1
Stackhousia intermedia	70	<1
Stylobasium spathulatum	150	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum var. *grandiflorum*	70	<1
Triodia schinzii	150	5-60
Eucalyptus victrix	Opportunistic	
Jacksonia aculeata	Opportunistic	

QUADRAT S35

Location: Along current Telfer Road
Datum: 404979E; 6540731N
S35A: 401183E; 7542047N
S35B: 395808E; 7547178N
S35C: 395257E; 7558626N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Low Woodland A of *Eucalyptus victrix* with scattered *Corymbia opaca* over Open Low Scrub A of *Acacia melleodora* and *Acacia ancistrocarpa* over Mid-Dense Hummock Grass of *Triodia basedowii* or *Triodia schinzii*
Vegetation Condition: Excellent to very good
Other Notes: Long stretches without trees



SPECIES	HEIGHT (cm)	% COVER
Acacia melleodora	160	5
Aristida holathera var. *holathera*	60	<1
Bonamia rosea	50	2
Calytrix carinata	50	<1
Corymbia opaca	800	0-1

SPECIES	HEIGHT (cm)	% COVER
Dampiera cinerea	60	3
Dicrastylis doranii	60	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	25	<1
Eucalyptus victrix	900	0-5
Euphorbia boophthona	30	<1
Grevillea eriostachya	150	3
Grevillea stenobotrya	150	2
Halgania solanacea var. *solanacea*	60	<1
Newcastelia roseoazurea	50	<1
Otion simplicifolia	50	10
Salsola australis	60	<1
Sida cardiophylla	30	1
Sida sp. Rabbit flat	30	<1
Solanum diversiflorum	50	<1
Solanum lasiophyllum	50	<1
Stackhousia intermedia	70	
Stylobasium spathulatum	50	<1
Triodia basedowii	90	65
Acacia ancistrocarpa	Opportunistic	
Acacia colei	Opportunistic	
Eucalyptus leucophloia subsp. *leucophloia*	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Hakea lorea	Opportunistic	
Melaleuca lasiandra	Opportunistic	
Petalostylis cassioides	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Triodia schinzii	Opportunistic	

QUADRAT S36

Location: On current Telfer Road
Datum: 404422E; 7540944N
Soil: Red silt with large rocks up to 50cm
Topography: Lower slope
Vegetation Description: Open Low Woodland A of *Eucalyptus leucophloia* subsp. *leucophloia* over Hummock Grass of *Triodia schinzii*
Vegetation Condition: Very good
Other Notes: On east aside of road only. West side is S35



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	1
Acacia eriopoda	100	1
Bonamia rosea	50	5
Calytrix carinata	70	<1
Corchorus sidoides subsp. *sidoides*	50	<1
Eucalyptus leucophloia subsp. *leucophloia*	800	1
Eucalyptus victrix	1200	1
Grevillea stenobotrya	200	2

SPECIES	HEIGHT (cm)	% COVER
Petalostylis cassioides	60	<1
Sida sp. Rabbit Flat	20	<1
Stackhousia intermedia	70	<1
Triodia basedowii	1230	25
Triodia schinzii	150	40

QUADRAT S37

Location: Along current Telfer Road
Datum: 397276E; 7545637N
S37A 397033E; 7545968N
S37B: 396583E; 7546347N
S37C: 394462E; 7548933N
S37D: 395257E; 7556252N
S37E: 399800E; 7565382N
S37F: 393901E; 7556251N
Soil: Red sand with rocks up to 70cm
Topography: Lower slope below sand dune
Vegetation Description: Low Woodland B of *Eucalyptus kingsmillii* subsp. *kingsmillii* and *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: On the west side is a sand dune, the east side is rocky



SPECIES	HEIGHT (cm)	% COVER
Acacia adoxa subsp. *adoxa*	30	<1
Acacia hilliana	50	5
Aluta maisonneuvei	100	2-30
Bonamia rosea	60	<1

SPECIES	HEIGHT (cm)	% COVER
Gompholobium polyzygum	50	2
Calytrix carinata	50	5
Cassytha capillaris	twiner	<1
Dodonaea coriacea	50	<1
Eucalyptus gamophylla	120	10
Eucalyptus kingsmillii subsp. *kingsmillii*	120	10
Gonocarpus eremophilus	20	<1
Goodenia azurea subsp. *hesperia*	70	<1
Goodenia stobbsiana	70	<1
Grevillea wickhamii subsp. *aprica*	120	5
Grevillea eriostachya	200	1
Grevillea pterosperma	120	2
Grevillea stenobotrya	175	5
Halgania solanacea var. *solanacea*	40	<1
Hybanthus aurantiacus	30	<1
Indigofera boviperda subsp. *boviperda*	30	<1
Jacksonia aculeata	50	<1
Keraudrenia velutina subsp. *elliptica*	60	<1
Otion simplicifolia	70	<1
Paraneurachne muelleri	70	2
Ptilotus calostachyus	80	<1
Ptilotus polystachyus	70	<1
Santalum lanceolatum	50	<1
Sida sp. Sand Dunes	120	<1
Thysanotus sp. Desert East of Newman	30	<1
Triodia basedowii	90	70
Triodia schinzii	120	10
Acacia colei	Opportunistic	
Acacia tumida var. *pilbarensis*	Opportunistic	
Amphipogon caricinus	Opportunistic	
Corymbia aspera	Opportunistic	
Corymbia opaca	Opportunistic	
Dampiera candicans	Opportunistic	
Dicrastylis doranii	Opportunistic	
Exocarpos sparteus	Opportunistic	
Goodenia triodiophila	Opportunistic	
Lamarchea sulcata	Opportunistic	
Newcastelia bracteosa	Opportunistic	
Pluchea tetranthera	Opportunistic	
Senna sericea	Opportunistic	

QUADRAT S38

Location: On current Telfer Road
Datum: 396315E; 7546535N
S38A: 395525E; 7547557N
Soil: Red silty loam in a rocky outcrop
Topography: Upper to middle slopes
Vegetation Description: Open Low Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* over Hummock Grass of *Triodia basedowii* and rocks
Vegetation Condition: Very good
Other Notes:



SPECIES	HEIGHT (cm)	% COVER
Acacia adoxa subsp. *adoxa*	20	<1
Acacia retivenea subsp. *clandestina*	60	<1
Acacia tumida var. *pilbarensis*	250	5
Amphipogon caricinus	60	<1
Bonamia pannosa	50	<1
Gompholobium polyzygum	60	<1
Calytrix carinata	50	<1

SPECIES	HEIGHT (cm)	% COVER
Dampiera candicans	30	<1
Dicrastylis cordifolia	50	<1
Eriachne aristidea	20	<1
Eriachne lanata	60	5
Eucalyptus gamophylla	120	<1
Eucalyptus leucophloia subsp. *leucophloia*	500	5
Goodenia stobbsiana	50	3
Grevillea pterosperma	60	<1
Halgania solanacea var. *solanacea*	50	<1
Hybanthus aurantiacus	50	<1
Indigofera boviperda subsp. *boviperda*	25	<1
Keraudrenia velutina subsp. *elliptica*	50	<1
Lamarchea sulcata	30	<1
Maireana georgei	40	<1
Petalostylis cassioides	70	<1
Ptilotus calostachyus	70	5
Ptilotus exaltatus	40	5
Scaevola browniana subsp. *browniana*	50	<1
Sclerolaena lanicuspis	20	<1
Senna sericea	130	2
Sida arenicola	100	<1
Tribulus suberosus	50	<1
Triodia basedowii	70	20
Acacia marramamba	Opportunistic	

QUADRAT S39

Location: Along current Telfer Road
Datum: 394922E; 7548278N
S39A: 394651E; 75748979N
S39B: 393009E; 7552094N
S39C: 397234E; 7561368N
Soil: Red soil
Topography: Flat
Vegetation Description: Low Woodland B of *Eucalyptus gamophylla* over Low Heath C of mixed shrubs including *Jacksonia aculeata, Dampiera candicans* and *Dicrastylis cordifolia* over Mid-Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: At S39C the plants have juvenile leaves due to a recent fire



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	50	2
Acacia colei	200	1
Acacia dictyophleba	120	1
Acacia stellaticeps	40	<1
Amphipogon caricinus	70	5

SPECIES	HEIGHT (cm)	% COVER
Aristida holathera var. *holathera*	70	1
Bonamia pannosa	60	5
Gompholobium polyzygum	70	30
Dampiera candicans	60	<1
Dampiera cinerea	50	2
Dicrastylis cordifolia	60	2
Dodonaea coriacea	70	1
Eragrostis eriopoda	50	<1
Eucalyptus gamophylla	200	<1
Goodenia armitiana	60	10
Goodenia stobbsiana	70	<1
Hakea lorea	100	2
Halgania solanacea var. *solanacea*	60	<1
Hybanthus aurantiacus	60	1
Isotropis atropurpurea	70	1
Jacksonia aculeata	70	10
Otion simplicifolia	60	3
Paraneurachne muelleri	70	1
Ptilotus calostachyus	70	<1
Ptilotus exaltatus	70	5
Scaevola parvifolia subsp. *pilbarae*	50	<1
Sida sp. Sand Dunes	50	<1
Solanum diversiflorum	40	5
Triodia basedowii	20	1-60
Acacia coriacea subsp. *pendens*	Opportunistic	
Acacia eriopoda	Opportunistic	
Acacia hilliana	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Macgregoria racemosa	Opportunistic	
Petalostylis cassioides	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT S40

Location: Duck Creek
Datum: 394753E; 7548952N
Soil: Coarse sand and rocks up to 50cm
Topography: Creek/drainage line
Vegetation Description: Low Woodland B of *Eucalyptus camaldulensis* over Open Scrub of *Acacia marramamba* over Very Open Tall Grass of *Sorghum plumosum*
Vegetation Condition: Excellent to very good
Other Notes: Creek influence starts at 394758E; 7548808N



SPECIES	HEIGHT (cm)	% COVER
Acacia hilliana	70	<1
Acacia ligulata	175	1
Acacia marramamba	200	10
Acacia tumida var. *pilbarensis*	170	2
Ammannia baccifera	40	<1
Blumea tenella	60	<1
Bonamia rosea	50	<1
Calandrinia ptychosperma	5	<1
**Cenchrus ciliaris*	50	5
Centipeda minima subsp. *macrocephala*	5	<1
Cleome viscosa	90	<1
Corchorus sidoides subsp. *sidoides*	50	<1

SPECIES	HEIGHT (cm)	% COVER
Cucumis maderaspatensis	twiner	<1
**Cucumis melo* subsp. *agrestic*	10	<1
Drosera indica	10	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	20	<1
Eragrostis cumingii	50	2
Eragrostis speciosa	80	2
Eucalyptus camaldulensis	400	25
Gonocarpus eremophilus	40	<1
Hypericum gramineum	20	<1
Indigofera brevidens	50	<1
Ipomoea muelleri	twiner	<1
Keraudrenia velutina subsp. *elliptica*	50	<1
Marsilea hirsuta	20	<1
Melhania oblongifolia	60	<1
Oldenlandia crouchiana	10	<1
Petalostylis labicheoides	175	<1
Ptilotus polystachyus	70	<1
Rotala diandra	15	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna notabilis	50	<1
Sida sp. Rabbit Flat	10	<1
Solanum diversiflorum	50	<1
Solanum lasiophyllum	20	<1
Sorghum plumosum	150	5-10
Sporobolus australis	20	<1
Striga squamigera	40	<1
Stylobasium spathulatum	200	1
Trichodesma zeylanicum var. *grandiflorum*	70	<1
Vigna lanceolata	twiner	<1
Brunonia australis	Opportunistic	
Calotis plumifera	Opportunistic	
Eriachne obtusa	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Malvastrum americanum	Opportunistic	
Newcastelia roseoazurea	Opportunistic	
Senna venusta	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Triodia basedowii	Opportunistic	
Wahlenbergia tumidifructa	Opportunistic	

QUADRAT S41

Location: Along current Telfer Road
Datum: 393993E; 7549520N
Soil: Red sand
Topography: Flat
Vegetation Description: Dwarf Scrub C of *Acacia ancistrocarpa, Hakea lorea* and *Grevillea stenobotrya* over Mid-Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Recent fire, shrubs regenerating



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	60	10
Acacia colei	120	<1
Acacia dictyophleba	120	5
Amphipogon caricinus	65	<1
Aristida holathera var. *holathera*	80	5
Bonamia rosea	60	5
Calytrix carinata	30	<1
Dampiera candicans	50	5

SPECIES	HEIGHT (cm)	% COVER
Dampiera cinerea	50	5
Dicrastylis cordifolia	70	<1
Dicrastylis doranii	40	<1
Eragrostis eriopoda	50	10
Eucalyptus gamophylla	200	<1
Goodenia armitiana	45	2
Hakea lorea	70	<1
Halgania solanacea var. *solanacea*	50	3
Jacksonia aculeata	60	3
Newcastelia roseoazurea	70	8
Otion simplicifolia	60	5
Petalostylis cassioides	50	<1
Ptilotus calostachyus	75	<1
Ptilotus polystachyus	80	<1
Sida ammophila	40	<1
Sida sp. Sand Dunes	70	<1
Solanum diversiflorum	30	<1
Triodia basedowii	80	35
Acacia stellaticeps	Opportunistic	
Grevillea eriostachya	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT S42

Location: Along current Telfer Road
Datum: 393764E; 7549820N
S42A: 396528E; 7560243N
S42B: 397504E; 7561640N
Soil: Red sand
Topography: Slope into a minor creek
Vegetation Description: Scrub of *Acacia eriopoda* and *Acacia tumida* var. *pilbarensis* over Low Heath C of mixed taxa over Open Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Open areas between shrubs



SPECIES	HEIGHT (cm)	% COVER
Acacia elachantha	300	<1
Acacia eriopoda	200	25
Acacia tumida var. *pilbarensis*	300	3
Aluta maisonneuvei	100	1
Amphipogon caricinus	70	1
Aristida holathera var. *holathera*	70	<1
Bonamia rosea	40	3

SPECIES	HEIGHT (cm)	% COVER
Gompholobium polyzygum	80	1
Calytrix carinata	50	1
Cassytha capillaris	twiner	<1
Dampiera candicans	70	1
Dicrastylis cordifolia	70	2
Dicrastylis doranii	70	2
Eragrostis eriopoda	50	2
Eriachne aristidea	50	<1
Eucalyptus camaldulensis	1500	<1
Goodenia azurea subsp. *hesperia*	70	1
Grevillea wickhamii subsp. *aprica*	120	1
Gyrostemon tepperi	100	<1
Halgania solanacea var. *solanacea*	60	1
Hybanthus aurantiacus	30	<1
Jacksonia aculeata	80	<1
Otion simplicifolia	70	3
Petalostylis cassioides	80	3
Santalum lanceolatum	120	<1
Scaevola parvifolia subsp. *pilbarae*	50	3
Sida arenicola	150	<1
Solanum diversiflorum	30	<1
Triodia basedowii	70	5

QUADRAT S43

Location: Along current Telfer Road
Datum: 394016E; 7549496N
S43A: 396585E; 7560369N
S43B: 393160E; 7551390N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Scrub of *Acacia ancistrocarpa* over Dwarf Scrub C dominated *by Newcastelia roseoazurea, Halgania solanacea* var. *solanacea, Jacksonia aculeata* and *Dicrastylis cordifolia* over Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Regenerating after recent fire



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	10
Acacia colei	175	<1
Acacia dictyophleba	80	1
Amphipogon caricinus	70	1
Bonamia pannosa	50	2
Calytrix carinata	30	<1

SPECIES	HEIGHT (cm)	% COVER
Dampiera candicans	50	<1
Dicrastylis cordifolia	70	5
Dicrastylis doranii	50	1
Eragrostis eriopoda	50	5
Eriachne aristidea	50	<1
Goodenia armitiana	70	1
Grevillea eriostachya	120	<1
Halgania solanacea var. *solanacea*	70	5
Jacksonia aculeata	70	5
Newcastelia roseoazurea	50	10
Otion simplicifolia	50	2
Petalostylis cassioides	60	<1
Ptilotus calostachyus	80	<1
Ptilotus polystachyus	80	<1
Scaevola parvifolia subsp. *pilbarae*	60	1
Sida sp. Sand Dunes	120	1
Solanum diversiflorum	70	1
Triodia basedowii	80	10-30
Waltheria virgata	50	5
Eucalyptus gamophylla	Opportunistic	

QUADRAT S44

Location: Along current Telfer Road
Datum: 393224E; 7551091N
S44A: 393025E; 7551971N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Low Woodland A of *Acacia coriacea* subsp. *pendens* Low Heath C dominated by *Bonamia rosea, Scaevola parvifolia* subsp. *pilbarae* and *Newcastelia roseoazurea* over Hummock Grass of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: Excellent to very good
Other Notes: Lot of bare ground



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	70	<1
Acacia coriacea subsp. *pendens*	600	5
Acacia dictyophleba	100	1
Acacia eriopoda	150	1
Acacia ligulata	60	<1
Anthobolus leptomerioides	70	<1
Aristida holathera var. *holathera*	70	3

SPECIES	HEIGHT (cm)	% COVER
Bonamia rosea	70	10
Dampiera candicans	60	1
Dicrastylis cordifolia	60	2
Eragrostis eriopoda	50	2
Eriachne aristidea	50	<1
Eriachne obtusa	75	3
Goodenia armitiana	50	1
Heliotropium ovalifolium	50	<1
Hibiscus burtonii	70	1
Indigofera sp. D Kimberley Flora	80	1
Isotropis atropurpurea	70	5
Jacksonia aculeata	70	1
Newcastelia roseoazurea	50	5
Oldenlandia pterospora	30	<1
Petalostylis cassioides	80	1
Ptilotus polystachyus	100	2
Scaevola parvifolia subsp. *pilbarae*	50	10
Sida cardiophylla	60	2
Sida sp. Sand Dunes	120	3
Solanum diversiflorum	30	<1
Triodia basedowii	100	5
Triodia schinzii	120	5
Triumfetta chaetocarpa	50	<1
Acacia colei	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Hakea lorea	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	

QUADRAT S45

Location: Along Telfer Road
Datum: 392804E; 7553707N
S45A: 393065E; 7555081N
S45B: 395527E; 7559113N
S45C: 396884E; 7561468N
S45D: 397449E; 7561612N
Soil: Rock/gravel
Topography: Slight rise
Vegetation Description: Low Forest B of *Acacia hilliana* over Open Mid Dense Hummock Grass of *Triodia basedowii* over Herbs of *Ptilotus calostachyus*
Vegetation Condition: Excellent
Other Notes: Area burnt



SPECIES	HEIGHT (cm)	% COVER
Acacia adoxa subsp. *adoxa*	30	<1
Acacia ancistrocarpa	120	1
Acacia hilliana	50	35
Brunonia australis	40	<1
Calytrix carinata	50	1

SPECIES	HEIGHT (cm)	% COVER
Eriachne aristidea	50	2
Euphorbia tannensis subsp. *eremophila*	30	<1
Goodenia stobbsiana	90	<1
Grevillea wickhamii subsp. *aprica*	300	5
Hakea lorea	200	<1
Halgania solanacea var. *solanacea*	50	<1
Hybanthus aurantiacus	50	<1
Ptilotus calostachyus	90	5
Ptilotus exaltatus	30	<1
Scaevola browniana subsp. *browniana*	50	1
Solanum lasiophyllum	70	<1
Trachymene oleracea subsp. *oleracea*	50	<1
Triodia basedowii	90	70
Acacia coriacea subsp. *pendens*	Opportunistic	
Gompholobium polyzygum	Opportunistic	
Corymbia opaca	Opportunistic	
Eucalyptus victrix	Opportunistic	
Lamarchea sulcata	Opportunistic	

QUADRAT S46

Location: Along Telfer Road
Datum: 396640E; 7560804N
Soil: Deep red sand
Topography: Flat
Vegetation Description: Scrub of *Acacia ancistrocarpa* and *Acacia eriopoda* over Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Occasional trees of *Eucalyptus victrix*



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	5
Acacia dictyophleba	90	3
Acacia eriopoda	400	15-25
Acacia tumida var. *pilbarensis*	120	2
Aristida holathera var. *holathera*	20	<1
Bonamia rosea	50	<1
Calytrix carinata	50	5
Corchorus sidoides subsp. *sidoides*	80	5

SPECIES	HEIGHT (cm)	% COVER
Dicrastylis cordifolia	75	5
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Eriachne lanata	40	<1
Eriachne obtusa	90	2
Grevillea stenobotrya	250	2
Grevillea wickhamii subsp. *aprica*	400	2
Haloragis gossei	10	<1
Jacksonia aculeata	60	2
Keraudrenia velutina subsp. *elliptica*	70	5
Melaleuca lasiandra	300	1
Newcastelia roseoazurea	50	<1
Otion simplicifolia	40	<1
Petalostylis cassioides	60	1
Polymeria ambigua	twiner	<1
Ptilotus polystachyus	70	<1
Scaevola parvifolia subsp. *pilbarae*	50	2
Senna notabilis	50	<1
Sida cardiophylla	50	1
Stackhousia intermedia	70	<1
Stylobasium spathulatum	200	1
Tephrosia arenicola	75	<1
Trianthema pilosa	twiner	1
Triodia basedowii	90	75
Eucalyptus victrix	Opportunistic	
Swainsona laciniata	Opportunistic	

QUADRAT S47

Location: Along Telfer Road
Datum: 397805E; 7561732N
Soil: Red sand
Topography: Flat
Vegetation Description: Low Woodland B of *Eucalyptus gamophylla* over Dwarf Scrub C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii* over Open Herbs dominated by *Ptilotus axillaris*
Vegetation Condition: Excellent
Other Notes: Burnt 5-10 years. Vegetation heavily infested with *Cassytha capillaris*



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	5
Acacia dictyophleba	150	<1
Acacia stellaticeps	100	15
Amphipogon caricinus	70	<1
Aristida holathera var. *holathera*	70	<1
Bonamia rosea	60	1
Calytrix carinata	50	<1
Cassytha capillaris	twiner	5

SPECIES	HEIGHT (cm)	% COVER
Corymbia opaca	500	1
Dicrastylis cordifolia	60	<1
Dodonaea coriacea	40	<1
Eragrostis eriopoda	70	2
Eriachne aristidea	30	<1
Eucalyptus gamophylla	200	5-30
Euphorbia tannensis subsp. *eremophila*	30	<1
Grevillea wickhamii subsp. *aprica*	300	2
Hakea lorea	200	2
Halgania solanacea var. *solanacea*	60	<1
Heliotropium ovalifolium	60	<1
Heliotropium transforme	40	<1
Indigofera boviperda subsp. *boviperda*	50	<1
Jacksonia aculeata	70	<1
Otion simplicifolia	70	<1
Petalostylis cassioides	70	<1
Ptilotus axillaris	5	10
Ptilotus polystachyus	70	<1
Scaevola parvifolia subsp. *pilbarae*	40	2
Senna artemisioides subsp. *oligophylla*	60	<1
Senna notabilis	50	<1
Sida echinocarpa	175	<1
Stylobasium spathulatum	120	2
Tephrosia arenicola	50	<1
Triodia basedowii	90	85
Triodia schinzii	120	1
Grevillea stenobotrya	Opportunistic	<1

QUADRAT S48

Location: Close to Nifty turn off from Telfer Road
Datum: 398017E; 7561902N
S48A: 399979E; 7566163N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Low Woodland A of *Corymbia aspera* and *Corymbia opaca* over Open Scrub of *Grevillea eriostachya, Grevillea wickhamii* subsp. *aprica* and *Codonocarpus cotinifolius* over Low Heath dominated by *Dicrastylis cordifolia* over Open Tall Grass dominated by *Triodia basedowii* and *Amphipogon carinatus*
Vegetation Condition: Excellent to very good
Other Notes: Small drainage area, damp at time of survey. Very small area



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	5
Acacia dictyophleba	150	<1
Acacia stellaticeps	100	15
Amphipogon caricinus	70	<1
Aristida holathera var. *holathera*	70	<1
Bonamia rosea	60	1
Calytrix carinata	50	<1

SPECIES	HEIGHT (cm)	% COVER
Cassytha capillaris	twiner	5
Corymbia aspera	1200	2
Corymbia opaca	500	1
Dicrastylis cordifolia	60	<1
Dodonaea coriacea	40	<1
Eragrostis eriopoda	70	2
Eriachne aristidea	30	<1
Eucalyptus gamophylla	200	5-30
Euphorbia tannensis subsp. *eremophila*	30	<1
Grevillea wickhamii subsp. *aprica*	300	2
Hakea lorea	200	2
Halgania solanacea var. *solanacea*	60	<1
Heliotropium ovalifolium	60	<1
Heliotropium transforme	40	<1
Indigofera boviperda subsp. *boviperda*	50	<1
Jacksonia aculeata	70	<1
Otion simplicifolia	70	<1
Petalostylis cassioides	70	<1
Ptilotus axillaris	5	10
Ptilotus polystachyus	70	<1
Scaevola parvifolia subsp. *pilbarae*	40	2
Senna artemisioides subsp. *oligophylla*	60	<1
Senna notabilis	50	<1
Sida echinocarpa	175	<1
Stylobasium spathulatum	120	2
Tephrosia arenicola	50	<1
Triodia basedowii	90	85
Triodia schinzii	120	1
Grevillea stenobotrya	Opportunistic	

QUADRAT S49

Location: Along current Telfer Road
Datum: 398158E; 7561975N
S49A: 399833E; 7565504N
S49B: 400035E; 7566442N
S49C: 399482E; 7563555N
Soil: Red sand with pebbles about 3cm
Topography: Flat
Vegetation Description: Open Low Woodland of *Eucalyptus kingsmillii* subsp. *kingsmillii* and *Eucalyptus gamophylla* over Open Scrub of *Hakea lorea* and *Sida echinocarpa* over Low Heath C dominated by *Acacia stellaticeps* and *Dicrastylis cordifolia* over Mid Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Scattered unburnt areas of dense *Acacia* species



SPECIES	HEIGHT (cm)	% COVER
Acacia stellaticeps	60	2-20
Aristida contorta	20	<1
Bonamia rosea	50	<1
Calytrix carinata	15	<1
Codonocarpus cotinifolius	100	<1-5

SPECIES	HEIGHT (cm)	% COVER
Dampiera candicans	60	5
Dicrastylis cordifolia	60	10
Eucalyptus gamophylla	140	1-5
Eucalyptus kingsmillii subsp. *kingsmillii*	120	1-5
Euphorbia australis	10	<1
Goodenia armitiana	50	<1
Goodenia azurea subsp. *hesperia*	80	2-10
Grevillea stenobotrya	50	<1
Grevillea wickhamii subsp. *aprica*	250	5
Hakea lorea	250	5
Halgania solanacea var. *solanacea*	70	<1
Heliotropium transforme	30	<1
Indigofera boviperda subsp. *boviperda*	30	<1
Jacksonia aculeata	70	<1
Macgregoria racemosa	20	<1
Oldenlandia pterospora	15	<1
Petalostylis cassioides	70	<1
Pluchea tetranthera	50	<1
Ptilotus exaltatus	50	<1
Ptilotus polystachyus	50	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Sida echinocarpa	250	<1
Sida sp. Spiciforme Panicles	70	<1
Triodia basedowii	80	5-70
Senna notabilis	Opportunistic	

QUADRAT S50

Location: Along current Telfer Road
Datum: 400536E; 7568545N
Soil: Red loam
Topography: Flat
Vegetation Description: Open Low Woodland of *Acacia synchronicia* over Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Bunch Grass of *Eragrostis xerophila*
Vegetation Condition: Excellent to very good
Other Notes: Swamp. Road should not go into the east side where there is an excellent sump. In the area of the sump *Acacia tetragonophylla* is up to 4m tall and *Sennas* to 2m tall.



Vegetation where site recorded



Lush vegetation recorded from sump on the east side of the road

SPECIES	HEIGHT (cm)	% COVER
Acacia synchronicia	300	5
Acacia tetragonophylla	300	1
Alternanthera nodiflora	30	5
Aristida contorta	10	<1
Bergia ammannioides	5	40
Bergia perennis subsp. *perennis*	5	5
**Cenchrus ciliaris*	50	2
Chrysopogon pallidus	150	2
Crotalaria medicaginea subsp. *neglecta*	30	<1
Cucumis maderaspatensis	twiner	<1
Eragrostis dielsii	15	<1
Eragrostis xerophila	60	85
Euphorbia alsiniflora	40	<1
Fimbristylis oxystachya	35	<1
Goodenia lamprosperma	30	<1
Maireana georgei	80	1
Maireana tomentosa subsp. *tomentosa*	70	1
Marsilea hirsuta	20	5
Pluchea tetranthera	50	<1
Polycarpaea corymbosa	15	<1
Pterocaulon serrulatum	80	<1
Ptilotus exaltatus	50	<1
Ptilotus macrocephalus	80	<1
Rhodanthe humboldtiana	20	<1
Salsola australis	70	1
Sclerolaena crenata	15	<1
Senna artemisioides subsp. *helmsii*	60	5
Senna artemisioides subsp. *oligophylla*	100	5
Trianthema triquetrum	10	<1
Triodia pungens	90	2
Triodia schinzii	100	<1
Acacia ligulata	Opportunistic	
Calandrinia pumilio	Opportunistic	
Calotis hispidula	Opportunistic	
Scaevola spinescens	Opportunistic	
Streptoglossa liatroides	Opportunistic	

QUADRAT S51

Location: Along Telfer Road
Datum: 400652E; 7568766N
Soil: Red loam
Topography: Flat
Vegetation Description: Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Low Heath D of *Sclerolaena* species and *Maireana tomentosa* subsp. *tomentosa* s over Tall Grass dominated by **Cenchrus ciliaris*
Vegetation Condition: Very good
Other Notes: Lot of open ground



SPECIES	HEIGHT (cm)	% COVER
Acacia synchronicia	200	<1
Acacia tetragonophylla	300	<1
Aristida contorta	50	3
Atriplex codonocarpa	30	<1
Calandrinia ptychosperma	5	<1
**Cenchrus ciliaris*	80	50
Chrysopogon pallidus	120	3

SPECIES	HEIGHT (cm)	% COVER
Eragrostis laniflora	70	2
Eragrostis xerophila	70	2
Eremophila forrestii	90	1
Fimbristylis dichotoma	70	<1
Indigofera monophylla	60	<1
Lepidium phlebopetalum	15	<1
Maireana tomentosa subsp. *tomentosa*	70	1
Mollugo molluginea	10	<1
Pluchea tetranthera	60	5
Portulaca pilosa	30	<1
Pterocaulon serrulatum	70	<1
Ptilotus macrocephalus	70	<1
Ptilotus obovatus	60	<1
Salsola australis	80	<1
Sclerolaena bicornis var. *bicornis*	30	5
Sclerolaena cornishiana	35	10
Sclerolaena crenata	35	5
Sclerolaena lanicuspis	40	1
Senna artemisioides subsp. *helmsii*	100	5-15
Senna artemisioides subsp. *oligophylla*	120	5-15
Sida platycalyx	20	<1
Acacia ligulata	Opportunistic	

QUADRAT S52

Location: Along current Telfer Road
Datum: 401588E; 7569857N
Soil: Red sand
Topography: Slight rise – sand dune
Vegetation Description: Low Scrub A of *Acacia ligulata* over Low Heath of mixed taxa including *Ptilotus exaltatus, Heliotropium ovalifolium, Indigofera monophylla* and *Senna artemisioides* subsp. *helmsii* over Hummock Grass of *Triodia basedowii* over Tall Grass dominated by *Eragrostis eriopoda* and **Cenchrus ciliaris*
Vegetation Condition: Very good
Other Notes: Starts where S31B ended



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	160	<1
Acacia ligulata	150	5-20
Aristida contorta	40	5
Aristida holathera var. *holathera*	70	<1
Boerhavia gardneri	twiner	<1
Bulbostylis barbata	5	<1
**Cenchrus ciliaris*	80	20
Eragrostis eriopoda	80	10

SPECIES	HEIGHT (cm)	% COVER
Eriachne aristidea	30	<1
Goodenia armitiana	40	<1
Gossypium australe	70	<1
Heliotropium ovalifolium	50	10
Hibiscus sturtii subsp. *platychlamys*	70	<1
Indigofera monophylla	60	10
Paraneurachne muelleri	70	2
Ptilotus exaltatus	50	10
Ptilotus obovatus	60	2
Scaevola parvifolia subsp. *pilbarae*	50	<1
Sclerolaena cornishiana	30	<1
Senna artemisioides subsp. *helmsii*	60	5
Senna artemisioides subsp. *oligophylla*	80	5
Sida echinocarpa	80	<1
Sida sp. Spiciforme Panicles	100	3
Tribulus hirsutus	twiner	5
Tribulus macrocarpus	twiner	5
Tribulus occidentalis	twiner	<1
Triodia basedowii	80	15
Grevillea stenobotrya	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Swainsona formosa	Opportunistic	

QUADRAT S53

Location: Along current Telfer Road
Datum: 398659E; 7544462N
S53A: 404651E; 7540861N
Soil: Red silty sand amongst outcropping rocks
Topography: Low rocky rise
Vegetation Description: Open Low Woodland A of *Corymbia aspera over* Open Low Scrub B dominated by *Grevillea wickhamii* subsp. *aprica* and *Sida echinocarpa* over Low Heath C of mixed taxa dominated by *Goodenia stobbsiana, Gompholobium polyzygum* and *Ptilotus calostachyus* over Open Tall Grass of *Eriachne mucronata* and *Amphipogon caricinus*
Vegetation Condition: Excellent to very good
Other Notes: On the east side only. A few trees only on the west side



SPECIES	HEIGHT (cm)	% COVER
Acacia hilliana	50	1
Acacia wanyu	150	1
Amphipogon caricinus	70	15
Aristida holathera var. *holathera*	100	5
Gompholobium polyzygum	75	5
Calytrix carinata	50	3
Cleome viscosa	90	<1

SPECIES	HEIGHT (cm)	% COVER
Corymbia aspera	900	5
Dampiera candicans	50	2
Dicrastylis cordifolia	60	2
Eragrostis eriopoda	60	2
Eriachne aristidea	50	<1
Eriachne lanata	90	5
Eriachne mucronata	80	15
Goodenia azurea subsp. *hesperia*	50	<1
Goodenia stobbsiana	100	3
Goodenia triodiophila	50	<1
Grevillea wickhamii subsp. *aprica*	175	3
Halgania solanacea var. *solanacea*	60	1
Heliotropium transforme	10	<1
Hybanthus aurantiacus	30	<1
Logania centralis	50	<1
Paraneurachne muelleri	70	5
Petalostylis cassioides	150	1
Polygala isingii	5	<1
Ptilotus calostachyus	90	5
Ptilotus polystachyus	70	<1
Sida coatesii	50	<1
Sida echinocarpa	150	2
Sida sp. Rabbit Flat	10	<1
Stackhousia intermedia	70	<1
Trianthema pilosa	5	
Triodia basedowii	90	5

QUADRAT S54

Location: On current Telfer Road
Datum: 399461E; 7543544N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Low Woodland A of *Corymbia opaca* over Thicket of *Grevillea stenobotrya* over Low Scrub A of *Acacia dictyophleba* over Mid Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent
Other Notes: Site selected to show variation



SPECIES	HEIGHT (cm)	% COVER
Acacia dictyophleba	250	20
Acacia ligulata	100	2
Aluta maisonneuvei	70	1
Boerhavia gardneri	twiner	<1
Calytrix carinata	60	5
Corymbia opaca	400	5
Cucumis maderaspatensis	twiner	<1

SPECIES	HEIGHT (cm)	% COVER
Dodonaea coriacea	70	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	50	<1
Grevillea eriostachya	200	2
Grevillea stenobotrya	400	40
Halgania solanacea var. *solanacea*	70	1
Otion simplicifolia	50	<1
Paspalidium rarum	10	<1
Petalostylis cassioides	100	5
Salsola australis	90	2
Scaevola parvifolia subsp. *pilbarae*	50	5
Setaria surgens	50	<1
Sporobolus australis	30	<1
Stylobasium spathulatum	350	5
Triodia basedowii	100	70
Crotalaria cunninghamii	Opportunistic	
Senna notabilis	Opportunistic	

QUADRAT S55

Location: Along current Telfer Road
Datum: 402175E; 7541484N
Soil: Red Sand
Topography: Flat
Vegetation Description: Thicket of *Grevillea wickhamii* subsp. *aprica* over Hummock Grass of *Triodia schinzii*
Vegetation Condition: Very good
Other Notes: Illustrating variation



SPECIES	HEIGHT (cm)	% COVER
Acacia dictyophleba	170	10
Amphipogon sp. hairy	50	5
Bonamia rosea	70	5
Dicrastylis doranii	40	2
Dodonaea coriacea	70	1
Eragrostis eriopoda	70	5
Grevillea stenobotrya	200	2
Grevillea wickhamii subsp. *aprica*	400	40
Hakea lorea	300	1

SPECIES	HEIGHT (cm)	% COVER
Halgania solanacea var. *solanacea*	70	<1
Otion simplicifolia	70	2
Paraneurachne muelleri	80	3
Paspalidium rarum	10	4
Petalostylis cassioides	80	1
Pluchea tetranthera	80	1
Scaevola parvifolia subsp. *pilbarae*	30	5
Sida arenicola	60	1
Sida sp. Rabbit Flat	20	<1
Stackhousia intermedia	70	<1
Trichodesma zeylanicum var. *grandiflorum*	120	<1
Triodia basedowii	90	70
Triodia schinzii	100	10-25

QUADRAT S56

Location: Along road to Telfer
Datum: 407311E; 7532424N
Soil: Red sand
Topography: Flat
Vegetation Description: Scrub of *Acacia melleodora* over Open Dwarf Scrub dominated by *Newcastelia roseoazurea* over Mid Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Very good
Other Notes: Area burnt about 30 months



SPECIES	HEIGHT (cm)	% COVER
Acacia ligulata	100	<1
Acacia melleodora	200	20
Amphipogon caricinus	60	<1
Aristida inaequiglumis	50	2
Bonamia rosea	50	1
Brunonia australis	25	<1
Dicrastylis cordifolia	50	<1
Dodonaea coriacea	20	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Eragrostis cumingii	50	<1

SPECIES	HEIGHT (cm)	% COVER
Eragrostis eriopoda	50	<1
Eriachne sulcata	15	<1
Euphorbia tannensis subsp. *eremophila*	70	<1
Goodenia armitiana	20	<1
Grevillea eriostachya	70	<1
Hakea lorea	100	<1
Haloragis gossei	10	<1
Hibiscus burtonii	60	<1
Newcastelia roseoazurea	75	<1
Paraneurachne muelleri	50	5
Paspalidium rarum	15	<1
Petalostylis cassioides	100	1
Ptilotus aphyllus	50	<1
Ptilotus polystachyus	90	2
Scaevola parvifolia subsp. *pilbarae*	50	2
Senna artemisioides subsp. *oligophylla*	90	<1
Sida cardiophylla	70	<1
Sida sp. Sand Dunes	100	<1
Solanum centrale	50	<1
Streptoglossa liatroides	50	<1
Stylobasium spathulatum	80	<1
Triodia basedowii	90	50
Triodia schinzii	120	5
Trichodesma zeylanicum var. *grandiflorum*	Opportunistic	

QUADRAT S57

Location: Along current Telfer track
Datum: 407253E; 7532759N
Soil: Red sand
Topography: Flat
Vegetation Description: Scrub of *Acacia ligulata* and *Hakea lorea* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	<1
Acacia ligulata	250	25
Acacia melleodora	300	2
Aristida inaequiglumis	70	<1
Bonamia rosea	50	3
Calytrix carinata	75	1

SPECIES	HEIGHT (cm)	% COVER
Dicrastylis cordifolia	120	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	50	<1
Eragrostis eriopoda	60	<1
Euphorbia australis	10	<1
Euphorbia tannensis subsp. *eremophila*	70	<1
Goodenia armitiana	50	<1
Grevillea eriostachya	120	<1
Hakea lorea	400	5
Halgania solanacea subsp. *solanacea*	60	<1
Haloragis gossei	20	<1
Indigofera boviperda subsp. *boviperda*	20	<1
Jacksonia aculeata	50	<1
Newcastelia roseoazurea	60	<1
Oldenlandia pterospora	40	<1
Paraneurachne muelleri	50	<1
Petalostigma cassioides	30	<1
Ptilotus aphyllus	70	<1
Ptilotus calostachyus	60	<1
Ptilotus polystachyus forma. *polystachyus*	90	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Senna artemisioides subsp. *helmsii*	100	<1
Sida sp. Rabbit Flat	5	<1
Sida sp. Sand Dunes	150	<1
Solanum centrale	50	<1
Solanum lasiophyllum	60	<1
Streptoglossa liatroides	60	<1
Stylobasium spathulatum	130	5
Thysanotus sp. Desert East of Newman	50	<1
Trianthema pilosa	10	<1
Triodia basedowii	80	75
Velleia connata	60	<1
Macgregoria racemigera	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Sida cardiophylla	Opportunistic	

QUADRAT S58

Location: Along current Telfer track
Datum: 407388E; 7533953N
Soil: Red sand
Topography: Flat
Vegetation Description: Open Low Woodland A of *Eucalyptus victrix* over Scrub of *Acacia ancistrocarpa* and *Hakea lorea* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Relatively dense vegetation



SPECIES	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia ancistrocarpa	250	30
Acacia eriopoda	250	<1
Acacia ligulata	175	<1
Anthobolus leptomerioides	100	1
Aristida inaequiglumis	70	<1
Bonamia rosea	50	<1
**Cenchrus ciliaris*	70	<1
Dicrastylis cordifolia	50	<1
Eragrostis cumingii	50	<1
Eragrostis laniflora	80	<1
Eucalyptus victrix	700	5-15
Euphorbia boophthona	80	<1

SPECIES	HEIGHT (cm)	% COVER
Evolvulus alsinoides var. *villosicalyx*	30	<1
Goodenia armitiana	50	<1
Hakea lorea	250	<1
Halgania solanacea subsp. *solanacea*	50	<1
Indigofera boviperda subsp. *boviperda*	50	<1
Melhania oblongifolia	50	1
Newcastelia roseoazurea	50	<1
Paraneurachne muelleri	70	<1
Paspalidium rarum	10	<1
Petalostyla cassioides	70	<1
Ptilotus astrolasius var. *astrolasius*	50	<1
Ptilotus obovatus	50	<1
Ptilotus polystachyus forma. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Senna artemisioides subsp. *oligophylla*	120	1
Stylobasium spathulatum	70	<1
Tribulus angustifolia	10	<1
Trichodesma zeylanicum var. *grandiflorum*	130	<1
Triodia basedowii	100	75
Acacia dictyophleba	Opportunistic	
Blumea tenella	Opportunistic	
Calytrix carinata	Opportunistic	
Corchorus parviflorus	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Dodonaea coriacea	Opportunistic	
Dysphania rhadinostachya subsp. *rhadinostachya*	Opportunistic	
Eucalyptus gamophylla	Opportunistic	
Euphorbia australis	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Grevillea eriostachya	Opportunistic	
Ipomoea muelleri	Opportunistic	
Isotropis atropurpurea	Opportunistic	
Jacksonia aculeata	Opportunistic	
Otion simplicifolia	Opportunistic	
Pterocaulon sphacelatum	Opportunistic	
Senna notabilis	Opportunistic	
Sida arenicola	Opportunistic	
Streptoglossa liatroides	Opportunistic	
Triodia schinzii	Opportunistic	
Wahlenbergia tumidifructa	Opportunistic	

QUADRAT S59

Location: Along current Telfer track
Datum: 407620E; 7534469N
S59A: 405183E; 7539812N
Soil: Red sand with a few pebbles
Topography: Flat
Vegetation Description: Low Woodland B of *Eucalyptus kingsmillii* subsp. *kingsmillii* over Scrub of *Acacia ligulata* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: S59A the grass is *Triodia schinzii*



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	5
Acacia colei	300	<1
Acacia dictyophleba	100	<1
Acacia eriopoda	250	<1
Acacia ligulata	250	1-20
Anthobolus leptomerioides	50	<1

SPECIES	HEIGHT (cm)	% COVER
Aristida inaequiglumis	50	3
Aristida latifolia	70	<1
Bonamia rosea	50	<1
Calytrix carinata	60	<1
Dicrastylis cordifolia	60	<1
Eragrostis eriopoda	60	3
Eriachne aristidea	70	3
Eriachne obtusa	70	<1
Eucalyptus kingsmillii subsp. *kingsmillii*	300	10-20
Eucalyptus odontocarpa	300	<1
Euphorbia boophthona	70	<1
Goodenia armitiana	50	<1
Grevillea stenobotrya	150	<1
Hakea lorea	300	1
Halgania solanacea subsp. *solanacea*	50	<1
Heliotropium ovalifolium	60	<1
Indigofera boviperda subsp. *boviperda*	60	1
Isotropis atropurpurea	50	<1
Jacksonia aculeata	50	<1
Newcastelia roseoazurea	60	<1
Oldenlandia pterospora	50	<1
Paraneurachne muelleri	60	3
Petalostylis cassioides	50	<1
Ptilotus obovatus	60	<1
Ptilotus polystachyus forma. *polystachyus*	100	1
Scaevola parvifolia subsp. *pilbarae*	50	1
Senna artemisioides subsp. *helmsii*	110	<1
Senna artemisioides subsp. *oligophylla*	120	5
Senna notabilis	50	<1
Sida cardiophylla	60	2
Sida sp. Rabbit Flat	30	<1
Sida sp. Sand Dunes	70	<1
Trichodesma zeylanicum var. *grandiflorum*	100	1
Triodia basedowii	80	50
Amphipogon caricinus	Opportunistic	
Cassytha capillaris	Opportunistic	
Eragrostis eriopoda	Opportunistic	
Eucalyptus microptera	Opportunistic	
Senna notabilis	Opportunistic	
Trianthema pilosa	Opportunistic	
Triodia schinzii	Opportunistic	

QUADRAT S60

Location: Along current Telfer Road
Datum: 407989E; 7535051N
Soil: Red sandy clay
Topography: Flat
Vegetation Description: Open Low Woodland A of *Corymbia opaca* over Scrub of *Acacia eriopoda* and *Acacia dictyophleba* over Tall Grass dominated by *Eragrostis eriopoda, Eragrostis eriopoda* and **Cenchrus ciliaris*
Vegetation Condition: Very good
Other Notes: Floodplain before creek



SPECIES	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia ancistrocarpa	200	5
Acacia coriacea subsp. *pendens*	250	<1
Acacia dictyophleba	170	1-30
Acacia eriopoda	200	10
Alternanthera nodiflora	30	<1
Aristida inaequiglumis	60	5
Aristida latifolia	80	5

SPECIES	HEIGHT (cm)	% COVER
Blumea tenella	50	<1
Bonamia rosea	50	<1
**Cenchrus ciliaris*	70	15
Centipeda minima	50	<1
Chrysocephalum eremaeum	80	<1
Corchorus sidoides subsp. *sidoides*	50	<1
Corymbia opaca	900	2-5
Cyperus cunninghamii subsp. *cunninghamii*	70	<1
Dicrastylis cordifolia	50	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	50	<1
Eragrostis eriopoda	70	10
Eragrostis laniflora	90	5
Eragrostis speciosa	30	<1
Eriachne aristida	50	1
Euphorbia boophthona	50	<1
Gomphrena canescens subsp. *canescens*	50	<1
Goodenia armitiana	60	1
Grevillea wickhamii subsp. *aprica*	50	<1
Isotropis atropurpurea	50	<1
Jacksonia aculeata	70	1
Melhania oblongifolia	60	<1
Newcastelia roseoazurea	50	<1
Paraneurachne muelleri	80	10
Polycarpaea corymbosa	20	<1
Pterocaulon sphacelatum	10	<1
Ptilotus polystachyus forma polystachyus	70	<1
Rutidosis helichrysoides	60	<1
Sida cardiophylla	50	<1
Stylidium desertorum	15	<1
Trichodesma zeylanicum var. *grandiflorum*	100	<1
Triodia basedowii	70	2
Triodia schinzii	120	50
Wahlenbergia tumidifructa	50	1
Zornia albiflora	10	1
Pluchea tetranthera	Opportunistic	

QUADRAT S61

Location: South of Telfer-Marble Bar Road
Datum: 404710E; 7605032N
S61A: 403398E; 7587823N
Soil: Red sand
Topography: Flat to slight rise
Vegetation Description: Open Low Woodland B of *Eucalyptus kingsmillii* subsp. *kingsmillii* and *Eucalyptus gamophylla* over Dwarf Scrub C dominated by *Acacia stellaticeps* over Mid Dense Hummock Grass of *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Understorey dominance varies with the time since fire



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	70	<1
Acacia colei	100	<1
Acacia stellaticeps	50	10
Corchorus sidoides subsp. *sidoides*	60	5
Dicrastylis cordifolia	60	<1

SPECIES	HEIGHT (cm)	% COVER
Dodonaea coriacea	60	3
Eragrostis eriopoda	60	1
Eucalyptus gamophylla	250	5
Eucalyptus kingsmillii subsp. *kingsmillii*	200	5
Goodenia armitiana	50	<1
Grevillea wickhamii subsp. *aprica*	50	<1
Hakea lorea	200	2
Halgania solanacea subsp. *solanacea*	50	<1
Heliotropium ovalifolium	60	<1
Hibiscus leptocladus	80	<1
Jacksonia aculeata	60	1
Oldenlandia pterospora	30	<1
Paraneurachne muelleri	70	3
Ptilotus arthrolasius	50	<1
Ptilotus axillaris	5	2
Scaevola parvifolia subsp. *pilbarae*	50	<1
Sida cardiophylla	50	1
Sida robeorum	50	<1
Sida sp. Sand Dunes	90	1
Stylobasium spathulatum	60	<1
Trianthema pilosa	5	<1
Triodia basedowii	70	10
Triodia schinzii	120	10-60
Acacia tumida var. *pilbarensis*	Opportunistic	
Amphipogon caricinus	Opportunistic	
Aristida inaequiglumis	Opportunistic	
Bonamia rosea	Opportunistic	
Calytrix carinata	Opportunistic	
Dampiera cinerea	Opportunistic	
Eriachne aristida	Opportunistic	
Evolvulus alsinoides var. *decumbens*	Opportunistic	
Grevillea eriostachya	Opportunistic	
Indigofera boviperda	Opportunistic	
Otion simplicifolia	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna notabilis	Opportunistic	

QUADRAT S62

Location: South of Telfer-Marble Bar Road
Datum: 404371E; 7603714N
Soil: Red sand
Topography: Water course – drainage line
Vegetation Description: Thicket of *Acacia tumida* var. *pilbarensis*, *Grevillea wickhamii* subsp. *aprica* and *Grevillea eriostachya* over Dwarf Scrub C dominated by *Jacksonia aculeata* over Mid Dense Hummock Grass of *Triodia schinzii*
Vegetation Condition: Excellent
Other Notes: Area consists of a series of drainage channels



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	80	<1
Acacia tumida var. *pilbarensis*	200	25
Aristida holathera var. *holathera*	60	<1
Bonamia rosea	50	<1
Calytrix carinata	70	<1
Corchorus sidoides subsp. *sidoides*	60	<1
Dampiera candicans	60	<1
Dampiera cinerea	40	<1

SPECIES	HEIGHT (cm)	% COVER
Dicrastylis cordifolia	50	<1
Dicrastylis doranii	50	<1
Dicrastylis cordifolia	60	<1
Eragrostis eriopoda	50	<1
Grevillea eriostachya	200	3
Grevillea wickhamii subsp. *aprica*	300	15
Halgania solanacea var. *solanacea*	70	<1
Isotropis atropurpurea	60	<1
Jacksonia aculeata	70	10
Jacksonia aculeata (white flowers)	50	<1
Keraudrenia velutina subsp. *elliptica*	70	<1
Macgregoria racemosa	20	<1
Newcastelia cladotricha	60	<1
Portulaca pilosa	15	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Sida arenicola	60	<1
Sida cardiophylla	50	<1
Sida sp. Rabbit Flat	50	2
Solanum centrale	50	<1
Stylobasium spathulatum	100	3
Trachymene pilosa	15	<1
Triodia basedowii	70	1
Triodia schinzii	120	60
Acacia eriopoda	Opportunistic	
Acacia melleodora	Opportunistic	
Cassytha capillaris	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eriachne obtusa	Opportunistic	
Evolvulus alsinoides var. *decumbens*	Opportunistic	
Hakea lorea	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Indigofera boviperda	Opportunistic	
Pluchea tetranthera	Opportunistic	

QUADRAT S63

Location: South of Telfer-Marble Bar Road
Datum: 404243E; 7603192N
Soil: Red sand
Topography: Rise above drainage area
Vegetation Description: Low Scrub B of *Stylobasium spathulatum* and *Acacia stellaticeps* over Mid Dense Hummock Grass of *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: Excellent to very good
Other Notes: Burnt about 3 years



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	60	<1
Acacia stellaticeps	100	25
Amphipogon caricinus	50	<1
Bonamia rosea	60	1
Corchorus sidoides subsp. *sidoides*	50	2
Dampiera candicans	50	<1
Dicrastylis cordifolia	60	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	<1

SPECIES	HEIGHT (cm)	% COVER
Eragrostis eriopoda	60	15
Eriachne aristidea	50	<1
Fimbristylis oxystachya	20	<1
Grevillea eriostachya	120	<1
Halgania solanacea var. *solanacea*	40	<1
Heliotropium ovalifolium	40	1
Indigofera boviperda subsp. *boviperda*	100	25
Ptilotus arthrolasius	50	<1
Ptilotus calostachyus	100	<1
Scaevola parvifolia subsp. *pilbarae*	25	<1
Sida arenicola	175	<1
Sida cardiophylla	50	1
Sida robeorum	60	<1
Sida sp. Rabbit Flat	50	<1
Sida sp. Sand Dunes	80	3
Streptoglossa liatroides	40	<1
Stylobasium spathulatum	120	15
Triodia basedowii	120	40
Triodia schinzii	130	20
Grevillea stenobotrya	Opportunistic	

QUADRAT S64

Location: South of Telfer-Marble Bar Road
Datum: 404211E; 7603116N
Soil: Red sand with scattered stone less than 5cm
Topography: Flat
Vegetation Description: Low Scrub B of *Sida* sp. Sand Dunes over Dwarf Scrub C dominated by *Corchorus sidoides* subsp. *sidoides* over Hummock Grass of *Triodia basedowii* over Open Tall Grass of *Eragrostis eriopoda*
Vegetation Condition: Excellent to very good
Other Notes: A relatively large area



SPECIES	HEIGHT (cm)	% COVER
Acacia ligulata	50	1
Acacia stellaticeps	60	1
Amphipogon caricinus	80	1
Aristida holathera var. *holathera*	60	2
Bulbostylis barbata	15	<1
Corchorus sidoides subsp. *sidoides*	60	10
Dampiera candicans	60	<1
Dodonaea coriacea	60	<1

SPECIES	HEIGHT (cm)	% COVER
Dysphania rhadinostachya subsp. *rhadinostachya*	20	<1
Eragrostis eriopoda	60	15
Euphorbia australis	5	<1
Halgania solanacea var. *solanacea*	60	2
Haloragis gossei	20	<1
Heliotropium ovalifolium	35	2
Indigofera boviperda	25	1
Isotropis atropurpurea	70	<1
Jacksonia aculeata	50	<1
Keraudrenia velutina subsp. *elliptica*	50	<1
Paraneurachne muelleri	60	3
Ptilotus arthrolasius	30	1
Ptilotus calostachyus	100	1
Ptilotus gaudichaudii var. *gaudichaudii*	50	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Sida arenicola	150	1
Sida robeorum	50	1
Sida sp. Sand Dunes	120	30
Streptoglossa liatroides	50	1
Stylobasium spathulatum	50	5
Triodia basedowii	70	20
Acacia synchronicia	Opportunistic	
Eremophila decipiens var. *decipiens*	Opportunistic	
Pluchea tetranthera	Opportunistic	
Polycarpaea corymbosa	Opportunistic	
Portulaca pilosa	Opportunistic	
Ptilotus exaltatus	Opportunistic	
Ptilotus polystachyus	Opportunistic	
Sclerolaena deserticola	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Solanum diversiflorum	Opportunistic	
Sporobolus australis	Opportunistic	
Tribulus macrocarpus	Opportunistic	

QUADRAT S65

Location: South of Telfer-Marble Bar Road
Datum: 404132E; 7602746n
Soil: Red fine sandy loam
Topography: Flat
Vegetation Description: Thicket of *Acacia ancistrocarpa* over Open Low Scrub B of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*
Vegetation Condition: Excellent
Other Notes: From the aerial photograph provided and as far as it was possible to see this vegetation unit continued for some distance. Area burnt about 3 years, most Acacias still regenerating



SPECIES	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	150	40
Acacia stellaticeps	120	5
Calytrix carinata	20	<1
Corchorus sidoides subsp. *sidoides*	40	<1
Dampiera candicans	10	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	25	<1

SPECIES	HEIGHT (cm)	% COVER
Goodenia armitiana	50	<1
Haloragis gossei	20	<1
Paraneurachne muelleri	50	<1
Ptilotus calostachyus	120	<1
Scaevola parvifolia subsp. *pilbarae*	40	<1
Senna notabilis	50	<1
Sporobolus australis	15	<1
Triodia basedowii	70	75

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N

0 5km

Scale 1:250,000
MGA94 (Zone 51)

Cameco

LOCALITY



TELFER

1
2
3
4
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7
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Survey Area

KINTYRE PROJECT

Karlamilyi National Park

Kintyre Joint Venture Project
Kintyre to Telfer Access Track
Locality

Author: E. Bennett Date: December 2011

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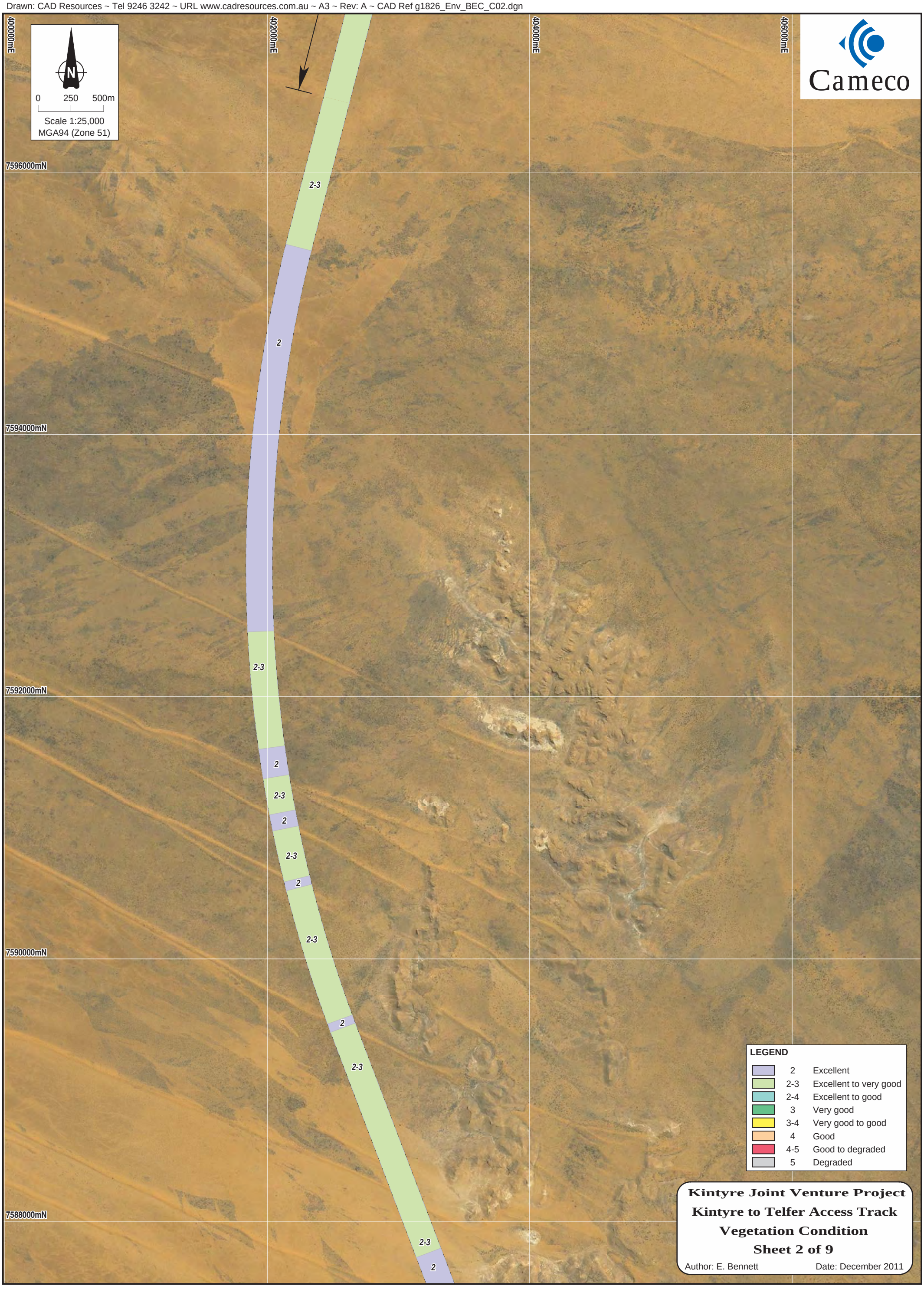

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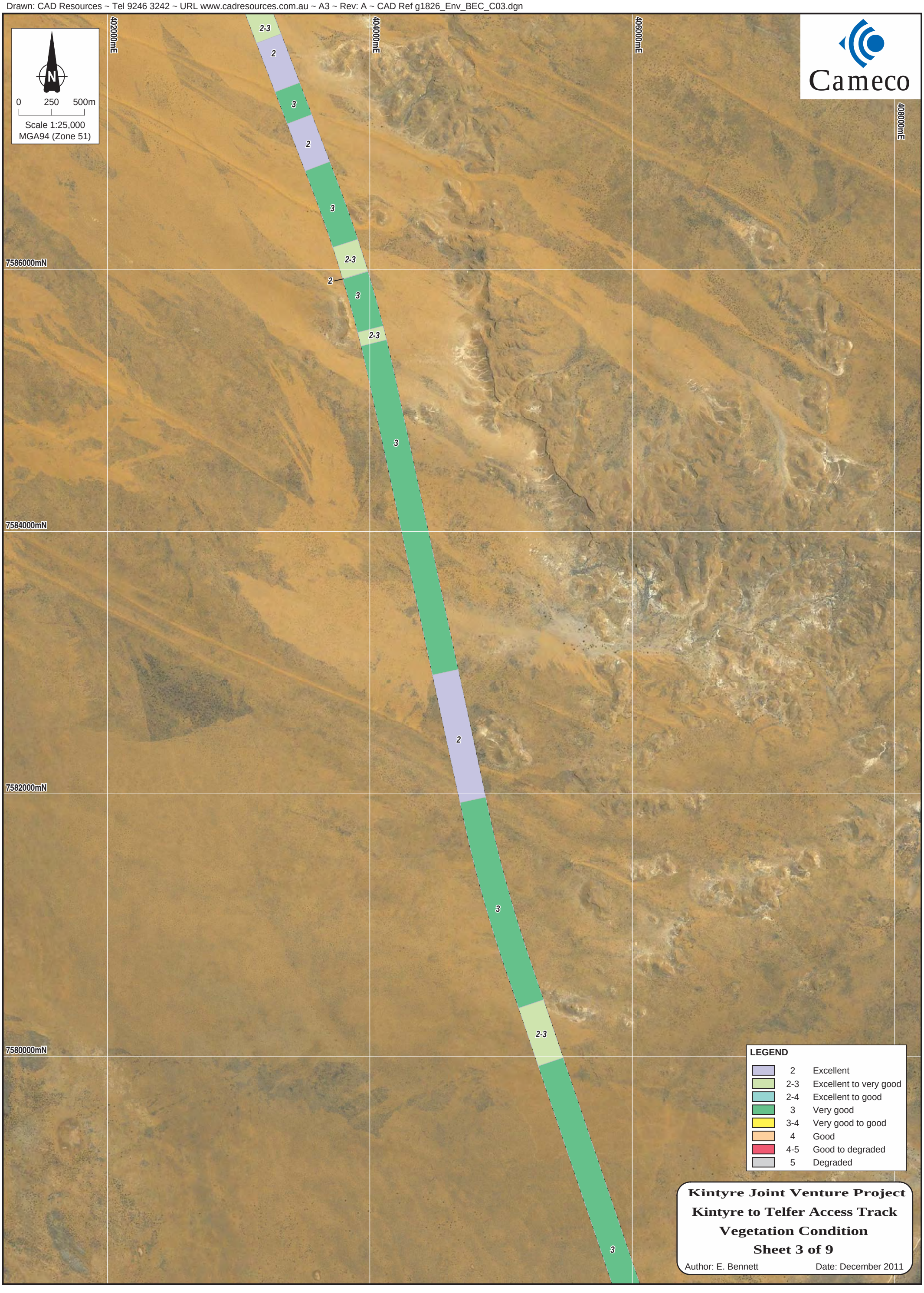

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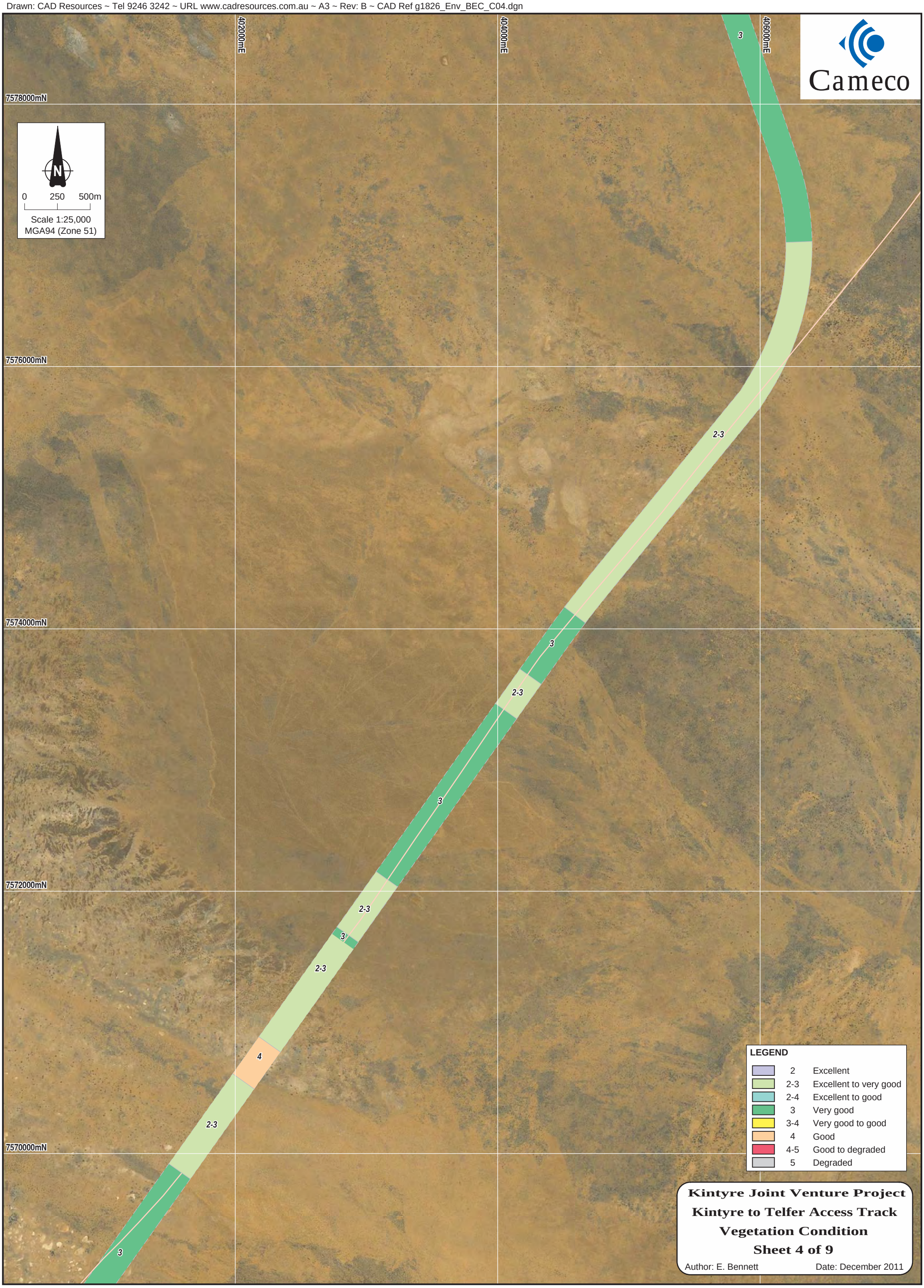

Kintyre Joint Venture Project

Kintyre to Telfer Access Track

Vegetation Condition

Sheet 4 of 9

Author: E. Bennett Date: December 2011

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Scale 1:25,000
MGA94 (Zone 51)

Cameco

3
2-3
4
2-3
3
2-3
2
2-3
2
2-3
2
3
2-3

LEGEND

	2	Excellent
	2-3	Excellent to very good
	2-4	Excellent to good
	3	Very good
	3-4	Very good to good
	4	Good
	4-5	Good to degraded
	5	Degraded

Kintyre Joint Venture Project
Kintyre to Telfer Access Track
Vegetation Condition
Sheet 5 of 9

Author: E. Bennett Date: December 2011

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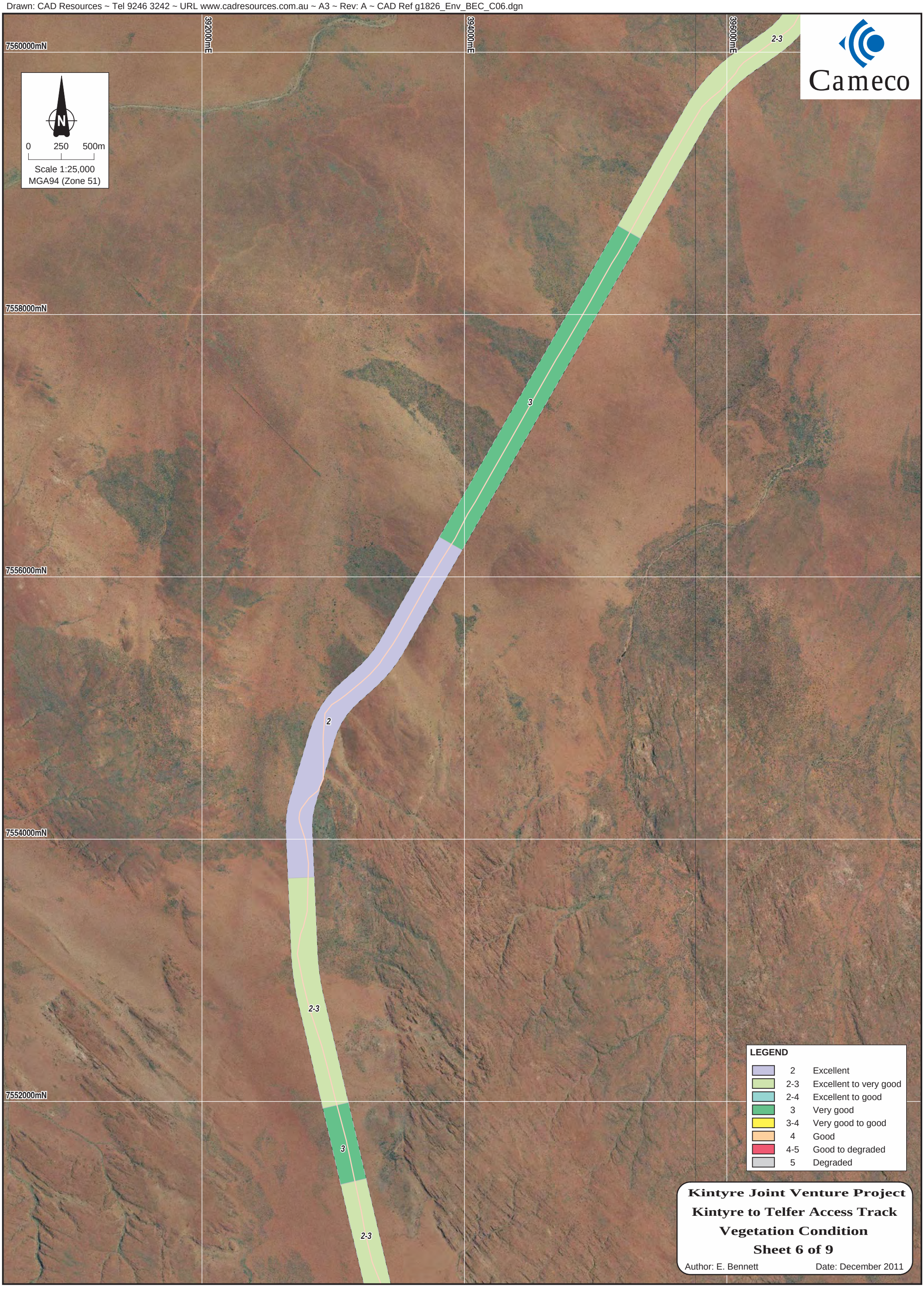

Kintyre Joint Venture Project
Kintyre to Telfer Access Track
Vegetation Condition
Sheet 6 of 9

Author: E. Bennett Date: December 2011

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0 250 500m
Scale 1:25,000
MGA94 (Zone 51)

Cameco

2-3
3
2-3
COOLBRO CREEK
3
2-3
3
2-3
2

LEGEND

	2	Excellent
	2-3	Excellent to very good
	2-4	Excellent to good
	3	Very good
	3-4	Very good to good
	4	Good
	4-5	Good to degraded
	5	Degraded

Kintyre Joint Venture Project
Kintyre to Telfer Access Track
Vegetation Condition
Sheet 7 of 9

Author: E. Bennett Date: December 2011

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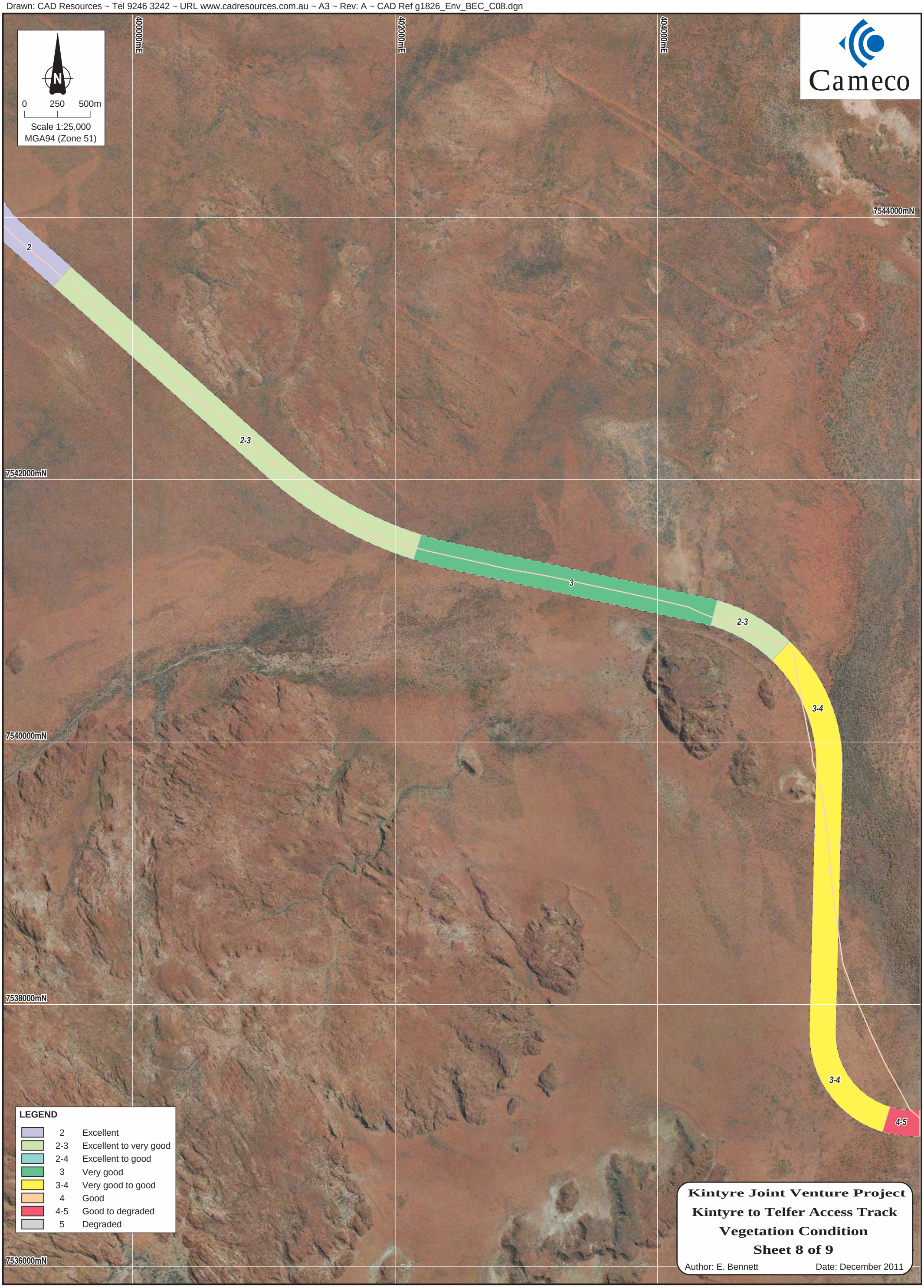

Cameco

Kintyre Joint Venture Project

Kintyre to Telfer Access Track

Vegetation Condition

Sheet 8 of 9

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Scale 1:25,000
MGA94 (Zone 51)

Cameco

3-4
4-5
4
2-4
4-5
3-4
3
2-3
5

YANDAGOOGE CREEK

KINTYRE PROJECT

To Karlamilyi National Park

LEGEND

	2	Excellent
	2-3	Excellent to very good
	2-4	Excellent to good
	3	Very good
	3-4	Very good to good
	4	Good
	4-5	Good to degraded
	5	Degraded

Kintyre Joint Venture Project
Kintyre to Telfer Access Track
Vegetation Condition
Sheet 9 of 9

Author: E. Bennett Date: December 2011

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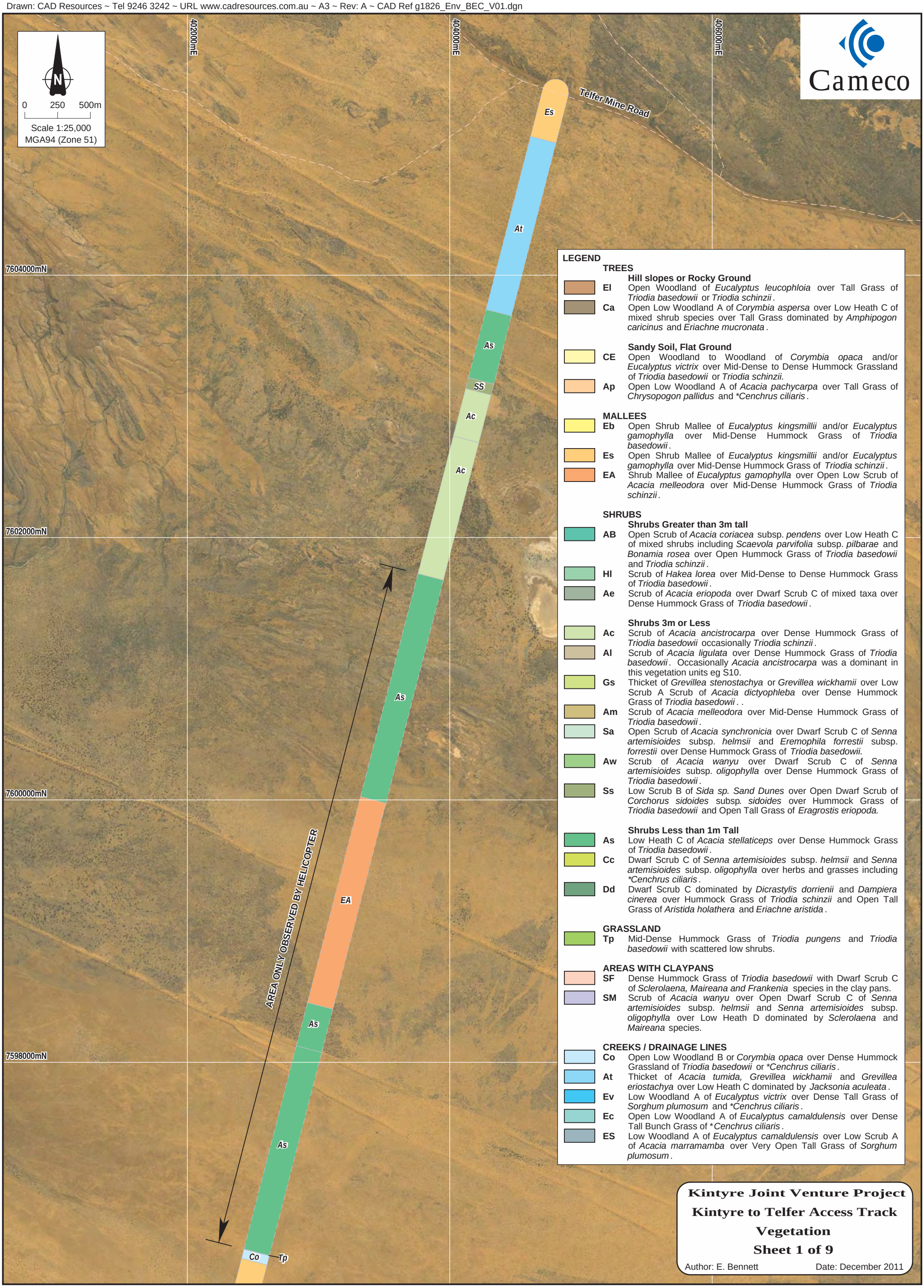

Cameco

LEGEND

TREES

Hill slopes or Rocky Ground

El Open Woodland of *Eucalyptus leucophloia* over Tall Grass of *Triodia basedowii* or *Triodia schinzii* .

Ca Open Low Woodland A of *Corymbia aspersa* over Low Heath C of mixed shrub species over Tall Grass dominated by *Amphipogon caricinus* and *Eriachne mucronata* .

Sandy Soil, Flat Ground

CE Open Woodland to Woodland of *Corymbia opaca* and/or *Eucalyptus victrix* over Mid-Dense to Dense Hummock Grassland of *Triodia basedowii* or *Triodia schinzii.*

Ap Open Low Woodland A of *Acacia pachycarpa* over Tall Grass of *Chrysopogon pallidus* and **Cenchrus ciliaris* .

MALLEES

Eb Open Shrub Mallee of *Eucalyptus kingsmillii* and/or *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia basedowii* .

Es Open Shrub Mallee of *Eucalyptus kingsmillii* and/or *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia schinzii* .

EA Shrub Mallee of *Eucalyptus gamophylla* over Open Low Scrub of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia schinzii* .

SHRUBS

Shrubs Greater than 3m tall

AB Open Scrub of *Acacia coriacea* subsp. *pendens* over Low Heath C of mixed shrubs including *Scaevola parvifolia* subsp. *pilbarae* and *Bonamia rosea* over Open Hummock Grass of *Triodia basedowii* and *Triodia schinzii* .

Hl Scrub of *Hakea lorea* over Mid-Dense to Dense Hummock Grass of *Triodia basedowii* .

Ae Scrub of *Acacia eriopoda* over Dwarf Scrub C of mixed taxa over Dense Hummock Grass of *Triodia basedowii* .

Shrubs 3m or Less

Ac Scrub of *Acacia ancistrocarpa* over Dense Hummock Grass of *Triodia basedowii* occasionally *Triodia schinzii* .

Al Scrub of *Acacia ligulata* over Dense Hummock Grass of *Triodia basedowii* . Occasionally *Acacia ancistrocarpa* was a dominant in this vegetation units eg S10.

Gs Thicket of *Grevillea stenostachya* or *Grevillea wickhamii* over Low Scrub A Scrub of *Acacia dictyophleba* over Dense Hummock Grass of *Triodia basedowii* . .

Am Scrub of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia basedowii* .

Sa Open Scrub of *Acacia synchronicia* over Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Eremophila forrestii* subsp. *forrestii* over Dense Hummock Grass of *Triodia basedowii.*

Aw Scrub of *Acacia wanyu* over Dwarf Scrub C of *Senna artemisioides* subsp. *oligophylla* over Dense Hummock Grass of *Triodia basedowii* .

Ss Low Scrub B of *Sida sp. Sand Dunes* over Open Dwarf Scrub of *Corchorus sidoides* subsp. *sidoides* over Hummock Grass of *Triodia basedowii* and Open Tall Grass of *Eragrostis eriopoda.*

Shrubs Less than 1m Tall

As Low Heath C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii* .

Cc Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over herbs and grasses including **Cenchrus ciliaris* .

Dd Dwarf Scrub C dominated by *Dicrastylis dorrienii* and *Dampiera cinerea* over Hummock Grass of *Triodia schinzii* and Open Tall Grass of *Aristida holathera* and *Eriachne aristida* .

GRASSLAND

Tp Mid-Dense Hummock Grass of *Triodia pungens* and *Triodia basedowii* with scattered low shrubs.

AREAS WITH CLAYPANS

SF Dense Hummock Grass of *Triodia basedowii* with Dwarf Scrub C of *Sclerolaena, Maireana and Frankenia* species in the clay pans.

SM Scrub of *Acacia wanyu* over Open Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Low Heath D dominated by *Sclerolaena* and *Maireana* species.

CREEKS / DRAINAGE LINES

Co Open Low Woodland B or *Corymbia opaca* over Dense Hummock Grassland of *Triodia basedowii* or **Cenchrus ciliaris* .

At Thicket of *Acacia tumida, Grevillea wickhamii* and *Grevillea eriostachya* over Low Heath C dominated by *Jacksonia aculeata* .

Ev Low Woodland A of *Eucalyptus victrix* over Dense Tall Grass of *Sorghum plumosum* and **Cenchrus ciliaris* .

Ec Open Low Woodland A of *Eucalyptus camaldulensis* over Dense Tall Bunch Grass of **Cenchrus ciliaris* .

ES Low Woodland A of *Eucalyptus camaldulensis* over Low Scrub A of *Acacia marramamba* over Very Open Tall Grass of *Sorghum plumosum* .

Kintyre Joint Venture Project

Kintyre to Telfer Access Track

Vegetation

Sheet 1 of 9

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Scale 1:25,000
MGA94 (Zone 51)

Cameco

Co
Tp
Es
Dd
As
Thysanotus sp. Desert East of Newman (RP Hart 964) (P2)
Dd
As
Dd
As
Dd
As
Co
Dd
Co
Dd
As
Ac
Dd

For legend - refer to sheet 1

Kintyre Joint Venture Project
Kintyre to Telfer Access Track
Vegetation
Sheet 2 of 9

Author: E. Bennett Date: December 2011

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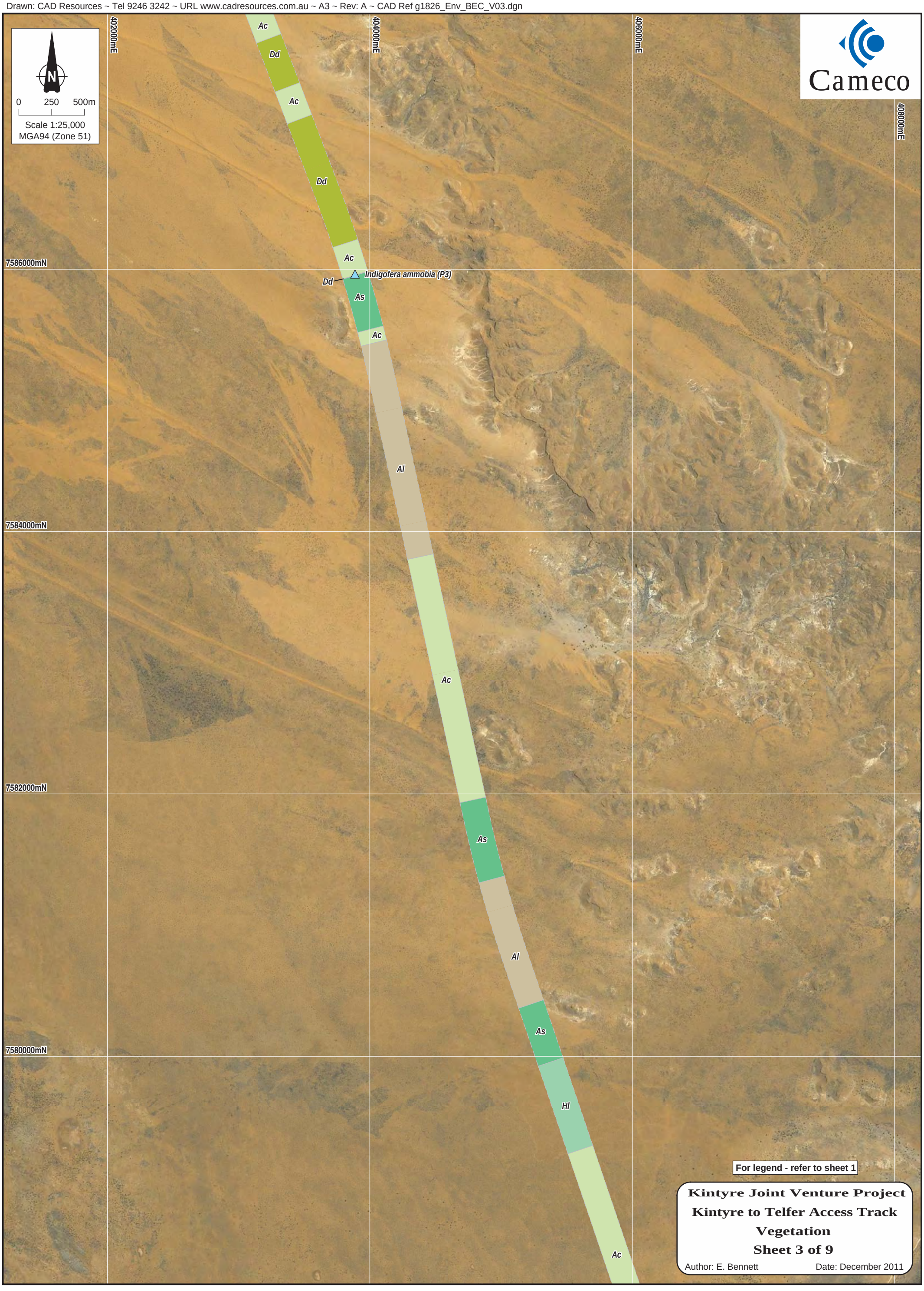

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Scale 1:25,000
MGA94 (Zone 51)

Cameco

Ac
SF
Ac
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As
SM
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Ap
Cc

For legend - refer to sheet 1

Kintyre Joint Venture Project

Kintyre to Telfer Access Track

Vegetation

Sheet 4 of 9

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Scale 1:25,000
MGA94 (Zone 51)

Cameco

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CE
Thysanotus sp. Desert East of Newman (RP Hart 964) (P2)
Eb
Ae
As
Es
As
Ae
Ac
Ae
As

For legend - refer to sheet 1

Kintyre Joint Venture Project
Kintyre to Telfer Access Track
Vegetation
Sheet 5 of 9

Author: E. Bennett Date: December 2011

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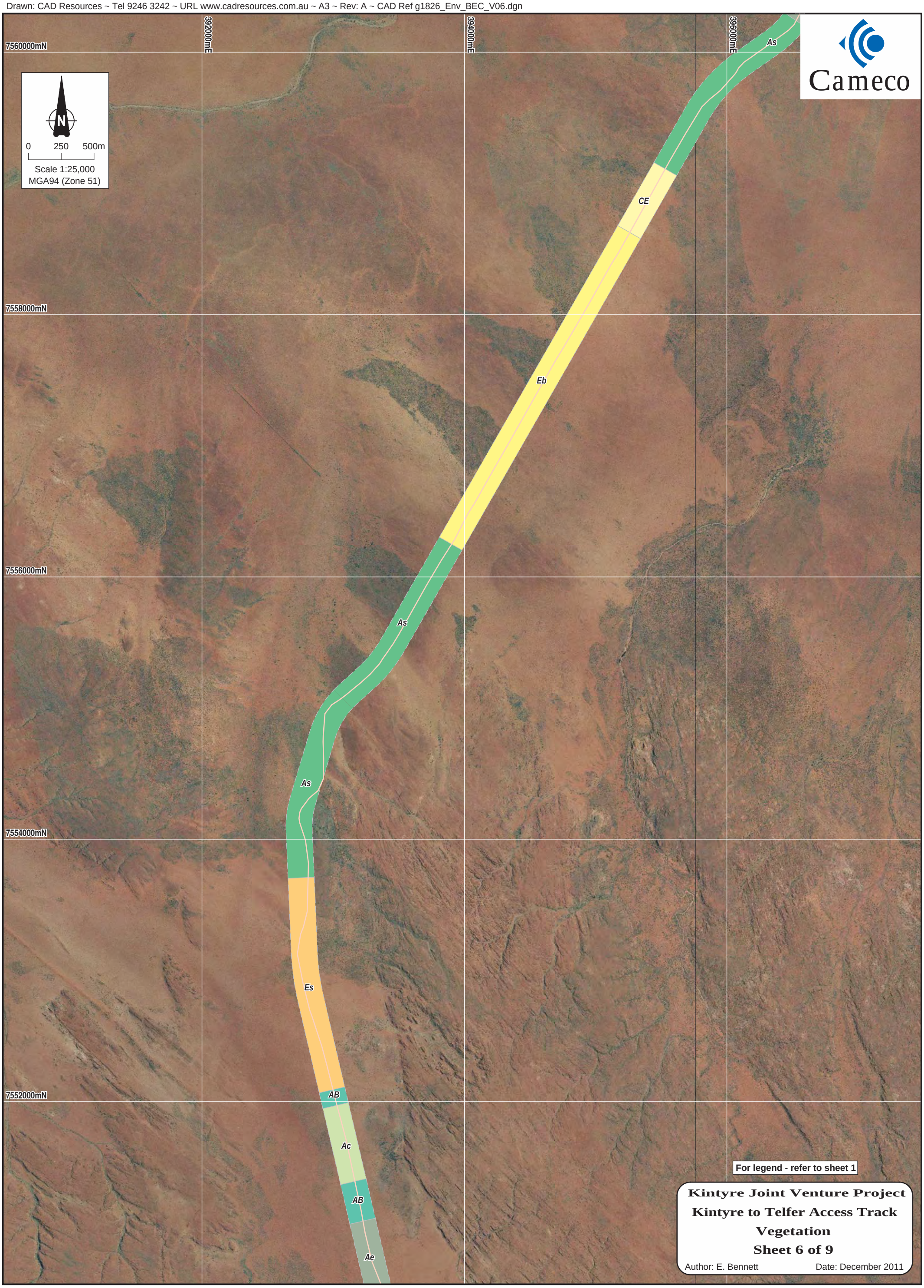

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COOLBRO CREEK

Thysanotus sp. Desert East of Newman (RP Hart 964) (P2)

N
0 250 500m
Scale 1:25,000
MGA94 (Zone 51)

Cameco

For legend - refer to sheet 1

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Kintyre to Telfer Access Track
Vegetation
Sheet 7 of 9

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Kintyre Joint Venture Project

Kintyre to Telfer Access Track

Vegetation

Sheet 8 of 9

Author: E. Bennett

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Scale 1:25,000
MGA94 (Zone 51)

Cameco

Co
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Es
Thysanotus sp. Desert East of Newman (RP Hart 964) (P2)
Am

YANDAGOOGE CREEK

To Karlamilyi National Park

KINTYRE
PROJECT

For legend - refer to sheet 1

Kintyre Joint Venture Project
Kintyre to Telfer Access Track
Vegetation
Sheet 9 of 9

Author: E. Bennett Date: December 2011

FLORA AND VEGETATION
Kintyre Lease

Prepared for:
Canning Resources
Kings Park Road
WEST PERTH

Prepared by:
Bennett Environmental Consulting Pty Ltd



Sollya heterophylla

PO Box 341
KALAMUNDA 6926

August 2007

STATEMENT OF LIMITATIONS

Scope of Services

This report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Eleanor Bennett ("the Author"). In some circumstances a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services.

Reliance on Data

In preparing the report, the Author has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, the Author has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. The Author will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to the Author.

Environmental Conclusions

In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. The Author assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of the Author or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

Other Limitations

The Author will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report. The scope of services did not include any assessment of the title to or ownership of the properties, buildings and structures referred to in the report nor the application or interpretation of laws in the jurisdiction in which those properties, buildings and structures are located.

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APPENDICES

A Species listed according to vegetation areas
B Quadrat Data
C Bennett Environmental Consulting Pty Ltd Quadrats overlain on Hart Simpson and Associates Pty Ltd mapping
D Mapping from 2007 survey

SUMMARY

Bennett Environmental Consulting Pty Ltd undertook a survey between 25th June and 4th July inclusive of Canning Resources Kintyre Lease. There had been exploration drilling in the area in the 1990's but more intensive drilling is due to commence later in 2007 or 2008. Hart Simpson and Associates Pty Ltd (1994 and 1997) had undertaken intensive vegetation surveys of the area, so the 2007 survey was to check the mapping undertaken previously by ground truthing, ensuring that all areas to be included in the proposed exploration phase were covered. In addition the areas proposed for the village and associated infrastructure if the project proceeds were also to be surveyed.

The method to be used was to meet the requirements of the Environmental Protection Authority Guidance No 51 (2004). Dr van Leeuwen, a research officer at the Department of Environment and Conservation recommended that 50m x 50m quadrats was the method to be used. A permanent dropper was left at the north west corner of each quadrat at the completion of the assessment.

One priority flora was recorded. It was a Priority 3 Flora, *Comesperma pallidum* and was recorded from within the area where it is intended to undertake exploration drilling.

The variation in the vegetation within the site varied with the rocks and associated soils. The hillslopes in the northern section of the lease had scattered shrubs of *Acacia synchronicia* (narrow leaf form), *Grevillea wickhamii* and *Senna glutinosa* as the dominant shrubs. The hillslopes where *Acacia retivenea* occurred were only recorded from the southern area of the lease where the rocks were more schistose than in the northern area. *Eucalyptus leucophloia* was only recorded on a few hillslopes and was not a common taxon.

The sandy soils typically included *Triodia basedowii* and *Triodia schinzii* associated with *Acacia ligulata* and *Stylobasium spathulatum*. The latter taxon was more common on the raised dunes rather than on the flatter sandy soils. *Dicrastylis georgei* and *Lachnostachys roseoazurea* were typically associated with the sandy soils across the lease.

The drainage lines at the base of the hills varied with the taxa located on the adjacent hill slopes and flat areas. As an example *Acacia retivenia* was common in the drainage lines to the south of the lease but less common in the north of the lease. *Grevillea wickhamii* occurred across all vegetation units and did not appear to be restricted to a specific soil.

Two arms of the creek were included in the survey area but the vegetation at both was the same. The tree in the creek bed itself was *Eucalyptus camaldulensis* and it also continued onto the bank where *Corymbia opaca* also often occurred. The dominant native grass was *Sorghum plumosum* but all banks of the creek were dense with **Cenchrus ciliaris*, possibly due to distribution by flood waters and feral animals.

One claypan of a reasonable size was recorded during the survey. This was a herbfield with occasional scattered *Acacia inaequilatera* and *Acacia acradenia*. It had commenced to dry off at the time of the survey but the diversity of annual taxa could still be recorded. With good rainfall this area would have been inundated.

A comparison was made between the vegetation units recorded in 2007 and those of Hart *et al*. (1994, 1997). Fire has changed the make up of the units between the surveys although when the quadrats and opportunistic sites recorded in 2007 were overlain on the original vegetation map there was a reasonable correlation between them.

Four introduced taxa were recorded during the current survey. These were **Cenchrus ciliaris*, **Cucumis melo* subsp. *agrestis*, **Aerva peruviana* and **Bidens bipinnata*. **Cenchrus ciliaris* (Buffel grass) was introduced into the pastoral areas originally as fodder for stock but has become a common weed throughout the Pilbara and Kimberley Regions of Western Australia. This weed was common in several areas of the lease, in particular where the soil had been

ripped at the completion of the original exploration survey. Care will need to be exercised by the company to ensure this weed is not spread further, particularly into areas where it currently is not recorded.

**Cucumis melo* subsp. *agrestis* (an introduced melon) occurred typically as individual plants through the area. This had a characteristic elongated fruit, which is not edible.

**Aerva peruviana* (Kapok bush) was recorded from one hillslope which had been rehabilitated after the original exploration phase. As the area where this taxon occurs is small it is recommended that it be removed prior to any further disturbance. It is important that this taxon is not distributed further.

**Bidens bipinnata* (Beggar's ticks) was only recorded along the creek banks. It was reasonably common but would be difficult to control as it appears to be spread by water.

None of the vegetation units recorded for the survey area are listed by the Department of Environment and Conservation as Threatened Ecological Communities.

When exploration of the area occurs it is essential that only the area required for the development of infrastructure and drilling is disturbed. Vehicles moving from a heavily infested weed area into one of limited or no weed, should be checked to ensure that no weeds are being transported on the vehicles. Radiators, body undersurface and tyres in particular must be checked. No vehicle should be driven across the vegetation but should remain on prepared tracks. These requirements should also apply to contractors coming in to reopen some tracks eg the track to the airstrip.

The lease is an area of 'outback' Western Australia and should be respected for its uniqueness. There have been no pastoral leases through the area (pers. comm.. Shorty) but there are many feral animals including donkeys and camels. The disturbance by European man has been limited mainly due to its inaccessibility and although there are several other exploration teams from other mining companies about to undertake drilling it is essential that the environment is not degraded with these developments.

1. INTRODUCTION

1.1 Background

Bennett Environmental Consulting Pty Ltd was contracted by Canning Resources to undertake a flora and vegetation survey of the proposed disturbance areas within their lease to the north of Rudall River National Park. The tenements are P45/2632 – P45/2637; P45/2639 – P45/2643; M45/420, M45/264, M45/266, M45/267 and L45/66. Access to the area was via the Talawana Track, which traverses the northern edge of the Little Sandy Desert.

Hart, Simpson and Associates Pty Ltd undertook flora and fauna surveys in the same area in 1986 -1992. During these surveys Dr Hart listed the flora recorded and the vegetation units at the site.

1.2 Scope of Works

The requirements for this project were to:

- Review the existing vegetation mapping of Hart Simpson and Associates Pty Ltd (1994 and 1997) to ensure all disturbance areas are surveyed;
- Field check to confirm previous vegetation mapping;
- Conduct survey of any areas not mapped;
- All surveys were to be conducted to ensure the requirements of the Environmental Protection Authority Guidance Statement No 51 were met;
- All quadrats were to be 50m x 50m in size as required by the Department of Environment and Conservation (Dr. Van Leeuwen, pers. comm);
- Provide a list of flora including weed taxa, complimentary to those mapped by Hart Simpson and Associates Pty Ltd.

2. LIMITATIONS

There were several limitations with the project.

1. Vehicle access was limited. All 'tracks' were driven but large areas were transected on foot.
2. The lease area was very extensive and only the areas proposed for exploration drilling and future infrastructure development were surveyed.
3. As areas were transected a search was undertaken for Declared Rare and Priority Flora, but the area surveyed was limited in area.
4. The quadrat size required by the Department of Environment and Conservation (50m x 50m) limited the number that could be established in the time allocated.

3. REGIONAL METHODOLOGY

3.1 Climate

The climate of the area is arid tropical with summer rain. The annual average rainfall is 200-250mm. The Bureau of Meteorology (2007) provides the following information for Telfer, which is approximately 90km north of the Kintyre site.

Table 1. Average temperatures and rainfall for Telfer aero

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years	
Temperature															
Mean maximum temperature (°C)	40.5	38.4	37.4	34.4	29.0	25.4	25.2	28.2	32.7	37.0	39.4	40.1	34.0	32	1974 2007
Mean minimum temperature (°C)	26.0	25.2	23.8	20.5	15.3	11.9	10.5	12.5	16.4	20.7	23.3	25.3	19.3	31	1974 2007

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years	
Rainfall															
Mean rainfall (mm)	48.2	104.0	81.7	19.1	19.7	13.9	12.8	6.1	2.3	2.4	15.5	49.4	379.5	33	1974 2007
Decile 5 (median) rainfall (mm)	34.2	55.3	57.9	4.9	3.2	4.4	0.2	0.0	0.0	0.0	7.6	31.3	346.7	32	1974 2007
Mean number of days of rain ≥ 1 mm	5.0	6.6	4.3	1.8	2.0	1.6	1.1	0.7	0.5	0.4	1.7	3.9	29.6	33	1974 2007

3.2 Geology and Landform

Beard (1975) described the geology of the area as consisting of quaternary sandplain with longitudinal (seif) dunes developed over Middle Proterozoic sedimentary rocks which are exposed in numerous, low rocky hills.

The area varies considerably from:

- steep ranges and stony hills, comprising fine-grained sedimentary rocks along with basic dykes. Shallow stony earthy loams dominate in this area;
- Partially dissected pediments with some low stony hills. Red alkaline soils are dominant, with shallow stony soils on the steeper slopes; and
- Plains with variable proportion of linear sand dunes. The chief soils are red sand on the dunes.

3.3 Vegetation

The Interim Biogeographical Regionalisation for Australia (IBRA) (Thackway and Cresswell, 1995) recognises 85 bioregions. The IBRA is used as the common unit to compare biological and biophysical attributes. Bioregions represent a landscape-based approach to classifying the land surface and each region is defined by a set of major environmental influences, which shape the occurrence of flora and fauna and their interaction with the physical environment. The study area is in the Little Sandy Desert (LSD1 – Rudall Subregion), which consists of sparse shrub-steppe over *Triodia basedowii* on stony hills, with River Gum communities, and bunch grasslands on alluvial deposits in and associated with ranges. The climate is arid with summer rainfall (Kendrick, 2001).

Prior to the above classification Beard (1980) classified the vegetation of Western Australia. Western Australia was divided into three main Botanical Provinces, Southwest, Eremaean and Northern. The Kintyre project is within the Keartland Botanical District of the Eremaean Botanical Province (Beard, 1990). The Keartland Botanical District is described as shrub steppe of *Acacia*, *Grevillea* and *Triodia* species on and between dunes with patches of Desert oak (*Allocasuarina decaisneana*) and Mulga (*Acacia aneura*). He mapped the vegetation of the study site as:

- *Triodia wiseana* Grass Steppe on stony hills (abbreviated t_3Hi) and
- Mixed shrub steppe between sandhills with *Triodia schinzii* (abbreviated $a_n Sr^t_p$Hi)

Dr. R. Hart, of Hart Simpson and Associates undertook a very comprehensive botanical study between 1986 and 1992. In this report the vegetation units recorded from the lease are listed and mapped. In addition there is a list of taxa recorded during the survey. For the area he surveyed a total of 26 vegetation units were recorded which were representative of 7 vegetation/landform units. The 7 vegetation/landform units are:

1. Shrubs and spinifex on flat plains with silty sands;
2. Stony hills and scree slopes;
3. Sand dunes and sandy soils;
4. River channels;
5. Shrublands and woodlands in drainage channels;
6. Clayey or silty soils; and
7. Claypans.

3.4 Significant Flora

Prior to the field work being undertaken a search of the Department of Environment and Conservation Rare Flora Database was undertaken within the area, 22^0 00' - 23^0 00' S and 121^0 00' - 123^0 00' E (GDA94). This resulted in five Priority 1 Flora, seven Priority 2 Flora, fourteen Priority 3 Flora and three Priority 4 Flora, which are listed in Table 4.

Table 2 presents the definitions of Declared Rare and the four Priority Flora ratings under the Wildlife Conservation Act (1950) as extracted from Department of Environment and Conservation (2007). Table 3 presents the definitions of the threatened species under the Environmental Protection and Biodiversity Conservation Act, 1999 (Environment Australia, 2007).

Table 2. Code and description of Rare and Priority Flora

Code	Code Declared Rare and Priority Flora Categories
R	DRF (Declared Rare Flora) -Extant Taxa. Taxa, which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection.
X	DRF (Declared Rare Flora) -Presumed Extinct Taxa. Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently.
1	Priority One -Poorly Known Taxa. Taxa, which are known from one or a few (generally <5) populations, which are under threat.
2	Priority Two -Poorly Known Taxa. Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat.
3	Priority Three -Poorly Known Taxa. Taxa, which are known from several populations, at least some of which are not believed to be under immediate threat.
4	Priority Four -Rare Taxa. Taxa which are considered to have been adequately surveyed and which whilst being rare, are not currently threatened by any identifiable factors.

Table 3. Categories of Threatened Flora Species (Environmental Protection and Biodiversity Conservation Act, 1999)

Code	Code Declared Rare and Priority Flora Categories
Ex	Extinct Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of this species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa which at any particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	Endangered Taxa, which is not critically endangered, and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	Conservation Dependent Taxa which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Table 4. Prioirity Flora listed for the area, 22^0 00' - 23^0 00' S and 121^0 00' - 123^0 00' E (GDA94) with a description extracted from Western Australian Herbarium (2007a)

STATUS	TAXON	DESCRIPTION
1	*Halosarcia* sp. Yanneri Lake (S.van Leeuwen 3002)	Erect shrub, 1 m high, bulbous swollen succulent stems, red, blue, purple. Fl. Oct. White brown gritty loam over calcrete. Low-lying, calcarous salt flat with open scrub.
1	*Lepidium amelum*	Erect, spreading shrub, 0.3–1 m high, plants glabrous; leaves sessile, stem-clasping. Fl. white, May–Aug. Sandy loams & stony, calcareous, alkaline soils. Hummock grassland, low open woodland, disturbed sites.
1	*Philotheca eremicola*	Shrub, ca 0.4 m high, leaves congested, narrowly fusiform, ca 2.5 mm long, glabrous, glossy; sepals with brown glands. Red skeletal laterite. Rocky slopes in shrubland.
1	*Ptilotus tetrandrus*	Annual, herb, 0.15–0.3 m high. Fl. Oct. Loamy sand.
1	*Stackhousia clementii*	Dense broom-like perennial, herb, to 0.45 m high. Fl. green, yellow, brown. Skeletal soils. Sandstone hills.
2	*Acacia auripila*	Tree, to 3 m high, bark grey & fissured. Fl. yellow, Aug. Rocky quartz soils. Hillsides, gullies.
2	*Dampiera atriplicina*	Spreading, robust shrub, to 0.5(–1.2) m high. Fl. pink, May–Jul. Red sand. Sand ridges.
2	*Eremophila revoluta* ms	Shrub, 0.25–0.8 m high. Fl. blue, purple, Jul–Aug. Rocky clay, red sand. Rocky hills & plains, sandplains.
2	*Gonocarpus ephemerus*	Procumbent annual or perennial, herb, 0.07–0.5 m high. Fl. yellow, red, Aug. Sand. Along drainage lines.
2	*Goodenia hartiana*	Erect to spreading, multistemmed perennial, herb or shrub (sub-shrub). Fl. blue, purple, Aug – Sep. Sand. Sand dune swales, sandhills.
2	*Goodenia virgata*	Ascending to erect, virgate perennial, herb, to 0.4 m high. Fl. yellow, Jul. Red sandy loam. Near salt pans.
2	*Thysanotus* sp. Desert East of Newman (RP Hart 964)	Self supporting perennial, herb (with tuberous roots), distinguished by the long, equal anthers and pseudo-cymose branching. Fl. Aug–Oct. Red-brown loamy sand or red sand, sometimes silty. Sand plain, pisolitic buckshot plain.
3	*Acacia bromilowiana* ms	No information provided
3	*Bulbine pendula* ms	Upright annual, herb, to 0.1 m high, with succulent foliage. Cracking clay pan. Margins of tracks, tussock grassland.
3	*Calandrinia porifera*	Prostrate herb. Fl. pink, Sep. Granite rocks.
3	*Comesperma pallidum*	Erect shrub, 0.7–2 m high. Fl. yellow, cream, purple, May–Aug. Red sand. Sandplains & dunes.
3	*Daviesia arthropoda*	Spiny, bushy shrub, to 1 m high. Fl. yellow, brown. Dunes.
3	*Fimbristylis sieberiana*	Shortly rhizomatous, tufted perennial, grass-like or herb (sedge), 0.25–0.6 m high. Fl. brown, May–Jun. Mud, skeletal soil pockets. Pool edges, sandstone cliffs.
3	*Frankenia glomerata*	Prostrate shrub. Fl. pink, white, Nov. White sand.
3	*Fuirena incrassata*	Annual, grass-like or herb (sedge), 0.1–0.3 m high, perianth of 3 bristles and 3 clawed scales; scales 3-veined in basal part and thickened distally. Fl. May–Aug. Sand, sandy clay. Swamps, creek beds, claypans, semi-saline lakes.
3	*Gonocarpus pycnostachyus*	Erect annual, herb, 0.1–0.15 m high. Fl. green, red. Sand or clay soils. Wet depressions, granite rocks.
3	*Goodenia modesta*	Herb, to 0.5 m high. Fl. yellow, Jan–Dec. Red loam, sand.
3	*Goodenia pascua*	Ascending to erect herb, to 0.5 m high. Fl. yellow, May–Aug. Red sandy soils. Basaltic plains.
3	Goodenia purpurascens	Erect perennial or annual, herb, 0.1–0.3 m high. Fl. blue, purple, white, yellow, Jan/Apr–Jun/Sep/Dec. Clay, mud. Swamps & seasonally wet depressions.
3	*Mimulus repens*	Prostrate annual or perennial, herb. Fl. blue, purple, Aug–Nov. Sand, clay. Margins of lakes & watercourses.

STATUS	TAXON	DESCRIPTION
3	*Sauropus arenosus*	Spreading shrub, 0.5–1 m high. Fl. yellow, green, red, pink, May. Red sand dunes.
4	*Acacia balsamea*	Rounded or infundibular shrub, 1–2.5 m high. Red earth & gravel. Rocky hills, granite breakaways.
4	*Comesperma viscidulum*	Shrub, to ca 0.7 m high.
4	*Ptilotus mollis*	Compact, perennial shrub, to 0.5 m high, soft grey foliage. Fl. white, pink, May/Sep. Stony hills and screes.

4. METHODS

The remnant vegetation in the area was surveyed using the methods set out in the EPA Guidance No 51 (2004). All possible tracks were driven and transects were walked through the bushland and all vegetation variations noted by Hart Simpson and Associates Pty Ltd (1994) within the proposed exploration and infrastructure areas were targeted.

Permanent 50m x 50m quadrats were set up using a compass and oriented due N,S,E,W, with one (1) peg left at the NW corner. Where the remnant bushland was very narrow a strip quadrat was surveyed. Where this method was used is indicated in the quadrat data in Appendix B. Quadrats were placed to record the variation at the site. All species, including weeds were recorded. The vegetation, flora and weed surveys were conducted concurrently. For each quadrat the following was recorded in the field:

- GPS reading (WGS84, equivalent to Geocentric Datum of Australia 1994 (GDA94) at NW corner;
- Digital photograph taken at the NW corner;
- Soil type;
- Presence, size and type of any outcropping rocks;
- Topography – eg. Ridge, upper slope, middle slope, lower slope, drainage line, minor creek, major creek, wetland;
- Aspect where this is applicable;
- Vegetation condition using the scale of Keighery (1994);
- Presence of any Declared Rare or Priority Flora or other significant flora;
- Additional information including dieback, age since fire, predators, erosion, weeds, grazing, tracks etc.; and
- All species were listed together with their percentage cover within the quadrat and average height.

The area outside of the quadrat was also surveyed to record additional (opportunistic) species for that vegetation unit. In addition where the same vegetation unit was recorded any additional taxa were added to the flora list. These additional locations are listed in Appendix B with the suffix A, B, C, D etc.

All species unknown in the field were collected, pressed and identified later using appropriate keys and by comparison with collections housed at the Western Australian Herbarium. A collection of each Rare or Priority Flora seen was made and forms completed and sent to the Rare Flora section of the Department of Conservation and Land Management. The pressed and dried specimens will be sent to the Western Australian Herbarium for inclusion in their collection.

5. RESULTS

Field work was undertaken between 25th June and 4th July inclusive in 2007. Good rainfall had been recorded in April and May 2007. This dates on which this survey was undertaken proved to be the ideal time as grasses had completed flowering and were commencing to shed seed. Very few annual daisies were recorded but a lower lying clay pan recorded several of these taxa.

5.1 Vegetation Units

The vegetation units recorded during the survey were described using the vegetation layers given in Table 5. The descriptions use that developed by Trudgen for work undertaken in the Pilbara Region of Western Australia.

Table 5. Vegetation Classification (from Trudgen, 2002)

LIFE FORM/ HEIGHT CLASS	CANOPY COVER				
	DENSE 70 % - 100%	**MID DENSE 30% - 70%**	**SPARSE 10% - 30%**	**VERY SPARSE 2% - 10%**	**SCATTERED <2%**
Trees >30 m Trees 10-30 m Trees <10	High Close Forest Closed Forest Low Closed Forest	High Open Forest Open Forest Low Open Forest	High Woodland Woodland Low Woodland	High Open Woodland Open Woodland Low Open Woodland	Scattered Tall Trees Scattered Trees Scattered Low Trees
Shrubs > 2 m Shrubs 1 - 2 m Shrubs < 1 m	Closed Scrub Closed Heath Low Closed Heath	Open Scrub Open Heath Low Open Heath	High Shrubland Shrubland Low Shrubland	High Open Shrubland Open Shrubland Low Open Shrubland	Scattered Tall Shrubs
Herbs/Sedges/Grasses	Closed Herb, Sedge, Grassland	Herb, Sedge, Grassland	Open Herb, Sedge, Grassland	Very Open Herb, Sedge, Grassland	Scattered herbs, sedges, grasses
Ferns Mosses, liverworts	Closed Ferns Closed Mosses	Ferns Mosses	Open Ferns Open Mosses	Very Open Ferns Very Open Mosses	

Grasslands are then divided into:

- Tussock Grasslands (Perennial tussock species) eg *Eragrostis* species
- Hummock Grasslands (*Triodia* and *Plectrachne* species that form hummocks)
- Curly Spinifex Grasslands (*Plectrachne pungens*) that does not form hummocks
- Annual Tussock Grassland (eg annual *Sorghum* species)

The vegetation/landform units identified by Hart Simpson and Associates Pty Ltd (1994) were recognised during the current survey but as he stated they blended into each other. The PATN software package (Belbin and Colleis, 2006) was used for the analysis of both presence/absence of taxa and the percentage cover for the quadrats. Hierarchical clustering was determined using the principal association measure by Bray Curtis (Belbin and Colleis, 2006). No clear distinction into similar field groupings was obtained using presence/absence data but there was a better correlation using the % cover. Diagram 1 sets out the % cover data.

Generally Diagram 1 illustrates the following:

- The stony flat areas at the base of the hills include taxa also found on the hillslopes. The quadrats that included *Eremophila spathulata*, KIN23 and KIN38 separated in a cluster with the hill quadrats KIN01, KIN04, KIN17 and KIN28. Included in this cluster was KIN37, which was one of the drainage channels, that included *Acacia acradenia* also recorded from KIN17;
- The four quadrats with a high cover of **Cenchrus ciliaris* separated as a group. These were quadrats KIN09, KIN11, KIN15 and KIN34. KIN15 was the river where the banks were dense with this weed which was also dominant in KIN34, the claypan. This is separating on the presence of a weed rather than the variation noted in the vegetation. KIN15 was unique as it was the only vegetation unit that included *Eucalyptus camaldulensis.* KIN34 was the only claypan, it was a herbfield.
- Quadrats KIN08, KIN13, KIN14, KIN24, KIN25, KIN26 and KIN36 all recorded a high percentage of *Triodia schinzii*. All these quadrats were on sandy soils.
- Quadrats KIN03, KIN05, KIN18 and KIN29 were all slightly raised sand dunes.
- Quadrats KIN06, KN07, KIN12, KIN16, KIN19, KIN33 and KIN39 all occurred on sandy soils and recorded a high percentage of *Triodia basedowii*.
- Quadrats KIN31, KIN32, KIN40, KIN41 and KIN42 all recorded a very high percentage of *Triodia basedowii* but included *Acacia ligulata, Acacia acradenia* and *Acacia dictyophleba,*

- The remaining quadrats KIN10, KIN20, KIN21, KIN22, KIN30 and KIN35 appear to have *Triodia pungens* as the dominant taxon.

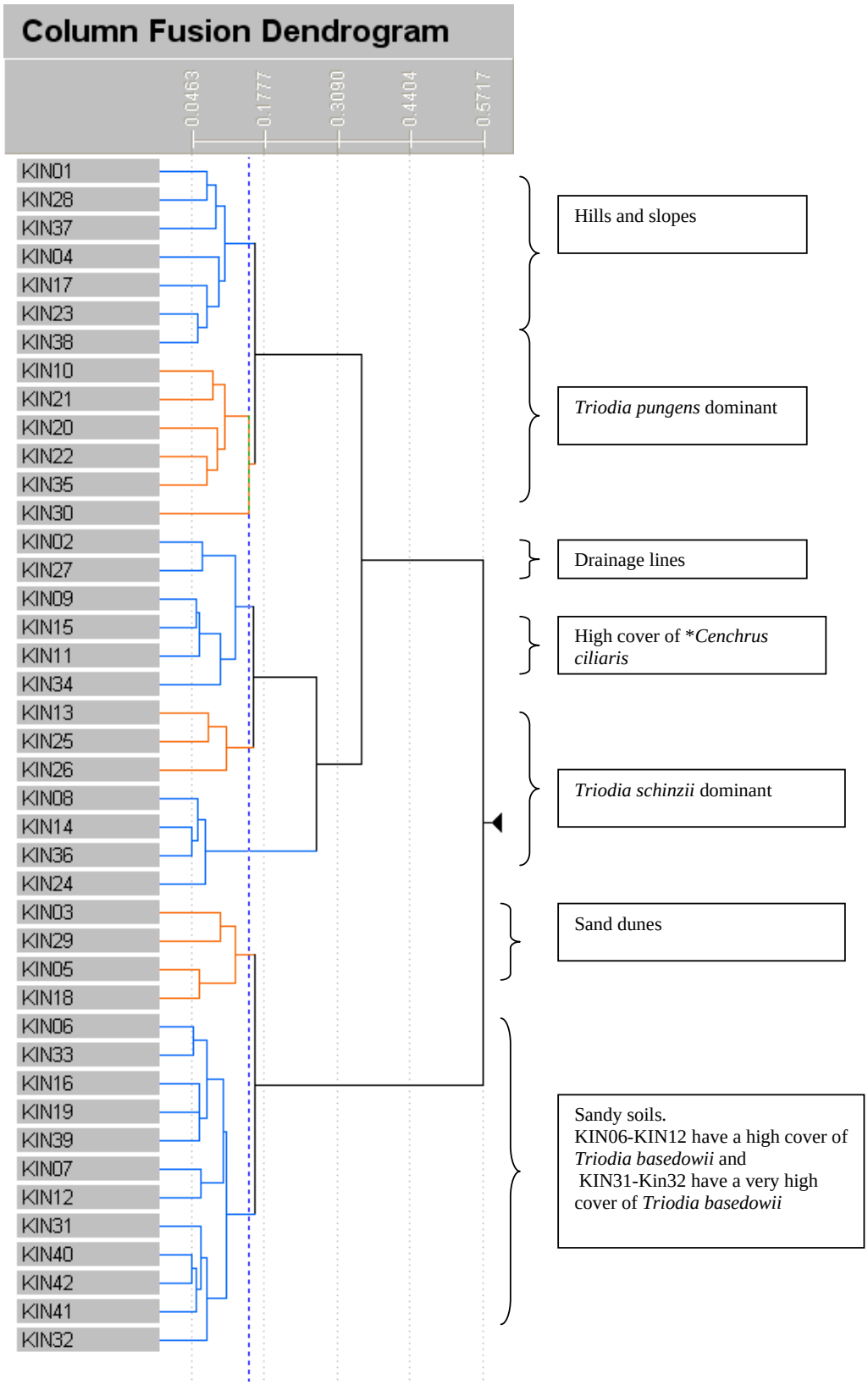

Diagram 1. Dendrogram illustrating relationship for percentage cover

Drainage lines at the base of the hills
In the field however the vegetation could be divided into:
In the field however the vegetation could be divided into that occurring on:

- Hill sides
- Scree at base of hills
- Drainage lines at the base of hills
- Sand dunes
- Red sandy soils – flat ground
- Creek lines
- Claypan

The field categories will be discussed below.

Hillsides
There were two distinct hillsides recorded. The northern hillsides, around the proposed exploration camp site were basically covered in *Triodia epactia* and *Triodia wiseana* (KIN01, KIN04 and KIN28). The southern hillsides, near the proposed village when mining is approved, were covered in *Triodia epactia* and *Acacia retivenea* (KIN17). The rocks of the two areas were different with the southern area consisting of quartzite and more schistose rocks.

Scree at the base of hills
It was in these quartzite rocks that *Eremophila spathulata* was recorded (KIN23 and KIN38). The vegetation was open with the main cover being of small rocks.

Drainage Lines
These drainage lines varied considerably as they mirrored the vegetation typically associated with the adjacent hill slope. These were represented by quadrats KIN02, KIN20, KIN26, KIN27, KIN35 and KIN37. By referring to the data for each site in Appendix B it can be seen that the taxa associated with these drainage lines varied considerably. The taxa at KIN27 resembled more closely that of the creeks which are inundated with a strong flow of water when the area is in flood. This was evidenced by the debris up the trees.

Sand dunes
The sand dunes were all low, only rising slightly above the level of the plain. Typically they included a greater number of taxa than the rocky soils. They were represented by quadrats KIN07, KIN08, KIN16 and KIN31. *Triodia schinzii* was typically the dominant grass usually in association with *Triodia basedowii*.

Red sandy soils - Flat
This group of quadrats varied only slightly from the sand dunes as they also included several other taxa. The main variation was in the depth of the sand, although *Triodia basedowii* tended to be more dominant than in the sand dune quadrats. In several of the areas *Acacia acradenia* formed dense stands and was typically associated with *Acacia ligulata* (especially on the eastern side of the lease) and *Acacia dictyophleba*. These were represented by quadrats KIN03, KIN05, KIN06, KIN09, KIN10, KIN11, KIN12, KIN13, KIN21, KIN25, KIN32, KIN33 and those separated below.

This grouping was further subdivided by Hart Simpson and Associates Pty Ltd (1997) into:

- *Acacia inaequilatera* dominant as observed at KIN22, KIN24 and KIN36;
- *Acacia dictyophleba* dominant as observed at KIN14, KIN29 and KIN30;
- *Senna* taxa dominant as observed at KIN18, KIN19, KIN41 and KIN42;
- *Grevillea* taxa dominant as observed at KIN40; and
- *Acacia wanyu* dominant as observed at KIN39.

This illustrates clearly the variation that occurred in this soil grouping.

Creek lines

Two arms of the creek were included in the survey area but the vegetation at both was the same. It was represented by quadrat KIN15 although quadrat KIN27 also included several of the same taxa in particular *Eucalyptus camaldulensis*, *Corymbia opaca* and *Sorghum plumosum*. The two areas varied considerably in the other associated taxa. All banks of the creek were dominated by **Cenchrus ciliaris*, possibly due to distribution by flood waters, camels, donkeys and kangaroos. There have been no pastoral leases in the area so introducing this plant for fodder did not occur.

Claypan

Only one claypan of a reasonable size (KIN34) was recorded during the survey, although a few smaller ones, less than 10m wide were observed. KIN34 was a herbfield with occasional scattered *Acacia inaequilatera* and *Acacia acradenia*. It had commenced to dry off at the time of the survey but the diversity of annual taxa could still be recorded. With good rainfall this area would have been inundated.

5.2 Vegetation Condition

The vegetation condition recorded for each of the quadrats is included in Appendix B.

Table 6 Explanation of Vegetation Condition Rating (Keighery, 1994)

Rating	Description	Explanation
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure covers repeated fire, aggressive weeds, dieback, logging, grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure covers frequent fires, aggressive weeds at high density, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure includes frequent fires, presence of very aggressive weeds, partial clearing, dieback and grazing.

Table 7 provides a summary of the vegetation condition recorded using the vegetation rating provided in Table 6. Due to fire frequency and severity and presence of feral animals the highest rating that could be applied was 2, excellent.

Table 7. Vegetation Condition recorded during the survey

Rating	Description	Quadrat Reference
2	Excellent	KIN01, KIN02, KIN03, KIN06, KIN07, KIN08, KIN14, KIN16, KIN17, KIN18, KIN19, KIN20, KIN21, KIN23, KIN24, KIN25, KIN26, KIN27, KIN28, KIN29, KIN30, KIN35, KIN37, KIN38, KIN39, KIN40, KIN41, KIN42
2-3	Excellent to very good	KIN04, KIN05, KIN12, KIN31, HIN32, KIN33
3	Very good	KIN13
2-4	Excellent to good	KIN15
3-4	Very good to good	KIN22
4	Good	KIN10, KIN36
3-5	Very good to degraded	KIN34
4-5	Good to degraded	KIN09
5	Degraded	KIN11

As there were very few weeds recorded from the site the vegetation condition of the area was typically excellent to very good. There were occasional areas where **Cenchrus ciliaris* was

dense and the condition then was degraded to completely degraded but these were typically only small areas. Fire through the area appears to be relatively frequent and severe, killing many plants which then regenerate from seed or underground stems. In addition there was evidence of camels and donkeys through the area as evidenced from scats and hoof prints. These animals would eat the plants and assist with the transportation of weeds through the area.

It is essential that with the proposed exploration drilling and future mining of the area that care be taken to ensure weeds are not introduced. This will ensure that the very good vegetation condition is retained. Where quadrats established during this current survey occur adjacent to any disturbance, these could continue to be monitored to ensure that the condition is not compromised and that weeds are not introduced.

5.3 Taxa

A total of 45 vascular plant families, 136 genera and 271 taxa (species, subspecies and varieties) were recorded during the survey. The dominant plant family was Poaceae (grass family), which recorded 29 genera and 51 taxa, representing 18.8% of the total number of taxa recorded during the survey. The three other dominant families were: Papilionaceae with 12 genera and 20 taxa; Mimosaceae and Malvaceae with 1 genus and 19 taxa and 4 genera and 19 taxa respectively. These 4 families represent 9% of the total number of families, 34% of the total number of genera and 40% of the total number of taxa. Appendix A has the complete list of taxa recorded for each vegetation grouping.

5.4 Significant Taxa

One significant taxa was recorded during the survey. This was *Comesperma pallidum* a Priority 3 taxon.

Comesperma pallidum was recorded from one site only, KIN06. It was a lax shrub obtaining support from a shrub of *Acacia ancistrocarpa*. One plant only was observed.

5.5 Introduced Taxa

A total of 4 weeds were recorded during the current survey. All have been determined as weeds by the Western Australian Herbarium (2007a) and Department of Conservation and Land Management (1999). The rating allocated to each weed by CALM (1999) is based on three criteria:

Invasiveness – ability to invade natural bushland in good to excellent condition or ability to invade waterways;

Distribution – wide current or potential distribution including consideration of known history of wide spread distribution elsewhere in the world; and

Environmental impacts – Ability to change the structure, composition and function of ecosystems. In particular an ability to form a monoculture in a vegetation community.

Ratings indicate the following:

High indicates this weed is prioritised for control and/or research ie prioritising funding to it;

Moderate indicates control or research effort should be directed to it if funds are available, however it should be monitored (possibly a reasonably high level of monitoring);

Mild indicates monitoring of the weed and control where appropriate; and

Low indicates that this species would require a low level of monitoring.

Table 7. Weeds recorded during the survey classified according to CALM (1999)

SCIENTIFIC NAME	COMMON NAME	CALM RATING	INVASIVENESS	IMPACTS
**Cenchrus ciliaris*	Buffel grass	High	✓	✓
**Aerva javanica*	Kapok bush	High	✓	✓
**Bidens bipinnata*	Beggar's ticks	To be assessed		
**Cucumis melo* subsp. *agrestis*	Melon	To be assessed		

Those weeds rated as high are the ones that should be targetted for removal. Two of the weeds recorded during the survey have not as yet been assessed for their environmental impact.

**Cenchrus ciliaris* was relatively common throughout the area. It was dominant on the edge of the creek lines and where areas had previously been ripped for rehabilitation. The clay pan, which was not adjacent to previous mining acitivity, also recorded dense areas of this taxon. Camels and goats are common introduced animals in the area so together with native animals would aid in its dispersal. When exploration drilling occurs it is essential that care be taken to ensure this taxon is not dispersed into areas where it currently does not occur.

**Cucumis melo* subsp. *agrestis* was also recorded from several locations. It occurs as scattered plants and nowhere was observed as a dense mass. The elongated fruits of this taxon are characteristic making it readily recognised.

**Aerva javanica* was only recorded on hill slopes that had previously been ripped and rehabilitated after preliminary drilling in the 1990's. This taxon, although common in the Pilbara and Kimberley areas of Western Australia could be readily eliminated from this site. It is imperative that this taxon is not introduced into other areas of the site.

**Bidens bipinnata* was recorded on the bank of the southern arm of the creek, at several of the locations sampled. This would be very difficult to control as it spread when the creek floods.

Hart Simpson and Associates Pty Ltd also recorded **Pseudognaphalium luteoalbum, *Emex australis, *Brassica tournefortii, *Sonchus oleraceus* and **Mesembryanthemum crystallinum*

6. COMPARISON WITH HART SIMPSON AND ASSOCIATES PTY LTD (1994 AND 1997)

The vegetation mapping undertaken by Hart Simpson and Associates Pty Ltd was checked for the areas surveyed. Dr Hart's mapping is very detailed and was accurate but due to fires etc since the original survey some of the vegetation units described were now found to have blended across other vegetation units. Some of the units that were described during the earlier surveys were not included in the current survey as the current survey was limited in area. In addition the degraded area of KIN11 was not recorded by Hart Simpson and Associates Pty Ltd as this area was still active and not under rehabilitation.

Hart Simpson and Associates Pty Ltd discussed the significance of fire. Dr stated that the burnt and unburnt areas were strikingly different and could be readily distinguished by the size of the *Triodia* plants and heights of the shrubs. Most of the taxa at the site are killed by fire and need to regenerate from seed, however when the fire was not severe some *Triodia* plants survived.

He separated the vegetation present at the site on a combination of vegetation and landform association. The following includes a description of the different units Dr Hart recognised and which are represented by the quadrats (KIN numbers) of this current survey.

<u>Shrubs and spinifex on flat plains with silty sands</u>.

- High Open Shrubland of *Acacia ancistrocarpa* and *Acacia ligulata* over Low Scrub A dominated by *Senna artemisioides* subsp. *helmsii* over *Triodia* species (KIN18, KIN19)
- High Open Shrubland of *Acacia ligulata* and *Acacia ancistrocarpa* over Hummock Grassland of *Triodia schinzii* (KIN24, KIN40, KIN41, KIN42)
- Hummock Grassland of *Triodia wiseana* (KIN25)
- High Shrubland of *Acacia eriopoda* and *Acacia ancistrocarpa* over Very Open Tussock Grassland of *Sorghum plumosum* over Hummock Grassland of *Triodia pungens* (KIN35)

Stony hills and scree slopes.

Stony hills

- Hummock Grassland of *Triodia pungens* and *Triodia wiseana* (KIN01)
- High Open Shrubland of *Grevillea wickhamii* and *Senna glutinosa* subsp. *pruinosa* over Hummock Grassland of *Triodia pungens* (KIN04)
- Low Open Woodland of *Eucalyptus leucophloia* over **Cenchrus ciliaris* (KIN09)
- Low Open Woodland of *Eucalyptus leucophloia* over Scattered Hummock Grass of *Triodia pungens* (KIN10, KIN28)
- Shrubland dominated by *Acacia retivenea* over Hummock Grass of *Triodia* species (KIN17)

Scree slopes

- Low Open Shrubland *Eremophila spathulata* over Hummock Grassland of *Triodia pungens* (KIN23)
- Open Shrubland of *Acacia wanyu* and *Eremophila spathulata* over Hummock Grassland of *Triodia pungens* (KIN38)

Sand dunes and sandy soils.

Sand dunes

- High Shrubland of *Grevillea wickhamii* over Shrubland of mixed taxa over Hummock Grassland dominated *Triodia basedowii* (KIN07)
- Shrubland of *Acacia ancistrocarpa* over Very Open Hummock Grassland dominated by *Triodia schinzii* (KIN08)
- Open Shrubland over Hummock Grassland of *Triodia basedowii* (KIN05, KIN12, KIN16)
- High Open Shrubland of *Acacia dictyophleba* and *Acacia validinervia* over Low Open Shrubland of *Otion simplicifolium* over Very Open Hummock Grassland of *Triodia basedowii* (KIN29, KIN30)

Sandy soils - Flat

- Shrubland of *Acacia* species dominated by *Acacia ancistrocarpa* over Hummock Grass of *Triodia basedowii* and *Triodia schinzii* (KIN03)
- Open Heath of *Acacia ancistrocarpa* over Hummock Grassland of *Triodia basedowii* (KIN06, KIN33)
- High Shrubland to Open Scrub of *Acacia* dictyophleba over Hummock Grassland of *Triodia schinzii* (KIN14, KIN21)
- High Shrubland of *Acacia inaequilatera*, *Acacia ancistrocarpa* and *Acacia synchronicia* over Open Hummock Grassland of *Triodia* species and Open Tussock Grassland of **Cenchrus ciliaris* (KIN22, KIN36)
- Open Scrub of *Acacia ancistrocarpa*, *Acacia ligulata* and *Acacia dictyophleba* over Hummock Grassland of *Triodia basedowii* (KIN31)
- Shrubland of *Sida echinocarpa* over Hummock Grassland of *Triodia basedowii* (KIN32)
- High Shrubland of *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii* (KIN39)

River channels.

- Low Open Woodland of *Eucalyptus camaldulensis* over bare sand in the creek and Tussock Grassland of **Cenchrus ciliaris* on the bank (KIN15)
- Low Open Woodland of *Eucalyptus camaldulensis* and *Corymbia opaca* over Open Heath of *Indigofera georgei* and Annual Tussock Grassland of *Sorghum plumosum* and *Chrysopogon fallax* (KIN27)

Shrublands and woodlands in drainage channels.

- Open Scrub of *Acacia* species over Tussock Grassland of *Eriachne* species (KIN02)
- Open Scrub of *Acacia ancistrocarpa* and *Grevillea wickhamii* over Hummock Grassland of *Triodia pungens* (KIN20)
- Low Open Woodland of *Eucalyptus leucophloia* over Open Scrub *of Acacia retivenea* and *Grevillea wickhamii* (KIN26)

- Open Scrub of *Acacia acradenia* and *Grevillea wickhamii* over Low Open Heath of *Keraudrenia velutina* subsp. *elliptica* and Hummock Grassland of *Triodia pungens* (KIN37)

Clayey or silty soils.

- Annual Tussock Grassland of **Cenchrus ciliaris* (KIN11)
- Closed Grassland of *Aristida inaequiglumis* (KIN13)

Claypans.

- High Open Shrubland of *Acacia inaequilatera* and *Acacia ancistrocarpa* over Herbs of mixed taxa dominated by *Calotis plumulifera* (KIN34)

In addition to the above vegetation/landform units Hart Simpson and Associates Pty Ltd also undertook detailed mapping (See Appendix C). He described the vegetation units at the site using the format of Beard (1975). Table 8 below indicates the mapping units of Hart Simpson and Associates Pty Ltd, which is then compared with the vegetation units recorded during the current survey.

Table 8. Comparison between survey vegetation units.

HART SIMPSON ASSOCIATES PL	BENNETT ENVIRONMENTAL CONSULTING PL
Woodlands	
1. *Corymbia opaca* Woodland	KIN27
2. Riverine Woodland	KIN15
Shrublands	
1. *Acacia dictyophleba* Shrubland	KIN14, KIN21
2. *Acacia aneura* Shrubland	Not located
Steppes	
1. Hummock Grass Steppe	KIN01, KIN04, KIN25
2. *Acacia ancistrocarpa* and *Acacia ligulata* Shrub Steppe	KIN03, KIN24, KIN31, KIN32, KIN33, KIN41, KIN42 KIN17
3. *Acacia retivenia* Shrub Steppe	KIN22, KIN36
4. *Acacia inaequilatera* Shrub Steppe	KIN06
5. Mixed Low Shrub Steppe	KIN40
6. *Grevillea/Acacia* Shrub Steppe	KIN29, KIN30, KIN35
7. *Acacia dictyophleba* Shrub Steppe	KN39
8. *Acacia wanyu* Shrub Steppe	Small area within KIN29
9. Open Shrub Steppe	KIN09, KIN10, KIN28
10. Mallee Steppe	
11. Tree Steppe	
Grasslands	
1. *Xerochloa laniflora* Grassland	Not located
Scrubs	
1. Chenopod Dwarf Scrub	Not located
Shrub Savanna	KIN18, KIN19
Complexes	
1. Sand Dune Complex	KIN05, KIN07, KIN08, KIN12, KIN16,
2. Claypan Complex	KIN34
3. Scald Complex	Not located
4. Drainage Line Complex	KIN02, KIN20, KIN26, KIN37
5. Bare Stony Slope	Not located
6. White Quartzite Scree Complex	KIN23, KIN38

Dr Hart did not record the vegetation of two quadrats KIN11 and KIN13. KIN11 is a degraded site dominated by **Cenchrus ciliaris* and KIN13 is the old airstrip which was dominated by *Aristida inaequiglumis*. Both these quadrats were highly disturbed sites.

Hart Simpson and Associates Pty Ltd undertook a detailed vegetation and flora assessment of the whole lease whereas the current survey was only in the proposed exploration area and the potential development when and if mining proceeds.

7. DISCUSSION

The area surveyed had previously been drilled and a camp established. When this was closed the disturbed area was ripped and left to rehabilitate naturally. The last area was ripped in March 2002. Generally those ripped areas had regenerated well, but many have encouraged the growth of **Cenchrus ciliaris.* On the positive side *Triodia* species have regenerated well, even in the harsher rocky soils of the hillsides. Similarly the shrub taxa are also regrowing so with time it would blend well with the surrounding undisturbed vegetation at the site.

It is proposed with the next drilling programme to reconstruct the ripped areas, including the airstrip and tracks into the airstrip, village and other infrastructure. As it is proposed to enter the site via an upgraded road from Telfer the track into the camp may be slightly north of where it is currently situated. This will be a positive move, as it will ensure that the Aboriginal significant site, the claypan will continue to be protected.

One priority flora, *Comesperma pallidum* a Priority 3 was found. It was recorded from within the area where it is intended to undertake exploration drilling. Only one plant was located along the transects walked through the area.

The vegetation within the site varied with the rock types and associated soils. Hillslopes with *Acacia retivenea* were only recorded from the southern area of the lease where the rocks were more schistose than in the northern area. *Eucalyptus leucophloia* was only recorded on a few hillslopes and was not a common taxon.

The sandy soils typically included *Triodia basedowii* and *Triodia schinzii* associated with *Acacia ligulata* and *Stylobasium spathulatum*. The latter taxon was more common on the raised dunes rather than on the flatter sandy soils. *Dicrastylis georgei* and *Lachnostachys roseoazurea* were typically associated with the sandy soils across the lease.

The drainage lines at the base of the hills varied directly with the taxa located on the adjacent hill slopes and flat areas. As an example *Acacia retivenia* was common in the drainage lines to the south of the lease but less common in the north of the lease. *Grevillea wickhamii* occurred across all vegetation units and did not appear to be restricted to a specific soil.

Care will need to be taken with any development at the site to ensure that weeds, in particular **Cenchrus ciliaris* and **Aerva peruviana* are not transported into areas where they do not presently occur. The small area of **Aerva peruviana* on a hill slope previously drilled should be removed immediately. The seed of this taxon is light and fluffy and is readily carried by wind. So by reducing its occurrence its spread should be contained, provided monitoring is undertaken and plants removed immediately they are observed. Plants of **Cucumis melo* subsp. *agrestis* were recorded in several locations but was not a dominant at any of them. Removing fruits when ever they are observed should reduce its potential to spread.

Fire has a major impact on the environment as most of the taxa recorded from the site need to regenerate from seed, with only a few suckering from underground stems. *Hakea lorea* is one of the exceptions as it regrows from the underground stem. Driving across *Triodia* plants also kills them so it is important that fixed tracks be established immediately the construction associated with the exploration phase commences. That will include the tracks in to the site, 'village', airstrip and any other areas to be surveyed. Where possible previous tracks should be reopened rather than destroying additional vegetation.

No detailed survey was undertaken outside of the lease area but as the track between the site and the road to Telfer was driven the major vegetation units associated with the sandy soils, sand dunes and rocks were observed to be the same as those at the site. Kendrick (2001) listed three wetland vegetation units for the Little Sandy Desert Bioregion. These are:

- Upper Rudall River draining into Lake Dora;
- Small permanent rockhole wetlands associated with hills and ranges; and
- Small artificial water sources constructed along the Canning Stock Route.

In addition Kendrick (2001) listed the Beard vegetation units, which are of reservation priority in this bioregion. These are listed in Table 9. The two listed by Beard (1975) for the region are *Triodia wiseana* Grass Steppe on stony hills which has the Beard Vegetation Code 157 and the Mixed Shrub Steppe between sandhills with *Triodia schinzii* which has the Beard Vegetation Code of 136. By reference to Table 9 the *Triodia wiseana* Grass Steppe (Beard vegetation code 157) is listed as having minor reservation priority.

Table 9. Reservation Priority of Beard Vegetation Units

Beard Veg Code	Ecosystem Description	Reservation Priority
39	Shrubland, mulga scrub	H
98	Hummock grasslands, shrub steppe; kanji over soft spinifex and *Triodia basedowii*	L
99	Hummock grasslands, shrub steppe; *Acacia coriacea* and hakea over *Triodia basedowii*	L
117	Hummock grasslands, shrub steppe; soft spinifex	L
125	Bare areas, salt lakes	H
134	Mosaic; Hummock grasslands, open tree steppe; desert bloodwood and feathertop spinifex (on) sandhills/Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills	H
136	Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills	M
152	Hummock grasslands, shrub steppe; soft and hard spinifex, soft spinifex	M
157	Hummock grasslands, shrub steppe; Hard spinifex *Triodia wiseana*	M
1251	Low woodland; coolabah and paperbark (*Melaleuca* sp.)	H

H = High Priority; M = Moderate Priority; L = Low Priority

A comparison was made between the vegetation units of Hart Simpson and Associates Pty Ltd and the quadrats of the current survey. The GPS points of the current survey were provided to Pinpoint Cartographics for placing on the Hart Simpson and Associates Pty Ltd map. This resulted in the plots in Appendix C where a key to the different vegetation unit abbreviations is provided.

Table 10. Comparison between Hart *et al* (1999) vegetation units and those of the current survey

Woodlands		
Corymbia opaca Woodland	C	KIN06B, KIN15B
	C/I	KIN30
Riverine Woodland	D	KIN15, KIN15C, KIN27
Shrublands		
Acacia dictyophleba Shrubland	I	Not located
Acacia aneura Shrubland	R	Not located
Steppes		
Hummock Grass Steppe	A	KIN01, KIN01A, KIN01B, KIN01C, KIN01D, KIN01E, KIN17, KIN17B, KIN17D, KIN25.
Acacia ancistrocarpa and *Acacia ligulata* Shrub Steppe	F1	KIN03C, KIN05, KIN05B, KIN06E, KIN06F, KIN06G, KIN06H, KIN16B, KIN16C, KIN17, KIN18, KIN18C, KIN20, KIN22, KIN23A, KIN31B, KIN36, KIN36A, KIN40, KIN41.
	F1/4	KIN19A, KIN21.
Acacia retivenia Shrub Steppe	F2	Not located
Acacia inaequilatera Shrub Steppe	F3	KIN24E, KIN14B, KIN20C, KIN20B, KIN22A.
Mixed Low Shrub Steppe	F4	KIN03, KIN03A, KIN06, KIN08, KIN08A, KIN08C, KIN14A, KIN04E, KIN06B, KIN06C, KIN06D, KIN08D, KIN13, KIN16, KIN18D,

		KIN24, KIN24A, KIN33, KIN33A, KIN33C, KIN33D, KIN33E, KIN33F, KIN33G, KIN35.
Grevillea/Acacia Shrub Steppe	F8	KIN24D.
Acacia dictyophleba Shrub Steppe	F9	KIN07E, KIN31, KIN31A, KIN31D, KIN31E, KIN42.
	F1/9	KIN23C, KIN23D, KIN37A, KIN38.
Acacia wanyu Shrub Steppe	F10	KIN22, KIN32.
Open Shrub Steppe	G	Not located
Mallee Steppe	O	Not located
Tree Steppe	B	KIN09, KIN10, KIN24B, KIN26A, KIN28.
Grasslands		
2. *Xerochloa laniflora* Grassland	L	Not located
Scrubs		
2. Chenopod Dwarf Scrub	E	Not located
Shrub Savanna	H	KIN34.
	H/F	KIN02, KIN24C, KIN24F.
Complexes		
Sand Dune Complex	J	KIN07, KIN07B, KIN07C, KIN07D, KIN29
Claypan Complex	K	Not located
Scald Complex	M	Not located
Drainage Line Complex	N	KIN12, KIN26, KIN39
Bare Stony Slope	P	Not located
White Quartzite Scree Complex	Q	KIN23
	Q/A	KIN36B

KIN11 was a degraded site and was not recorded by Hart Simpson and Associates Pty Ltd. Eight of the twenty-nine units described by Hart and Simpson and Associates Pty Ltd were not recorded during the current survey. In addition in the mapping Dr Hart included some complexes of different units eg Q/A, which indicates that complex has some of the characteristics of Units A, and Q. The area covered in the 2007 survey was smaller than that covered by Dr Hart during all his surveys. Quadrat KIN34 over lain on the mapping of Hart is included in the Scrub Savanna complex but on the ground more closely matched that of the claypan complex. However it was only small in area and possibly too small to have been mapped by Hart. No stands of *Acacia aneura* were recorded during the 2007 survey. A few plants of a mallee, *Eucalyptus odontocarpa*, were observed during the 2007 survey but not enough of them to constitute a distinct unit. None of the vegetation units present are listed by the Department of Environment and Conservation (2007) as Threatened Ecological Communities.

The variations observed in 2007 indicate that time since fire can make a marked changed ion the constitution of the vegetation units.

Although no formal survey was undertaken of the vegetation outside of the area surveyed, it would appear that the same vegetation units are all included in the Rudall River National Park. This is based on observation as the track between the Kintyre site and Talawana track was traversed in the car.

With the proposed development it is essential that care is taken to ensure that weeds are not moved from areas of infestation to those with no or limited weeds. It is recommended that those areas disturbed by the original camp and exploration mining in the late 1990's be the areas used and opened for access and infrastructure. Uncontrolled driving across the spinifex should be avoided as this taxon is destroyed if driven across. Development should occur in sympathy with the environment.

8. ACKNOWLEDGEMENTS

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Mr M. Trudgen is thanked for his assistance with the identification of some plants and Mr Rob Davies for identification of some *Ptilotus* species. Mr Frank Obbens checked the identity of the *Calandrinia* species that was common throughout the lease. Mr Bruce Maslin identified some *Acacia* species and provided information on how to distinguish *Acacia melleodora* from *Acacia dictyophleba.*

Colin Reeves is thanked for preparing the Hart vegetation maps and upgrading the datum to WGS84 at very short notice so they could be used at Kintyre. These proved very useful in the field for vegetation comparison.

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APPENDIX A

Species listed according to vegetation areas

NB. Where a taxon is listed both as a single specific name and a variety of the same name it is because the varieties are only identifiable from flowering examples. For example – *Hibiscus sturtii* (vegetative only), *Hibiscus sturtii* var. *campylochlamys* and *Hibiscus sturtii* var. *platychlamys* both were in flower.

LEGEND

ABBREVIATION	DESCRIPTION
sp.	Species, used where the plant is vegetative
subsp.	Subspecies
forma	Forma
var.	Variety
*	Weed
affin.	Closest to that species
sp.nov.	New, undescribed species
(n)	Priority Flora code where n is a number between 1 and 4
ms	Unpublished name
?	Unsure if that is the correct species
x	Hybrid

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Adiantaceae													
Cheilanthes sieberi	+												
Marsileaceae													
Marsilea hirsuta	+	+											
Poaceae													
Amphipogon caricinus					+								
Aristida contorta		+				+	+			+			+
Aristida holathera	+	+	+	+	+	+	+	+	+	+	+		+
Aristida inaequiglumis		+	+		+	+	+	+					
Brachyachne prostrata					+						+		+
**Cenchrus ciliaris*	+	+	+		+	+	+	+		+	+		+
Chrysopogon fallax	+	+						+					
Chrysopogon pallidus	+												
Cymbopogon procerus	+	+	+	+			+	+					
**Cynodon dactylon*					+								
Dactyloctenium radulans		+			+	+				+	+		+
Digitaria ctenantha	+												
Elytrophorus spicatus	+												
Enneapogon polyphyllus		+			+		+			+	+		
Enneapogon purpurascens		+		+	+		+				+		+
Eragrostis cumingii	+		+							+			
Eragrostis eriopoda		+	+	+	+		+	+	+	+	+		+
Eragrostis laniflora		+			+			+					
Eragrostis tenellula	+					+		+					
Eriachne aristidea	+	+	+		+		+	+		+	+	+	
Eriachne benthamii					+								
Eriachne ciliata	+						+			+	+		

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Poaceae (cont.)													
Eriachne flaccida		+											
Eriachne mucronata		+	+		+		+				+		
Eriachne pulchella					+					+	+		
Eriachne tenuiculmis	+	+			+	+	+	+		+			
Eulalia aurea	+	+						+					
Iseilema eremaeum											+		+
Panicum decompositum			+										
Paraneurachne muelleri		+	+	+	+		+	+		+	+	+	
Paspalidium basicladum		+			+		+						
Paspalidium rarum					+		+	+	+	+			+
Perotis rara	+					+		+					
Schizachyrium fragile	+			+	+			+		+	+	+	
Setaria surgens	+												
Sorghum plumosum	+	+	+			+	+	+					
Sporobolus actinocladus													+
Sporobolus australasicus	+	+			+		+			+	+		+
Tragus australianus		+											
Triodia angusta											+		
Triodia basedowii			+	+	+		+	+	+	+			
Triodia bitextura					+								
Triodia epactia											+	+	
Triodia longiceps		+										+	
Triodia pungens	+	+	+	+	+		+	+		+	+		+
Triodia schinzii			+		+		+	+		+	+	+	
Triodia wiseana					+						+		
Tripogon loliiformis		+				+	+						+

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Poaceae (cont.)													
Triraphis mollis						+				+			
Whiteochloa airoides	+	+	+		+			+					
Xerochloa laniflora											+		
Cyperaceae													
Bulbostylis barbata		+	+	+	+		+	+		+	+	+	+
Cyperus bifax	+												
Cyperus cunninghamii	+												
Cyperus iria	+												
Cyperus rigidellus		+											
Cyperus squarrosus	+												
Fimbristylis affin. *ciliaris*	+												
Fimbristylis dichotoma	+				+	+	+	+	+	+	+		+
Fimbristylis oxystachya					+								
Fimbristylis ? *oxystachya*										+			
Lipocarpha microcephala	+				+								
Proteaceae													
Grevillea eriostachya			+		+		+		+	+			
Grevillea stenobotrya			+				+	+	+	+			
Grevillea ? *striata*			+		+		+						
Grevillea wickhamii		+	+		+		+	+		+	+	+	+
Hakea chordophylla					+								
Hakea lorea		+	+		+	+	+	+	+	+		+	
Santalaceae													
Anthobolus leptomerioides		+							+	+			
Santalum lanceolatum					+								

Vascular Plant Family	CLAY PAN	CREEK	HILLSIDE DRAIN	SAND DUNE	SAND						HILL SIDE		
Taxon					**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Chenopodiaceae													
Atriplex semilunaris											+		
Dysphania plantaginella		+											
Dysphania rhadinostachya subsp. *rhadinostachya*	+	+	+	+	+	+	+	+		+	+		
Maireana georgei											+		+
Maireana melanocoma													+
Rhagodia eremaea	+		+			+		+		+	+		
Rhagodia spinescens					+								
Salsola tragus					+	+				+	+		+
Sclerolaena cornishiana		+	+		+			+		+			+
Sclerolaena cuneata						+							
Sclerolaena diacantha											+		
Sclerolaena eriacantha					+								
Sclerolaena lanicuspis					+	+	+				+		+
Amaranthaceae													
**Aerva javanica*					+						+		
Alternanthera nodiflora	+	+				+							
Amaranthus mitchellii	+												
Gomphrena canescens subsp. *canescens*	+	+	+	+	+	+	+	+		+	+	+	+
Gomphrena cunninghamii												+	+
Ptilotus astrolasius var. *astrolasius*		+	+		+		+	+					
Ptilotus auriculifolius												+	
Ptilotus calostachyus		+			+						+		
Ptilotus clementii								+					
Ptilotus exaltatus		+		+	+			+			+		
Ptilotus helipteroides				+				+			+	+	+
Ptilotus macrocephalus		+				+		+					+

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Amaranthaceae (cont.)													
Ptilotus obovatus	+	+	+		+	+		+		+			
Ptilotus polystachyus var. *polystachyus*		+	+		+	+	+	+	+	+	+		
Ptilotus schwartzii var. *schwartzii*				+			+			+			
Nyctaginaceae													
Boerhavia coccinea		+	+		+			+			+		+
Aizoaceae													
Trianthema pilosa	+		+		+		+	+		+		+	
Trianthema triquetra					+	+					+		+
Trianthema turgidifolia		+			+						+		
Molluginaceae													
Glinus oppositifolius	+												
Portulacaceae													
Calandrinia ptychosperma	+	+		+									
Portulaca oleracea		+				+		+			+		+
Portulaca pilosa	+	+	+		+	+		+					+
Caryophyllaceae													
Polycarpaea corymbosa	+	+	+	+	+		+	+		+			+
Lauraceae													
Cassytha filiformis			+		+		+						
Capparaceae													
Cleome viscosa	+	+	+	+	+	+	+	+		+	+	+	+
Brassicaceae													
Lepidium phlebopetalum									+	+			
Lepidium pholidogynum			+		+	+							+
Stenopetalum anfractum												+	
Stenopetalum decipiens		+											

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Droseraceae													
Drosera indica	+												
Surianaceae													
Stylobasium spathulatum			+		+		+		+	+			
Mimosaceae													
Acacia acradenia		+											+
Acacia adoxa var. *adoxa*		+			+						+		
Acacia adsurgens					+								
Acacia ancistrocarpa		+	+	+	+	+	+	+		+	+		
Acacia colei	+	+	+		+		+	+		+			
Acacia coriacea subsp. *pendens*				+						+			
Acacia dictyophleba		+	+		+		+	+	+	+			+
Acacia eriopoda	+	+	+	+	+					+	+		+
Acacia inaequilatera		+	+		+	+	+	+			+	+	
Acacia ligulata			+		+			+	+	+			
Acacia melleodora			+		0			+		+	+		
Acacia pyrifolia		+									+	+	
Acacia retivenea		+	+		+			+				+	
Acacia synchronicia		+			+			+			+	+	+
Acacia synchronicia (Narrow leaf form)		+			+						+		+
Acacia tumida					+								+
Acacia validinervia							+			+			
Acacia victoriae		+											+
Acacia wanyu				+									+
Caesalpiniaceae													
Petalostylis cassioides		+	+		+		+	+		+			
Senna artemisioides subsp. *helmsii*		+	+		+	+	+	+		+		+	+

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Caesalpiniaceae (cont.)													
Senna artemisioides subsp. *oligophylla*		+	+	+	+		+	+	+	+	+		
Senna ferraria			+		+								
Senna glutinosa subsp. *glutinosa*		+			+	+	+				+	+	+
Senna glutinosa subsp. *pruinosa*		+		+	+			+			+	+	+
Senna glutinosa subsp. x *luerssenii*		+											+
Senna notabilis							+	+			+		+
Senna sericea					+						+		
Papilionaceae													
Aeschynomene indica	+												
Clianthus formosus					+								
Crotalaria crispata		+	+		+	+		+		+			
Crotalaria medicaginea		+											
Desmodium filiforme	+												
Indigofera boviperda subsp. *boviperda*							+						
Indigofera brevidens								+					
Indigofera colutea	+	+				+		+					
Indigofera georgei	+				+							+	
Indigofera linifolia		+	+		+								
Indigofera monophylla		+	+		+		+	+		+	+		+
Indigofera sp.								+					
Jacksonia aculeata			+		+					+			
Otion simplicifolium ms							+						
Rhynchosia minima	+												
Swainsona formosa							+						
Tephrosia arenicola		+					+						
Tephrosia rosea var. *clementii*					+			+				+	

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Papilionaceae (cont.)													
Vigna lanceolata	+	+	+		+	+	+	+					
Zornia albiflora			+		+		+	+					
Zygophyllaceae													
Tribulus hirsutus								+					
Tribulus macrocarpus			+	+									
Tribulus suberosus											+	+	+
Zygophyllum iodocarpum											+	+	
Polygalaceae													
Comesperma pallidum					+								
Polygala isingii										+			
Euphorbiaceae													
Euphorbia australis	+		+		+	+	+	+		+	+	+	
Euphorbia boophthona		+	+	+	+		+	+	+	+	+		+
Euphorbia coghlanii			+		+		+						
Phyllanthus lacunellus	+	+											
Stackhousiaceae													
Macgregoria racemigera	+				+								
Sapindaceae													
Dodonaea coriacea		+	+		+		+			+	+	+	
Tiliaceae													
Corchorus laniflorus	+		+		+	+							
Corchorus sidoides subsp. *sidoides*		+	+	+	+		+	+					+
Malvaceae													
Abutilon cunninghamii	+												
Abutilon lepidum	+						+			+	+		+
Abutilon macrum		+			+					+			+

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Malvaceae (cont.)													
Abutilon otocarpum		+			+			+		+			
Gossypium australe	+	+	+		+	+	+	+					
Hibiscus burtonii			+										
Hibiscus coatesii		+			+		+		+				
Hibiscus sturtii		+			+	+		+					
Hibiscus sturtii var. *campylochlamys*			+										
Hibiscus sturtii var. *platychlamys*										+			+
Sida arenicola		+	+		+		+	+		+		+	
Sida brownii													+
Sida cardiophylla		+	+		+	+	+	+	+	+	+		
Sida cordifolia										+			
Sida echinocarpa					+	+	+	+		+			
Sida excedentifolia ms				+			+			=	+		
Sida fibulifera			+		+	+	+			+		+	
Sida platycalyx					+	+				+			+
Sida tesquorum ms										+			
Sterculiaceae													
Keraudrenia velutina subsp. *elliptica ms*		+		+	+								
Melhania oblongifolia			+		+		+	+		+			
Rulingia kempeana		+											
Rulingia loxophylla			+										
Waltheria indica	+							+					
Waltheria virgata					+								
Violaceae													
Hybanthus aurantiacus		+	+	+	+								

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Lythraceae													
Ammannia baccifera	+	+											
Ammannia multiflora	+												
Myrtaceae													
Calytrix carinata			+		+		+		+	+			
Corymbia opaca	+	+	+		+		+	+				+	
Eucalyptus aspera		+											
Eucalyptus camaldulensis	+	+						+					
Eucalyptus leucophloia	+	+			+								
Eucalyptus odontocarpa							+						
Haloragaceae													
Haloragis gossei		+	+	+	+		+	+		+			
Apiaceae													
Trachymene oleracea subsp. *oleracea*		+		+	+			+			+	+	+
Convolvulaceae													
Bonamia media		+			+								
Bonamia rosea		+	+		+		+	+	+	+		+	
Evolvulus alsinoides var. *villosicalyx*	+	+	+		+		+	+		+			+
Ipomoea muelleri			+										
Polymeria ambigua	+		+										
Boraginaceae													
Halgania solanacea			+				+						
Heliotropium diversifolium		+	+			+	+			+			
Heliotropium ovalifolium			+		+						+		
Heliotropium tenuifolium		+	+							+	+		+
Trichodesma zeylanicum		+	+	+	+		+	+	+	+			

Vascular Plant Family	CLAY		HILLSIDE	SAND	SAND						HILL SIDE		
Taxon	PAN	CREEK	DRAIN	DUNE	FLAT	Ad	Ai	Aw	Gre	Sen	HILL	HILLb	SCREE
Lamiaceae													
Dicrastylis costelloi var. *eriantha*											+		
Dicrastylis doranii													
Dicrastylis georgei			+		+		+	+		+		+	
Newcastelia cephalantha					+							+	
Newcastelia roseoazurea		+			+		+			+			
Solanaceae													
Nicotiana benthamiana											+		
Solanum centrale		+	+		+				+	+			
Solanum lasiophyllum	+	+	+	+	+	+	+	+		+	+		+
Scrophulariaceae													
Buchnera linearis	+				+								
Peplidium muelleri	+												
Stemodia viscosa	+												
Myoporaceae													
Eremophila forrestii subsp. *forrestii ms*		+	+	+	+	+	+	+					
Eremophila latrobei subsp. *glabra ms*		+					+						
Eremophila latrobei var. *latrobei*										+			
Eremophila longifolia					+		+			+			
Eremophila spathulata					+						+	+	+
Rubiaceae													
Canthium latifolium					+								
Oldenlandia crouchiana					+						+		
Oldenlandia pterospora			+		+			+	+	+	+		
Synaptantha tillaeacea	+							+					

Vascular Plant Family	CLAY		HILLSIDE	SAND	SAND						HILL SIDE		
Taxon	PAN	CREEK	DRAIN	DUNE	FLAT	Ad	Ai	Aw	Gre	Sen	HILL	HILLb	SCREE
Cucurbitaceae													
**Cucumis melo* subsp. *agrestis*	+	+	+		+						+		
Mukia maderaspatana	+	+			+	+	+	+		+	+		
Campanulaceae													
Wahlenbergia tumidifructa	+							+					+
Goodeniaceae													
Dampiera candicans		+			+								
Goodenia armitiana			+				+						
Goodenia heterochila					+						+		
Goodenia microptera					+		+						
Goodenia stobbsiana											+		
Goodenia triodiophila										+			
Goodenia vilmoriniae	+	+	+	+	+		+	+		+			+
Scaevola parvifolia subsp. *pilbarae*		+	+		+		+	+	+	+			
Asteraceae													
**Bidens bipinnata*		+											
Blumea tenella		+			+								
Calocephalus knappii						+							
Calotis hispidula										+			
Calotis plumulifera	+	+	+		+	+	+	+		+			
Centipeda minima subsp. *macrocephala*	+	+											
Chrysocephalum apiculatum	+					+	+						
Chrysocephalum eremaeum			+										
Pluchea rubelliflora						+				+			
Pluchea tetranthera						+							
Pterocaulon sphacelatum	+	+			+	+	+	+		+	+		+
Rhodanthe humboldtiana			+										

Vascular Plant Family	**CLAY**		**HILLSIDE**	**SAND**	**SAND**						**HILL SIDE**		
Taxon	**PAN**	**CREEK**	**DRAIN**	**DUNE**	**FLAT**	**Ad**	**Ai**	**Aw**	**Gre**	**Sen**	**HILL**	**HILLb**	**SCREE**
Asteraceae (cont.)													
Rutidosis helichrysoides	+												
Streptoglossa decurrens		+	+		+		+	+		+			+
Streptoglossa liatroides						+				+		+	

APPENDIX B

Quadrat Data

QUADRAT 01

Approximate Location: Quadrat placed in hills above camp site
Datum (WGS84): 404432E; 7531179N
01A: 404862E; 7530771N
01B: 404242E; 7530608N
01C: 403929E; 7532028N
01D: 404198E; 7531154N
01E: 407058E; 7530480N
Soil: Reddish brown silty loam
Rocks: Schistose acid rocks with quartzite rocks. Outcropping varied between sites but the surface was covered in rocks varying in size from 2-20cm
Topography: Whole of knoll - middle, upper slopes and ridge
Field Vegetation Description: Hummock Grassland of *Triodia epactia* and *Triodia wiseana*
Vegetation Condition: 2
Notes: This was the common vegetation on the hills and slopes. Occasionally on the very low hills get *Eucalyptus leucophloia* as small trees



TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia (narrow leaf form)	75	<1
Bulbostylis barbata	20	10
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Eriachne pulchella	15	15
Gomphrena canescens subsp. *canescens*	10	<1
Grevillea wickhamii	175	1

Nicotiana benthamiana	30	<1
Ptilotus exaltatus	15	<1
Schizachyrium fragile	20	50
Sclerolaena lanicuspis	10	1
Senna glutinosa subsp. *pruinosa*	50	<1
Sida excedentifolia	25	<1
Tribulus suberosus	40	<1
Triodia epactia	50	85
Triodia wiseana	40	10
Abutilon lepidum	Opportunistic	
Acacia adoxa var. *adoxa*	Opportunistic	
Acacia ancistrocarpa	Opportunistic	
Atriplex semilunaris	Opportunistic	
Dactyloctenium radulans	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila spathulata	Opportunistic	
Eriachne ciliata	Opportunistic	
Euphorbia australis	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Goodenia heterochila	Opportunistic	
Goodenia stobbsiana	Opportunistic	
Iseilema eremaea	Opportunistic	
Maireana georgei	Opportunistic	
Paractaenum setaceum	Opportunistic	
Ptilotus calostachyus	Opportunistic	
Rhagodia eremaea	Opportunistic	
Senna sericea	Opportunistic	
Sporobolus australasicus	Opportunistic	
Trianthema triquetra	Opportunistic	
Trianthema turgidifolia	Opportunistic	
Triodia angustata	Opportunistic	
Zygophyllum iodocarpum	Opportunistic	

QUADRAT 02

Approximate Location: Along the track to north bore, near the northern extension of the lease
Datum (WGS84): 402830E; 7432285N
Soil: Reddish brown silty clay
Rocks: Very few, mostly absent
Topography: Flat below hills
Field Vegetation Description: Open Scrub of *Acacia* species over Tussock Grassland *Eriachne* species
Vegetation Condition: 2
Notes: Narrow belt along a drainage line through the area. Fauna trap 2-4 at 405013E; 7528594N



TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	40	1
Acacia colei	400	50
Acacia eriopoda	300	3
Acacia inaequilatera	110	5
Alternanthera nodiflora	30	20
Ammannia baccifera	10	1
Aristida contorta	25	1
Boerhavia coccinea	25	<1
Calotis plumulifera	50	<1
**Cenchrus ciliaris*	70	15
Centipeda minima subsp. *macrocephala*	10	60
Chrysopogon fallax	100	25

Cleome viscosa	40	<1
Corchorus glabrous	25	5
Corymbia opaca	600	<1
Crotalaria medicaginea	15	<1
**Cucumis melo* subsp. *agrestis*	Twiner	<1
Cyperus rigellus	35	1
Dactyloctenium radulans	20	2
Enneapogon polyphyllus	30	1
Eremophila forrestii subsp. *forrestii*	60	1
Eremophila latrobei subsp. *glabra*	100	1
Eriachne cumingii	30	30
Eriachne flaccida	50	60
Eulalia aurea	90	15
Euphorbia boophthona	20	1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	25	<1
Goodenia sp.	2	2
Gossypium australe	110	2
Hakea lorea	200	<1
Heliotropium tenuifolium	25	<1
Marsilea hirsuta	5	5
Mukia maderaspatana	Twiner	5
Paraneurachne muelleri	70	3
Phyllanthus lacunellus	30	<1
Polycarpaea corymbosa	15	<1
Portulaca pilosa	5	<1
Pterocaulon sphacelatum	20	5
Ptilotus obovatus	70	2
Senna artemisioides subsp. *oligophylla*	100	5
Senna artemisioides subsp. *helmsii*	90	1
Senna glutinosa subsp. x *luerssenii*	110	2
Sporobolus australasicus	15	20
Streptoglossa decurrens	5	<1
Tragus australiense	70	<1
Trichodesma zeylanicum	100	1
Triodia pungens	90	10
Tripogon loliiformis	25	<1
Vigna lanceolata	20	5
Whiteochloa airoides	40	2
Acacia synchronicia	Opportunistic	
Calandrinia ptychosperma	Opportunistic	
Calotis plumulifera	Opportunistic	
Eucalyptus camaldulensis	Opportunistic	
Indigofera linifolia	Opportunistic	
Sclerolaena cornishiana	Opportunistic	

QUADRAT 03

Approximate Location: Area to the south of the hills behind the camp site and towards the area of the proposed exploration drilling
Datum (WGS84): 404703E; 7530508N
03A 405078E; 7528659N
03B 404863E; 7530916N
03C 404630E; 7529934N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia* species dominated by *Acacia ancistrocarpa* over Closed Hummock Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2
Notes: Burnt about 5 years

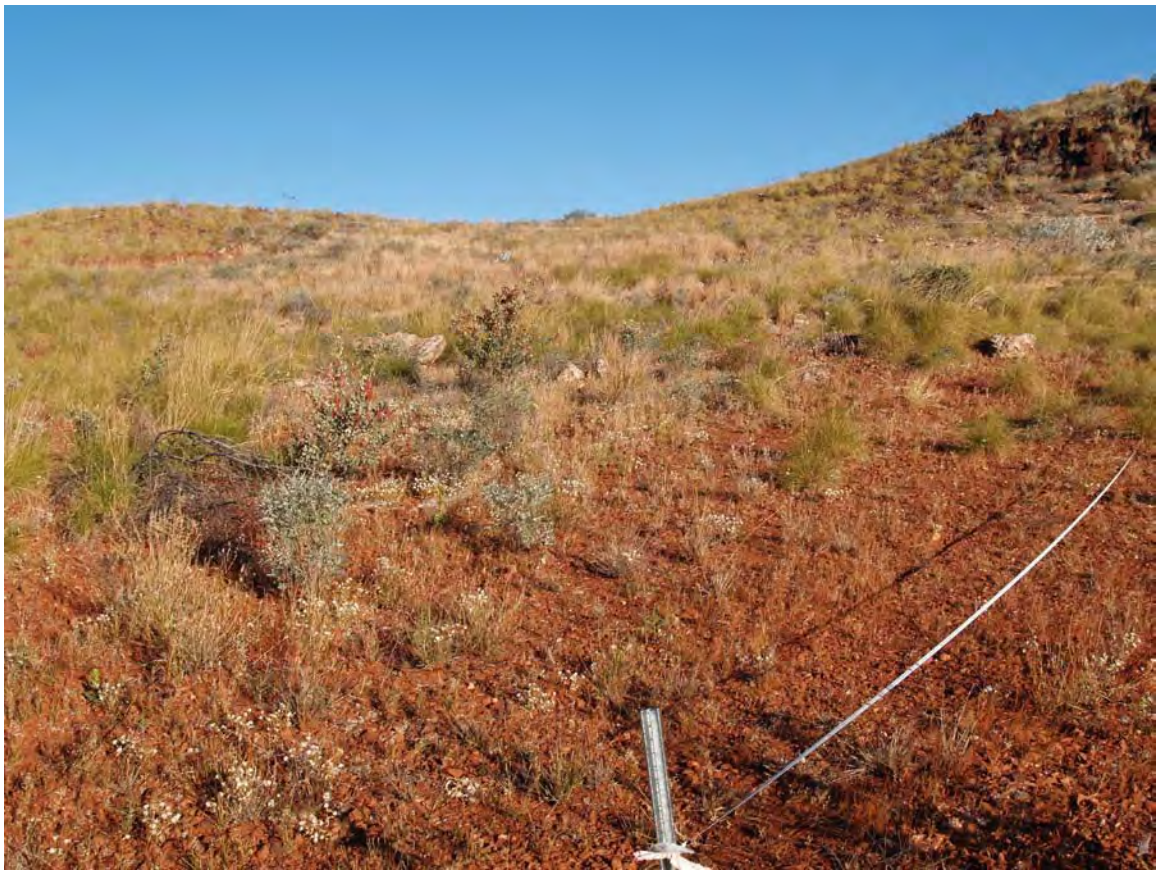


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	400	15 (10% dead)
Acacia melleodora	90	5
Aristida holathera	35	<1
Bonamia rosea	50	1
**Cenchrus ciliaris*	10	<1
Corchorus sidoides subsp. *sidoides*	50	1
Dampiera candicans	40	1
Eragrostis eriopoda	40	5

Eriachne aristidea	10	2
Grevillea wickhamii	250	15
Hakea lorea	250	2
Haloragis gossei	15	2
Hybanthus aurantiacus	35	5
Indigofera monophylla	50	8
Lachnostachys roseoazurea	35	3
Oldenlandia pterospora	10	<1
Paraneurachne muelleri	60	3
Paspalidium rarum	15	2
Petalostylis cassioides	60	5
Scaevola parvifolia subsp. *pilbarae*	40	5
Schizachyrium fragile	70	1
Senna artemisioides subsp. *oligophylla*	60	1
Senna glutinosa subsp. *glutinosa*	110	1
Sida arenicola	100	1
Sida cardiophylla	60	2
Trianthema pilosa	5	1
Trichodesma zeylanicum	70	1
Triodia basedowii	100	35
Triodia pungens	70	1
Triodia schinzii	100	35
Abutilon macrum	Opportunistic	
Acacia colei	Opportunistic	
Acacia retivenea	Opportunistic	
Calytrix carinata	Opportunistic	
Cassytha filiformis	Opportunistic	
Dicrastylis doranii	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eucalyptus leucophloia	Opportunistic	
Grevillea eriostachya	Opportunistic	
Jacksonia aculeata	Opportunistic	

QUADRAT 04

Approximate Location: Hill slope where previously drilled
Datum (WGS84): 404705E; 7529552N
04B 404613E; 7529449N
04C 404562E; 7529436N
04D 404669E; 7529433N
04E 405476E; 7529565N
Soil: Red silty loam
Rocks: Schistose with quartzite. Small amount of outcropping often present
Topography: Middle, upper and ridge
Field Vegetation Description: High Shrubland of *Grevillea wickhamii* and *Senna glutinosa* subsp. *pruinosa* over Closed Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2-3
Notes: Quadrat area has been ripped and rehabilitated

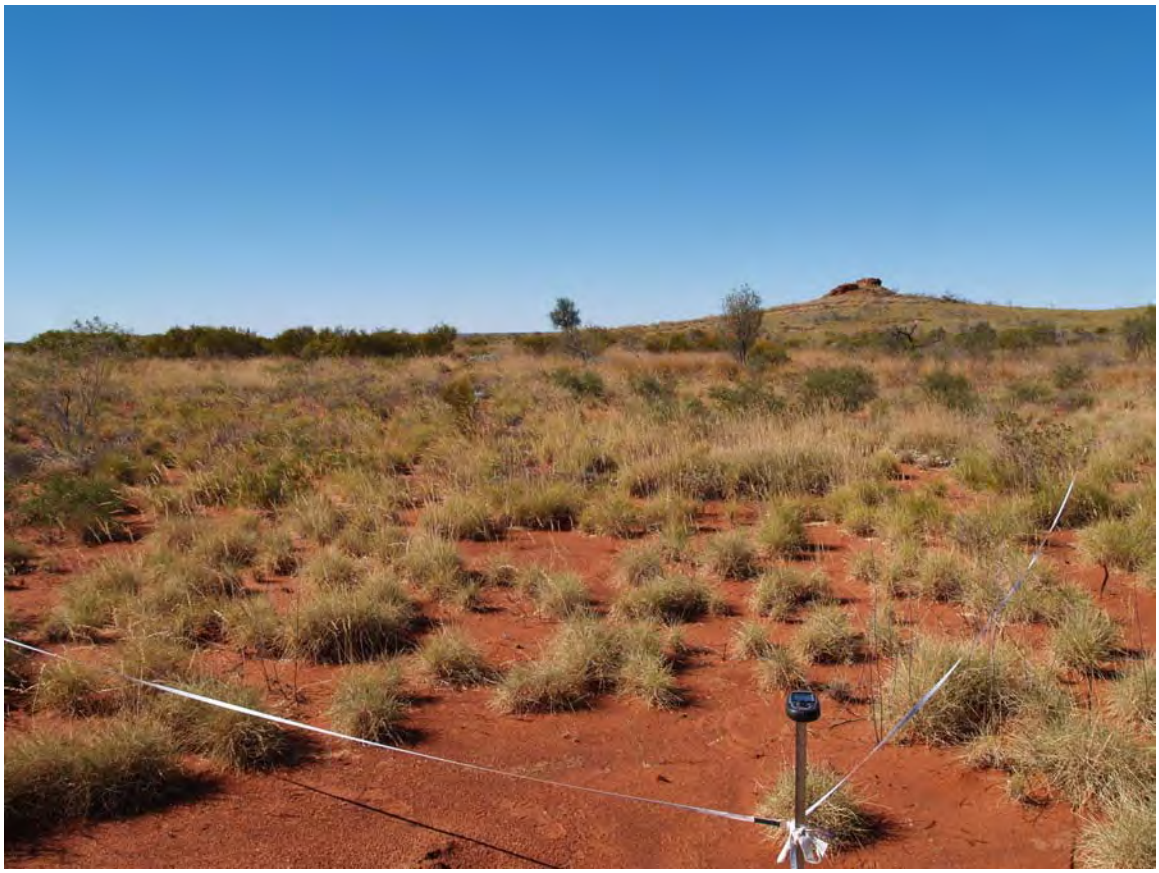


TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	50	<1
Acacia pyrifolia	150	1
**Aerva javanica*	70	1
Aristida holathera	35	2
Boerhavia coccinea	20	1
Bulbostylis barbata	15	2
**Cenchrus ciliaris*	50	15

Cleome viscosa	24	1
Enneapogon polyphyllus	45	2
Enneapogon purpurascens	15	30
Eragrostis eriopoda	40	1
Eriachne aristidea	15	5
Eriachne pulchella	15	2
Gomphrena canescens subsp. *canescens*	20	5
Grevillea wickhamii	175	5
Heliotropium ovalifolium	50	2
Heliotropium tenuifolium	35	2
Indigofera monophylla	60	8
Oldenlandia crouchiana	30	<1
Oldenlandia pterospora	10	1
Paraneurachne muelleri	50	1
Ptilotus exaltatus	15	<1
Ptilotus helipteroides	40	5
Salsola tragus	30	2
Schizachyrium fragile	40	25
Senna artemisioides subsp. *oligophylla*	70	2
Senna glutinosa subsp. *pruinosa*	110	1
Sporobolus australasicus	30	5
Triodia pungens	90	50
Triodia schinzii	75	1
Acacia eriopoda	Opportunistic	
Acacia melleodora	Opportunistic	
Acacia synchronicia (narrow leaf form)	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Eriachne mucronata	Opportunistic	
Euphorbia australis	Opportunistic	
Euphorbia boophthona	Opportunistic	
Mukia maderaspatana	Opportunistic	
Nicotiana benthamiana	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Senna sericea	Opportunistic	
Sida cardiophylla	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Triodia epactia	Opportunistic	

QUADRAT 05

Approximate Location: Below the hills in the previously drilled area
Datum (WGS84): 404559E; 7529640N
05A 404167E; 7529503N
05B 404327E; 7529246N
Soil: Red clayey sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Where the area has been ripped there is a lot of **Cenchrus ciliaris*. The undisturbed areas are in very good condition



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	175	8
Acacia melleodora	100	1
Acacia synchronicia (narrow leaf form)	40	<1
Aristida holathera	30	<1
Aristida inaequiglumis	80	1
**Cenchrus ciliaris*	60	15
Cleome viscosa	20	1
Corchorus sidoides subsp. *sidoides*	35	2
Corymbia opaca	200	<1

Dicrastylis georgei	60	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Enneapogon purpurascens	15	5
Eragrostis eriopoda	50	3
Eremophila longifolia	125	<1
Eriachne aristidea	30	2
Eriachne pulchella	15	2
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	20	2
Goodenia vilmoriniae	15	<1
Hakea lorea	300	1
Hakea chordophylla	175	3
Haloragis gossei	60	1
Heliotropium ovalifolium	80	5
Hibiscus sturtii	50	1
Indigofera monophylla	50	2
Paraneurachne muelleri	35	3
Paspalidium rarum	15	<1
Petalostylis cassioides	70	6
Portulaca pilosa	10	1
Ptilotus astrolasius subsp. *astrolasius*	40	2
Ptilotus exaltatus	30	2
Ptilotus obovatus	70	<1
Ptilotus polystachyus subsp. *polystachyus*	55	2
Salsola tragus	35	<1
Scaevola parvifolia subsp. *pilbarae*	35	2
Sclerolaena cornishiana	20	<1
Senna artemisioides subsp. *oligophylla*	50	1
Senna ferraria	50	<1
Senna glutinosa subsp. *glutinosa*	300	2
Sida arenicola	100	2
Solanum centrale	35	2
Solanum lasiophyllum	60	3
Sporobolus australasicus	10	<1
Streptoglossa decurrens	30	<1
Tephrosia rosea var. *clementii*	50	<1
Trianthema pilosa	5	1
Triodia basedowii	70	50
Triodia schinzii	110	5
Waltheria virgata	50	<1
Whiteochloa airoides	70	<1
Acacia ligulata	Opportunistic	
Acacia tumida	Opportunistic	
Bonamia rosea	Opportunistic	
Corchorus laniflorus	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Gossypium australe	Opportunistic	

Grevillea wickhamii	Opportunistic	
Oldenlandia pterospora	Opportunistic	
Portulaca pilosa	Opportunistic	
Pterocaulon sphacelatum	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Trichodesma zeylanicum	Opportunistic	
Triodia pungens	Opportunistic	

QUADRAT 06

Approximate Location: Eastern node
Datum (WGS84): 405269E; 7529989N
06B 405520E; 7529533N
06C 405553E; 7529711N
06D 405651E; 7529950N
06E 404636E; 7528268N
06F 404157E; 7528537N
06G 404297E; 7528745N
06H 404406E; 7528810N
Soil: Red sand
Rocks: N/A
Topography: Flat between hills
Field Vegetation Description: Open Heath of *Acacia ancistrocarpa* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Fire at quadrat site 4-5 years previously. All shrubs less than 2m tall
Drill bore at 405553E; 7529711N



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	25
Acacia melleodora	150	2
Aristida inaequiglumis	90	3
Bonamia rosea	50	<1

**Cenchrus ciliaris*	15	<1
Cleome viscosa	25	<1
Comesperma pallidum	60	<1
Corymbia opaca	300	<1
Dampiera candicans	50	<1
Dicrastylis georgei	50	5
Dodonaea coriacea	50	1
Eragrostis eriopoda	35	<1
Goodenia vilmoriniae	15	<1
Haloragis gossei	15	<1
Indigofera monophylla	30	7
Paraneurachne muelleri	60	5
Paspalidium basicladum	35	<1
Ptilotus astrolasius subsp. *astrolasius*	30	1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Sida arenicola	30	1
Solanum centrale	45	<1
Streptoglossa decurrens	70	<1
Trichodesma zeylanicum	10	<1
Triodia basedowii	75	75
Acacia eriopoda	Opportunistic	
Acacia ligulata	Opportunistic	
Acacia retivenea	Opportunistic	
Aristida holathera	Opportunistic	
Calotis plumulifera	Opportunistic	
Calytrix carinata	Opportunistic	
Canthium latifolium	Opportunistic	
Crotalaria crispata	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Dysphania rhadinostachya subsp. *rhadinostachya*	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	
Euphorbia coghlanii	Opportunistic	
Grevillea wickhamii	Opportunistic	
Hakea lorea	Opportunistic	
Indigofera linifolia	Opportunistic	
Jacksonia aculeata	Opportunistic	
Melhania oblongifolia	Opportunistic	
Polycarpaea corymbosa	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Rhagodia spinescens	Opportunistic	
Salsola tragus	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Tephrosia rosea var. *clementii*	Opportunistic	
Whiteochloa airoides	Opportunistic	

QUADRAT 07

Approximate Location: East of campsite
Datum (WGS84): 404791E; 7530001N
07B 404921E; 7530942N
07C 404269E; 7530684N
07D 404425E; 7530618N
07E 407038E; 7530410N
Soil: Red sand dune. The quadrat site had outcropping rock on the ridge. This was not always the case with the other locations
Rocks: <5%
Topography: Dune all slopes and ridge
Field Vegetation Description: High Shrubland of *Grevillea wickhamii* over Shrubland of mixed taxa over Closed Hummock Grassland dominated *Triodia basedowii*
Vegetation Condition: 2
Notes: Area unburnt for more than 5 years



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	250	3
Acacia melleodora	90	1
Aristida holathera	25	5
Corchorus sidoides subsp. *sidoides*	60	10
Corymbia opaca	100	<1
Dicrastylis georgei	40	5
Eragrostis eriopoda	50	5

Eriachne aristidea	15	<1
Gossypium australe	150	1
Grevillea sp.	70	<1
Grevillea eriostachya	200	1
Grevillea wickhamii	250	30
Heliotropium diversifolium	15	1
Heliotropium ovalifolium	25	5
Indigofera monophylla	20	1
Paraneurachne muelleri	50	5
Petalostylis cassioides	50	15
Senna artemisioides subsp. *oligophylla*	75	5
Senna artemisioides subsp. *helmsii*	100	5
Senna ferraria	110	2
Sida arenicola	125	1
Stylobasium spathulatum	150	5
Trianthema pilosa	5	1
Trichodesma zeylanicum	15	<1
Triodia basedowii	100	75
Triodia schinzii	110	2
Acacia dictyophleba	Opportunistic	
Acacia retivenea	Opportunistic	
Calytrix carinata	Opportunistic	
Cassytha filiformis	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Hibiscus sturtii var. *campylochlamys*	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Jacksonia aculeata	Opportunistic	
Ptilotus astrolasius subsp. *astrolasius*	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	

QUADRAT 08

Approximate Location: Pale colour indicated on the aerial photograph
Datum (WGS84): 405642E; 7530067N
08A 404866E; 7530473N
08B 405959E; 7530343N
08C 404780E; 7528344N
Soil: Red sand, slight rise
Rocks: N/A
Topography: Ridge
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* over Hummock Grass dominated by *Triodia schinzii*
Vegetation Condition: 2
Notes: Equivalent to R.Hart vegetation type J



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	175	10
Acacia eriopoda	300	<1
Acacia ligulata	175	<1
Acacia melleodora	175	2
Aristida holathera	75	1
Aristida inaequiglumis	90	2
Bulbostylis barbata	10	5
Calotis plumulifera	10	3

Cleome viscosa	15	<1
Cymbopogon procerus	70	<1
Dicrastylis georgei	50	5
Dodonaea coriacea	50	1
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Eragrostis cumingii	15	<1
Eragrostis eriopoda	60	1
Eriachne aristidea	30	1
Euphorbia australis	5	1
Euphorbia boophthona	40	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	10	2
Goodenia vilmoriniae	35	1
Gossypium australe	100	5
Haloragis gossei	15	<1
Heliotropium tenuifolium	15	1
Hibiscus sturtii var. *campylochlamys*	40	<1
Indigofera monophylla	40	13
Lachnostachys roseoazurea	50	1
Oldenlandia pterospora	10	1
Paraneurachne muelleri	70	5
Polycarpaea corymbosa	15	3
Portulaca pilosa	10	<1
Ptilotus astrolasius subsp. *astrolasius*	40	<1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	70	1
Rhagodia eremaea	70	<1
Scaevola parvifolia subsp. pilbarae	30	1
Senna artemisioides subsp. *oligophylla*	75	5
Senna artemisioides subsp. *helmsii*	20	<1
Sida arenicola	110	2
Sida cardiophylla	50	1
Sida excedentifolia	25	<1
Solanum lasiophyllum	70	<1
Streptoglossa decurrens	60	2
Trianthema pilosa	5	5
Tribulus macrocarpus	1	<1
Trichodesma zeylanicum	70	1
Triodia basedowii	110	5
Triodia schinzii	110	75
Whiteochloa airoides	50	<1
Acacia inaequilatera	Opportunistic	
Bonamia rosea	Opportunistic	
Hakea lorea	Opportunistic	
Indigofera linifolia	Opportunistic	
Solanum centrale	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 09

Approximate Location: Proposed exploration accommodation site
Datum (WGS84): 404334E; 7530984N
Soil: Silty clay
Rocks: Schistose quartz with a large number of small angular rocks over the surface
Topography: Flat below hills
Field Vegetation Description: Scattered Low Trees of *Eucalyptus leucophloia* over Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 4-5
Notes: Area ripped and left to rehabilitate of own accord. Nearly the whole area is **Cenchrus ciliaris* but is surrounded by hills with the vegetation of KIN01. At this site there were 8 *Eucalyptus leucophloia* trees, 5 of which were dead and 3 alive



TAXON	HEIGHT (cm)	% COVER
Acacia colei	175	3
Acacia eriopoda	250	10
Acacia melleodora	150	<1
Acacia retivenea	15	<1
Acacia synchronicia (narrow leaf form)	150	5
**Cenchrus ciliaris*	50	65
Cleome viscosa	70	<1

Clianthus formosus	10	<1
Cynodon dactylon	40	1
Dactyloctenium radulans	15	50
Enneapogon polyphyllus	20	<1
Enneapogon purpurascens	15	2
Eriachne aristidea	15	<1
Eucalyptus leucophloia	800	2 (2dead)
Euphorbia australis	5	<1
Gomphrena canescens subsp. *canescens*	10	11
Gossypium australe	50	<1
Indigofera georgei	30	<1
Melhania oblongifolia	50	<1
Mukia maderaspatana	Twiner	<1
Pterocaulon sphacelatum	50	<1
Ptilotus exaltatus	55	<1
Salsola tragus	50	<1
Sclerolaena cornishiana	15	<1
Sclerolaena lanicuspis	10	5
Senna ferraria	60	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Streptoglossa decurrens	5	5
Stylobasium spathulatum	200	1.5
Tephrosia rosea var. *clementii*	50	<1
Trianthema triquetra	5	10
Triodia pungens	70	2
Triodia wiseana	760	1
Vigna lanceolata	Twiner	<1
Aristida holathera	Opportunistic	
Fimbristylis oxystachya	Opportunistic	
Lepidium pholidogynum	Opportunistic	
Newcastelia cephalantha	Opportunistic	
Sida fibulifera	Opportunistic	
Triodia epactia	Opportunistic	

QUADRAT 10

Approximate Location: Track between proposed exploration camp and laydown area
Datum (WGS84): 404263E; 7530754N
Soil: Mixture of sand and schist
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 4
Notes: Between sand dune on south and hill on the north. Quadrat of uneven shape to ensure that it stayed within the same vege4tation unit. Western boundary 40m, northern and southern boundary 60m and eastern boundary 30m



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	3
Acacia ancistrocarpa	175	3
Acacia eriopoda	300	5
Acacia melleodora	120	1
Acacia synchronicia (narrow leaf form)	150	2
Aristida holathera	50	<1
Blumea tenella	15	<1
Bonamia rosea	20	<1
Bulbostylis barbata	15	5
Cassytha filiformis	Twiner	<1

**Cenchrus ciliaris*	15	<1
Dactyloctenium radulans	15	1
Dodonaea coriacea	30	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	20	5
Eragrostis laniflora	50	<1
Eragrostis laniflora	10	2
Eriachne aristidea	15	<1
Eriachne mucronata	20	<1
Eucalyptus leucophloia	700	10
Euphorbia boophthona	10	<1
Gomphrena canescens subsp. *canescens*	10	1
Goodenia heterochila	30	<1
Hybanthus aurantiacus	70	<1
Jacksonia aculeata	40	2 (5% dead)
Mukia maderaspatana	Twiner	<1
Oldenlandia crouchiana	5	<1
Paraneurachne muelleri	50	5
Petalostylis cassioides	60	1
Ptilotus exaltatus	10	<1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Salsola tragus	30	<1
Schizachyrium fragile	15	2
Sclerolaena lanicuspis	10	3
Senna sericea	100	1
Sida arenicola	120	1
Solanum lasiophyllum	50	1
Sporobolus australasicus	5	2
Trachymene oleracea subsp. *oleracea*	10	<1
Trichodesma zeylanicum	10	<1
Triodia pungens	120	60
Keraudrenia velutina subsp. *elliptica*	Opportunistic	

QUADRAT 11

Approximate Location: Proposed exploration laydown area
Datum (WGSD84): 404388E; 7530626N
Soil: Silty loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 5
Notes: Area ripped and allowed to rehabilitate naturally



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	150	2
**Aerva javanica*	50	3
**Cenchrus ciliaris*	70	95
Evolvulus alsinoides var. *villosicalyx*	10	<1
Grevillea wickhamii	200	1
Hybanthus aurantiacus	25	<1
Indigofera monophylla	35	1
Keraudrenia velutina subsp. *elliptica*	50	5
Paraneurachne muelleri	60	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Salsola tragus	50	<1
Scaevola parvifolia subsp. *pilbarae*	15	<1
Trichodesma zeylanicum	20	<1

QUADRAT 12

Approximate Location: to south of KIN11
Datum (WGS84): 404514E; 7530522N
Soil: Red sand
Rocks: N/A
Topography: Low rise to flat
Field Vegetation Description: Open Heath of mixed taxa over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	175	15
Acacia melleodora	120	2
Aristida holathera	70	2
Bonamia rosea	40	10
Cassytha filiformis	Twiner	<1
**Cenchrus ciliaris*	60	<1
Corchorus sidoides subsp. *sidoides*	60	10
Dicrastylis georgei	60	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Enneapogon purpurascens	25	<1
Eriachne aristidea	20	<1
Eriachne benthamii	60	<1

Eriachne pulchella	35	<1
Euphorbia boophthona	70	<1
Gomphrena canescens subsp. *canescens*	5	<1
Grevillea ? striata	70	<1
Grevillea eriostachya	110	1
Hybanthus aurantiacus	50	1
Jacksonia aculeata	35	<1
Keraudrenia velutina subsp. *elliptica*	60	5
Lachnostachys roseoazurea	50	<1
Oldenlandia pterospora	10	<1
Paspalidium basicladum	15	<1
Petalostylis cassioides	100	3
Santalum lanceolatum	100	<1
Scaevola parvifolia subsp. *pilbarae*	40	30
Senna artemisioides subsp. *oligophylla*	70	<1
Sida arenicola	120	<1
Sida cardiophylla	50	3
Trianthema pilosa	2	2
Trichodesma zeylanicum	50	<1
Triodia basedowii	90	60
Triodia schinzii	90	5

QUADRAT 13

Approximate Location: Previous airstrip
Datum (WGS84): 403909E; 7532174N
Soil: Silty loam
Rocks: Quartz schist stone mixture, 5cm or less in size
Topography: Flat
Field Vegetation Description: Closed Grassland of *Aristida inaequiglumis*
Vegetation Condition: 3
Notes: Area ripped after site was decommissioned



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	300	<1
Acacia ancistrocarpa	200	1
Acacia dictyophleba	200	1
Acacia synchronicia	170	1
Aristida holathera	50	2
Aristida inaequiglumis	100	85-95
Boerhavia coccinea	20	<1
Bonamia media	5	<1
Bonamia rosea	30	2
Brachyachne prostrata	2	<1
**Cenchrus ciliaris*	60	2
Cleome viscosa	35	<1

Corchorus sidoides subsp. *sidoides*	60	1
Dactyloctenium radulans	5	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	1
Enneapogon purpurascens	10	<1
Eragrostis eriopoda	70	<1
Eriachne aristidea	15	2
Eriachne mucronata	60	1
Evolvulus alsinoides var. *villosicalyx*	20	<1
Gomphrena canescens subsp. *canescens*	10	<1
Indigofera monophylla	60	<1
Melhania oblongifolia	40	<1
Portulaca pilosa	2	<1
Pterocaulon sphacelatum	5	<1
Ptilotus calostachyus	70	<1
Sclerolaena cornishiana	15	<1
Sclerolaena eriacantha	20	2
Sclerolaena lanicuspis	15	2
Senna artemisioides subsp. *oligophylla*	60	<1
Senna glutinosa subsp. *glutinosa*	75	<1
Senna glutinosa subsp. *pruinosa*	120	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Trianthema triquetra	5	1
Triodia pungens	150	<5
Acacia inaequilatera	Opportunistic	
Eremophila spathulata	Opportunistic	
Grevillea wickhamii	Opportunistic	
Hakea lorea	Opportunistic	
Mukia maderaspatana	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	

QUADRAT 14

Approximate Location: Southern end of airstrip
Datum (WGS84): 404251E; 7532061N
14A 404125E; 7531734N
14B 404237E; 7531445N
14C 404654E; 7531497N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland to High Open Shrubland of *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia schinzii*
Vegetation Condition: 2
Notes: Burnt many years previously



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia dictyophleba	300	30
Acacia inaequilatera	250	5
Aristida contorta	35	<1
Aristida holathera	30	1
Aristida inaequiglumis	110	5
Bonamia rosea	40	5
Bulbostylis barbata	15	<1
Calytrix carinata	70	<1

**Cenchrus ciliaris*	70	1
Cleome viscosa	30	<1
Corchorus sidoides subsp. *sidoides*	35	<1
Corymbia opaca	250	<1
Cymbopogon procerus	70	1
Dicrastylis georgei	40	1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	2
Enneapogon polyphyllus	40	<1
Enneapogon purpurascens	10	<1
Eragrostis eriopoda	70	<1
Eriachne aristidea	35	1
Eriachne mucronata	60	<1
Euphorbia boophthona	20	<1
Euphorbia coghlanii	15	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia microptera	15	<1
Goodenia vilmoriniae	40	<1
Hakea lorea	50	<1
Haloragis gossei	10	<1
Heliotropium diversifolium	15	<1
Hibiscus coatesii	50	<1
Indigofera monophylla	40	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	40	2
Paspalidium basicladum	15	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	10	<1
Ptilotus astrolasius subsp. *astrolasius*	45	<1
Ptilotus polystachyus var. *polystachyus*	35	<1
Scaevola parvifolia subsp. *pilbarae*	40	2
Senna artemisioides subsp. *oligophylla*	90	1
Senna artemisioides subsp. *helmsii*	40	<1
Senna notabilis	10	<1
Sida arenicola	120	<1
Sida echinocarpa	60	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	25	<1
Streptoglossa decurrens	50	<1
Swainsona formosa	5	,1
Tephrosia arenicola	80	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	20	<1
Triodia basedowii	90	5
Triodia schinzii	150	75
Vigna lanceolata	10	<1
Acacia colei	Opportunistic	
Eremophila latrobei subsp. *glabra*	Opportunistic	

Gossypium australe	Opportunistic	
Sclerolaena lanicuspis	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	

QUADRAT 15

Approximate Location: Creek at South bore
Datum (WGS84): 405641E; 7528767N
15A 406056E; 7529699N
15B 405323E; 7531414N
15C 402693E; 7532920N
15D 406041E; 7529679N
Soil: Coarse sand in river
Rocks: Scattered rocks carried by river
Topography: Major creek
Field Vegetation Description: Scattered Low Trees to Low Open Woodland of *Eucalyptus camaldulensis* over bare sand in the creek and Tussock Grassland of **Cenchrus ciliaris* on the bank
Vegetation Condition: 2-4
Notes: Several *Eucalyptus* seedlings have germinated in the creek since the last flow of water. Approximately 20% of the quadrat is in the creek bed. Some of the **Cenchrus ciliaris* plants are stabilizing the soil as some individuals are on small individual mounds. Capped bore on the eastern side of the creek near the location of the south bore



TAXON	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	60	70
**Cucumis melo* subsp. *agrestis*	Twiner	<1
Acacia eriopoda	600	1
Calandrinia ptychosperma	5	<1
Calotis plumulifera	25	<1
Corchorus laniflorus	60	<1

Corymbia opaca	900	<1
Cyperus squarrosus	10	<1
Desmodium filiforme	10	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	5	<1
Eragrostis cumingii	15	<1
Eriachne aristidea	15	<1
Eucalyptus camaldulensis	1000	3
Euphorbia australis	15	<1
Glinus oppositifolius	5	<1
Goodenia vilmoriniae	5	<1
Gossypium australe	150	<1
Indigofera georgei	75	<1
Polycarpaea corymbosa	15	<1
Polymeria ambigua	5	<1
Portulaca pilosa	10	<1
Ptilotus obovatus	50	<1
Rhagodia eremaea	95	5
Rhynchosia minima	Twiner	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	60	<1
Sporobolus australasicus	15	<1
Synaptantha tillaeacea	15	<1
Trianthema pilosa	5	<1
Triodia pungens	110	1
Vigna lanceolata	15	<1
Wahlenbergia tumidifructa	20	<1
Waltheria indica	50	<1
Whiteochloa airoides	60	<1
Abutilon cunninghamii	Opportunistic	
Aeschynomene indica	Opportunistic	
Alternanthera nodiflora	Opportunistic	
Amaranthus mitchellii	Opportunistic	
Ammannia baccifera	Opportunistic	
Ammannia multiflora	Opportunistic	
**Bidens bipinnata*	Opportunistic	
Buchnera linearis	Opportunistic	
Centipeda minima subsp. *macrocephala*	Opportunistic	
Cheilanthes sieberi	Opportunistic	
Chrysopogon pallidus	Opportunistic	
Cleome viscosa	Opportunistic	
Cyperus bifax	Opportunistic	
Cyperus cunninghamii	Opportunistic	
Cyperus iria	Opportunistic	
Cyperus squarrosus	Opportunistic	
Digitaria ctenantha	Opportunistic	
Drosera indica	Opportunistic	
Elytrophorus spicatus	Opportunistic	
Eragrostis cumingii	Opportunistic	

Eragrostis tenellula	Opportunistic	
Eriachne ciliata	Opportunistic	
Eulalia aurea	Opportunistic	
Evolvulus alsinoides var. *villosicalyx*	Opportunistic	
Fimbristylis affin. *Ciliaris*	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Lipocarpha microcephala	Opportunistic	
Marsilea hirsuta	Opportunistic	
Peplidium muelleri	Opportunistic	
Perotis rara	Opportunistic	
Setaria surgens	Opportunistic	
Stemodia viscosa	Opportunistic	
Stemodia viscosa	Opportunistic	

QUADRAT 16

Approximate Location: Bank on the west side of the creek
Datum (WGS84): 405547E; 7528791N
16A 405142E; 7431385N
16B 405174E; 7527801N
16C 405614E; 7528532N
16D 406101E; 7529685N
16E 405961E; 7529632N
Soil: Red silty sand
Rocks: N/A
Topography: Ridge of dune
Field Vegetation Description: Shrubland of mixed taxa over Hummock Grassland of *Triodia* species
Vegetation Condition: 2
Notes: Art site 16A there was less diversity and more **Cenchrus ciliaris*. The shrubs were dominated by *Acacia ancistrocarpa, Acacia eriopoda* and *Grevillea wickhamii*



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	100	5
Acacia eriopoda	200	10
Acacia melleodora	70	1
Aristida holathera	30	<1
Boerhavia coccinea	30	<1
Bulbostylis barbata	10	<1
**Cenchrus ciliaris*	70	1

Corchorus laniflorus	60	<1
Corchorus sidoides subsp. *sidoides*	30	<1
Crotalaria crispata	15	<1
Dicrastylis georgei	50	<1
Dodonaea coriacea	60	<1
Eragrostis eriopoda	60	<1
Eriachne aristidea	30	<1
Euphorbia australis	2	1
Euphorbia coghlanii	10	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Goodenia vilmoriniae	20	<1
Gossypium australe	200	5
Hakea lorea	110	<1
Heliotropium tenuifolium	15	<1
Lachnostachys roseoazurea	50	<1
Melhania oblongifolia	25	<1
Mollugo molluginis	30	<1
Oldenlandia pterospora	10	<1
Polycarpaea corymbosa	10	<1
Polymeria ambigua	10	<1
Ptilotus obovatus	70	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	1
Senna artemisioides subsp. *oligophylla*	50	1
Senna artemisioides subsp. *helmsii*	40	<1
Sida arenicola	125	<1
Sida fibulifera	10	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	110	<1
Streptoglossa decurrens	70	1
Stylobasium spathulatum	175	2
Trianthema pilosa	5	<1
Trichodesma zeylanicum	15	<1
Triodia basedowii	90	80
Triodia pungens	90	<1
Vigna lanceolata	10	<1
Whiteochloa airoides	70	<1
Zornia albiflora	25	<1
Acacia colei	Opportunistic	
Calotis plumulifera	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	
Eriachne mucronata	Opportunistic	
Euphorbia boophthona	Opportunistic	
Glinus oppositifolius	Opportunistic	
Grevillea wickhamii	Opportunistic	
Haloragis gossei	Opportunistic	
Hibiscus burtonii	Opportunistic	
Ipomoea muelleri	Opportunistic	

Lepidium pholidogynum	Opportunistic	
Panicum decompositum	Opportunistic	
Rhodanthe humboldtiana	Opportunistic	

QUADRAT 17

Approximate Location: Hill slope to the east of south bore
Datum (WGS84): 405729E; 7528730N
17A 405277E; 7528988N
17B 405038E; 7627981N
17C 404321E; 7577679N
17D 403801E; 7527205N
Soil: Sandy loam
Rocks: Chunky quartzite rocks
Topography: Middle, upper slopes and ridge
Field Vegetation Description: Open Heath dominated by *Acacia retivenea* over Hummock Grassland of *Triodia* species
Vegetation Condition: 2
Notes: Burnt recently. This vegetation unit occurred on most hills in the southern section of the lease

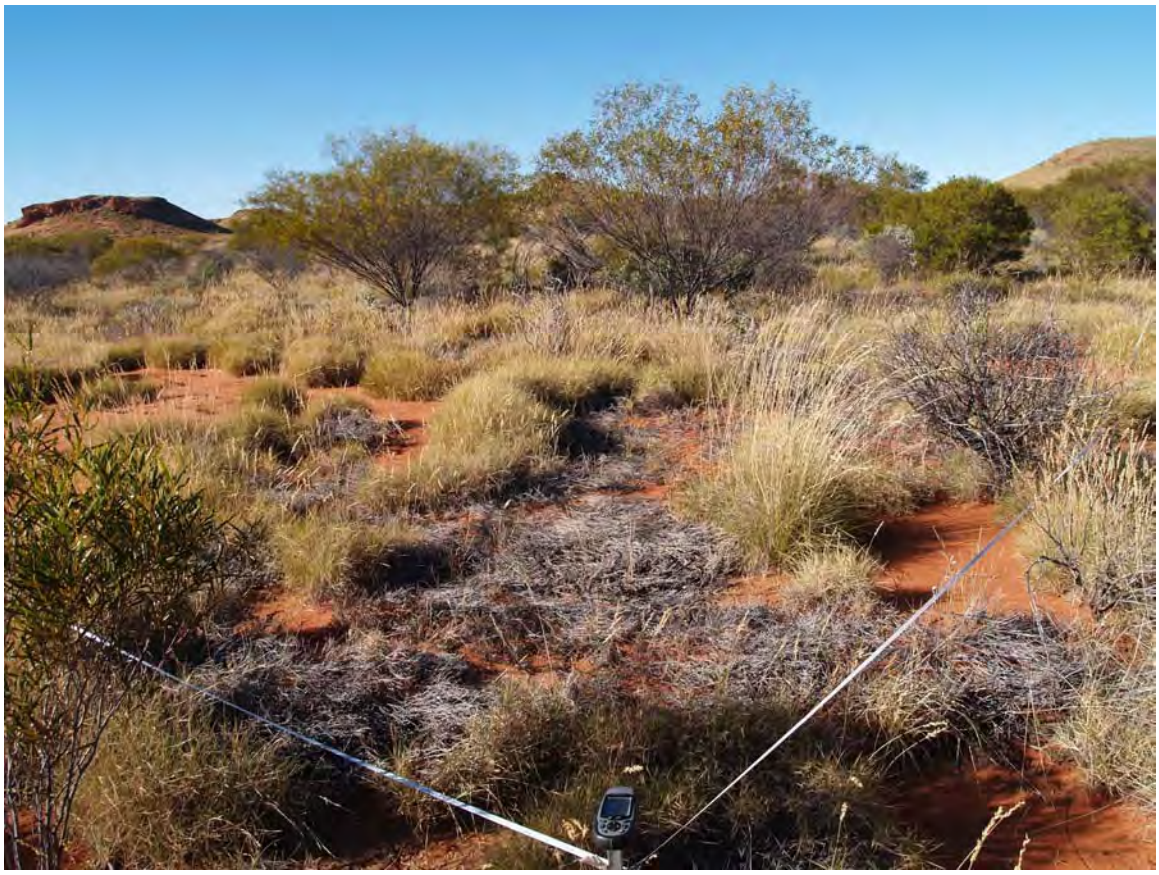


TAXON	HEIGHT (cm)	% COVER
Acacia pyrifolia	100	<1
Acacia retivenea	175	30
Bulbostylis barbata	10	<1
Eriachne aristidea	10	<1
Gomphrena canescens	10	<1
Grevillea wickhamii	200	5
Schizachyrium fragile	10	<1
Sida arenicola	70	<1

Tribulus suberosus	50	<1
Triodia pungens	150	75
Acacia inaequilatera	Opportunistic	
Acacia pyrifolia	Opportunistic	
Acacia synchronicia	Opportunistic	
Bonamia rosea	Opportunistic	
Cleome viscosa	Opportunistic	
Corymbia opaca	Opportunistic	
Dicrastylis georgei	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila spathulata	Opportunistic	
Euphorbia australis	Opportunistic	
Gomphrena cunninghamii	Opportunistic	
Hakea lorea	Opportunistic	
Indigofera georgei	Opportunistic	
Newcastelia cephalantha	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Ptilotus auriculifolius	Opportunistic	
Ptilotus helipteroides	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Sida fibulifera	Opportunistic	
Stenopetalum anfractum	Opportunistic	
Streptoglossa liatroides	Opportunistic	
Tephrosia rosea subsp. *clementii*	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Trianthema pilosa	Opportunistic	
Triodia epactia	Opportunistic	
Triodia longiceps	Opportunistic	
Triodia schinzii	Opportunistic	
Zygophyllum iodocarpum	Opportunistic	

QUADRAT 18

Approximate Location: Plain above creek on the track to the south bore
Datum (WGS84): 405888E; 7529070N
18A 405417E; 7528681N
18B 405504E; 7528916N
18C 405523E; 7528122N
18D 403801E; 7527205N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* and *Acacia ligulata* over Low Shrubland dominated by *Senna artemisioides* subsp. *helmsii* over Hummock Grassland of *Triodia* species
Vegetation Condition: 2



TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	50	<1
Acacia ancistrocarpa	300	20
Acacia ligulata	250	5
Aristida holathera	25	3
Bonamia rosea	50	1
Bulbostylis barbata	10	2
**Cenchrus ciliaris*	90	<1
Cleome viscosa	30	<1
Eragrostis cumingii	15	<1

Eragrostis eriopoda	40	<1
Eriachne aristidea	10	<1
Eriachne ciliata	30	1
Euphorbia australis	10	<1
Euphorbia boophthona	15	1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	30	<1
Gomphrena canescens	10	<1
Goodenia triodiophila	15	<1
Haloragis gossei	25	<1
Heliotropium tenuifolium	10	<1
Hibiscus sturtii var. *platychlamys*	30	<1
Indigofera monophylla	50	<1
Mukia maderaspatana	Twiner	<1
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	75	2
Paspalidium rarum	10	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	20	<1
Ptilotus obovatus	100	1
Ptilotus polystachyus var. *polystachyus*	90	2
Rhagodia eremaea	90	1
Salsola tragus	15	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *oligophylla*	100	5
Senna artemisioides subsp. *helmsii*	175	1-20
Sida arenicola	120	1
Solanum lasiophyllum	50	1
Sporobolus australasicus	10	<1
Streptoglossa liatroides	25	<1
Tragus australiensis	15	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	20	<1
Triodia basedowii	95	40
Triodia pungens	100	2
Triodia schinzii	110	20
Acacia eriopoda	Opportunistic	
Enneapogon polyphyllus	Opportunistic	
Eremophila latrobei subsp. latrobei	Opportunistic	
Eremophila latrobei var. latrobei	Opportunistic	
Eremophila longifolia	Opportunistic	
Hakea lorea	Opportunistic	
Pluchea rubelliflora	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Sida echinocarpa	Opportunistic	
Sida echinocarpa	Opportunistic	
Sida fibulifera	Opportunistic	
Solanum centrale	Opportunistic	

QUADRAT 19

Approximate Location: Along track to south bore
Datum (WGS84): 406133E; 7529739N
19A 405470E; 7531450N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Senna* species
Vegetation Condition: 2
Notes: Dense cover of *Acacia* species away from the quadrat



TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	25	<1
Abutilon otocarpum	60	1
Acacia colei	250	1
Acacia melleodora	150	1
Acacia validinervia	250	5
Aristida holathera	60	<1
Bulbostylis barbata	10	1
Calotis hispidula	5	<1
Calotis plumulifera	25	5
**Cenchrus ciliaris*	50	2
Crotalaria crispata	10	<1
Dactyloctenium radulans	30	<1

Enneapogon polyphyllus	20	<1
Eragrostis eriopoda	50	<1
Eriachne aristidea	20	<1
Euphorbia australis	5	<1
Euphorbia boophthona	40	<1
Evolvulus alsinoides var. *villosicalyx*	15	2
Fimbristylis dichotoma	50	<1
Gomphrena canescens	10	<1
Goodenia triodiophila	25	<1
Goodenia vilmoriniae	20	<1
Hakea lorea	200	<1
Haloragis gossei	20	<1
Heliotropium tenuifolium	30	<1
Lachnostachys roseoazurea	50	<1
Mukia maderaspatana	Twiner	<1
Oldenlandia pterospora	15	<1
Paspalidium rarum	10	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	15	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	50	<1
Salsola tragus	15	<1
Scaevola parvifolia subsp. *pilbarae*	50	5
Schizachyrium fragile	20	<1
Sclerolaena cornishiana	25	1
Senna artemisioides subsp. *oligophylla*	150	15
Senna artemisioides subsp. *helmsii*	100	10
Sida arenicola	120	<1
Sida platycalyx	50	3
Solanum lanceolatum	50	<1
Streptoglossa decurrens	90	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	50	<1
Triodia basedowii	90	70
Triodia pungens	100	5
Acacia dictyophleba	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Triraphis mollis	Opportunistic	

QUADRAT 20

Approximate Location: Drainage line near camp site
Datum (WGS84): 404380E; 7431248N
20B 404495E; 7531460N
20C 404292E; 7531149N
Soil: Silty mud
Rocks: Scattered stone from the hillside
Topography: Drainage line in the valley
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* and *Grevillea wickhamii* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Quadrat was a strip 60m x 40m as was a narrow vegetation unit at the base of several hillslopes. Burnt regularly



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	20	5
Acacia ancistrocarpa	250	40
Acacia dictyophleba	120	<1
Acacia eriopoda	175	<1
Acacia pyrifolia	175	<1
Acacia synchronicia (narrow leaf form)	50	<1
Aristida holathera	60	1
Aristida inaequiglumis	60	2
Bonamia media	40	<1
Bonamia rosea	35	7

Bulbostylis barbata	15	5
Calotis plumulifera	15	<1
**Cenchrus ciliaris*	70	2
Cleome viscosa	35	<1
Corchorus sidoides subsp. *sidoides*	50	2
Corymbia opaca	400	<1
Dampiera candicans	70	<1
Dodonaea coriacea	50	<1
Dysphania plantaginella	5	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	30	1
Eragrostis tenuiculmis	50	<1
Eriachne aristidea	15	8
Euphorbia boophthona	30	<1
Gomphrena canescens subsp. *canescens*	15	<1
Goodenia vilmoriniae	70	<1
Gossypium australe	70	<1
Grevillea wickhamii	400	15
Hakea lorea	70	<1
Haloragis gossei	15	1
Hibiscus coatesii	45	3
Hybanthus aurantiacus	40	3
Indigofera monophylla	50	2
Keraudrenia velutina subsp. *elliptica*	60	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	50	10
Paspalidium basicladum	25	1
Petalostylis cassioides	55	3
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	20	<1
Ptilotus astrolasius subsp. *astrolasius*	50	<1
Ptilotus calostachyus	70	<1
Ptilotus exaltatus	15	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Schizachyrium fragile	40	<1
Senna artemisioides subsp. *oligophylla*	100	1
Senna glutinosa subsp. *glutinosa*	200	<1
Sida arenicola	140	<1
Sida cardiophylla	60	<1
Solanum lasiophyllum	60	<1
Sporobolus australasicus	15	<1
Tephrosia arenicola	30	<1
Trachymene oleracea subsp. *oleracea*	25	<1
Trianthema turgidifolia	30	<1
Trichodesma zeylanicum	50	<1
Triodia pungens	95	60
Tripogon loliiformis	5	<1
Whiteochloa airoides	60	2

QUADRAT 21

Approximate Location: Near the corner of track into site and track to south bore
Datum (WGS84): 405870E; 7531078N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* and *Acacia melleodora* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Burnt



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	5
Acacia melleodora	150	5
Aristida holathera	15	<1
Calotis plumulifera	15	<1
**Cenchrus ciliaris*	20	<1
Corchorus sidoides subsp. *sidoides*	25	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	<1
Eragrostis eriopoda	30	<1
Eragrostis tenuiculmis	60	<1
Eriachne aristidea	50	<1
Eriachne pulchella	15	<1
Euphorbia australis	1	<1

Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	10	<1
Goodenia microptera	50	<1
Hakea lorea	200	<1
Haloragis gossei	15	<1
Lachnostachys rosea	50	<1
Lachnostachys roseoazurea	50	2
Lipocarpha microcephala	50	<1
Macgregoria racemigera	5	<1
Paraneurachne muelleri	50	5
Polycarpaea corymbosa	20	1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	40	<1
Scaevola parvifolia subsp. *pilbarae*	25	3
Senna artemisioides subsp. *oligophylla*	120	5
Senna artemisioides subsp. *helmsii*	60	2
Sida arenicola	90	<1
Sida cardiophylla	60	1
Sida platycalyx	75	<1
Streptoglossa decurrens	75	2
Stylobasium spathulatum	150	2
Trianthema pilosa	5	<1
Triodia pungens	110	60
Zornia albiflora	5	<1

QUADRAT 22

Approximate Location: East end of airstrip
Datum (WGS85): 404634E; 7532017N
22A 403497E; 7531182N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia inaequilatera, Acacia ancistrocarpa* and *Acacia synchronicia* over Open Hummock Grassland of *Triodia* species and Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes: In some areas *Acacia inaequilatera* up to 40% cover

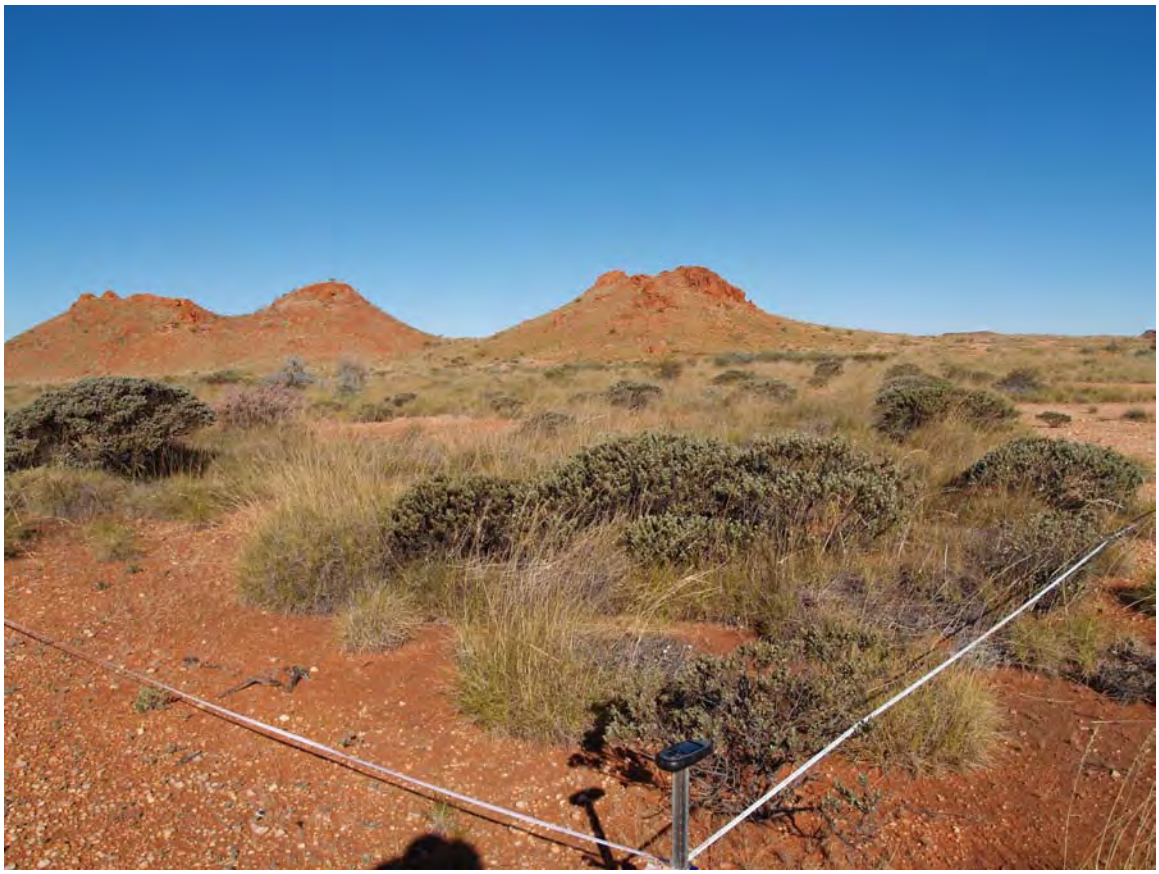


TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	250	10
Acacia inaequilatera	250	10
Aristida holathera	50	<1
Aristida inaequiglumis	170	6
Bonamia rosea	30	<1
Bulbostylis barbata	10	<1
Calotis plumulifera	20	10
**Cenchrus ciliaris*	80	5
Chrysopogon fallax	100	5

Cleome viscosa	25	<1
Corymbia opaca	400	<1
Crotalaria crispata	70	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	<1
Eragrostis eriopoda	50	<1
Eragrostis tenellula	30	<1
Eragrostis tenuiculmis	70	2
Eriachne aristidea	30	<1
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	5	<1
Indigofera brevidens	40	<1
Indigofera colutea	10	<1
Indigofera sp.	40	2
Melhania oblongifolia	30	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	35	<1
Perotis rara	10	<1
Polycarpaea corymbosa	15	<1
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	60	5
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	70	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna artemisioides subsp. *helmsii*	50	<1
Sida cardiophylla	30	<1
Sida platycalyx	40	<1
Trianthema pilosa	1	<1
Trichodesma zeylanicum	90	2
Triodia pungens	110	60
Triodia schinzii	150	10
Vigna lanceolata	10	<1
Wahlenbergia tumida	15	<1
Whiteochloa airoides	90	<1
Acacia synchronicia	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Hakea lorea	Opportunistic	

QUADRAT 23

Approximate Location: Western end of runway on south side
Datum (WGS84): 403342E; 7532167N
23A 404215E; 7527705N
23B 403839E; 7527765N
23C 404560E; 7527043N
23D 404886N; 7527152N
Soil: Red silty mud
Rocks: Quartzite stones <10cm over surface
Topography: Flat
Field Vegetation Description: Low Open Shrubland of *Eremophila spathulata* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Located in the scree at the base of hills



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	250	1
Acacia eriopoda	70	1
Acacia synchronicia	200	3
Acacia synchronicia (narrow leaf form)	80	1
Acacia victoriae	150	<1
Aristida contorta	20	5
Brachyachne prostrata	5	2
**Cenchrus ciliaris*	40	<1

Dactyloctenium radulans	10	2
Enneapogon purpurascens	15	<1
Eragrostis eriopoda	50	<1
Eremophila spathulata	90	20
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	15	5
Gomphrena canescens subsp. *canescens*	10	<1
Hibiscus sturtii var. *platychlamys*	60	<1
Iseilema eremaeum	5	<1
Lepidium pholidogynum	5	<1
Maireana georgei	50	<1
Maireana melanocoma	15	<1
Paspalidium rarum	15	<1
Polycarpaea corymbosa	20	2
Pterocaulon sphacelatum	15	<1
Schizachyrium fragile	25	1
Sclerolaena lanicuspis	5	2
Senna glutinosa subsp. *glutinosa*	120	<1
Senna glutinosa subsp. *pruinosa*	150	2
Solanum lasiophyllum	60	<1
Sporobolus actinocladus	10	<1
Sporobolus australasicus	10	<1
Synaptantha tillaeacea	2	<1
Tragus australiensis	15	<1
Trianthema triquetra	2	<1
Triodia pungens	100	60
Tripogon loliiformis	15	5
Wahlenbergia tumida	25	<1
Acacia acradenia	Opportunistic	
Acacia tumida	Opportunistic	
Grevillea wickhamii	Opportunistic	
Portulaca pilosa	Opportunistic	
Sclerolaena cornishiana	Opportunistic	

QUADRAT 24

Approximate Location: Western edge of runway
Datum (WGS84): 403027E; 7532453N
24A 404050E; 7532003N
24B 403100E; 7531496N
24C 402796E; 7532451N
24D 402315E; 7533366N
24E 403803E; 7531160N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia* species over Hummock Grassland of *Triodia schinzii*
Vegetation Condition: 2
Notes: Large number of dead shrubs on the ground
Acacias occur in groups with open grassed areas between



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	300	5
Acacia dictyophleba	300	1
Acacia inaequilatera	150	1
Acacia ligulata	250	5-20
Aristida inaequiglumis	100	5

Boerhavia coccinea	15	<1
Bonamia rosea	60	<1
Bulbostylis barbata	15	5
Calotis plumulifera	40	<1
**Cenchrus ciliaris*	70	5
Corchorus sidoides subsp. *sidoides*	50	<1
Crotalaria crispata	50	<1
Cymbopogon procerus	70	<1
Dicrastylis georgei	45	<1
Eragrostis eriopoda	30	1
Eragrostis laniflora	50	<1
Eragrostis tenuiculmis	70	30
Eriachne aristidea	35	<1
Eulalia aurea	90	<1
Euphorbia australis	5	<1
Euphorbia boophthona	20	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Fimbristylis dichotoma	60	<1
Gomphrena canescens subsp. *canescens*	15	<1
Goodenia vilmoriniae	15	<1
Gossypium australe	50	<1
Hakea lorea	40	1
Haloragis gossei	15	<1
Indigofera monophylla	50	1
Mukia maderaspatana	Twiner	<1
Oldenlandia pterospora	10	<1
Polycarpaea corymbosa	10	1
Portulaca pilosa	10	<1
Pterocaulon sphacelatum	5	<1
Ptilotus astrolasius subsp. *astrolasius*	60	<1
Ptilotus obovatus	70	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Senna artemisioides subsp. *oligophylla*	60	1
Synaptantha tillaeacea	5	<1
Tephrosia rosea var. *clementii*	30	<1
Trianthema pilosa	2	<1
Triodia schinzii	150	50
Whiteochloa airoides	90	<1
Zornia albiflora	15	<1
Cymbopogon procerus	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Petalostylis cassioides	Opportunistic	
Schizachyrium fragile	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna notabilis	Opportunistic	
Vigna lanceolata	Opportunistic	

QUADRAT 25

Approximate Location: Flat area between hills
Datum (WGS84): 404115E; 7531301N
25A 403623E; 7531018N
Soil: Silty clay
Rocks: Quartzite, schist off the hill side
Topography: Flat
Field Vegetation Description: Closed Hummock Grassland of *Triodia wiseana*
Vegetation Condition: 2
Notes: Some area of the quadrat ripped. This is the dominant vegetation in the flat between the hills where enter the current camp site and new accommodation area



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	<1
Acacia ancistrocarpa	50	<1
Acacia eriopoda	70	<1
Acacia retivenea	125	<1
Acacia synchronicia (narrow leaf form)	50	<1
Amphipogon caricinus	40	<1
Aristida holathera	50	<1
Aristida inaequiglumis	90	<1
Bonamia rosea	50	<1
Brachyachne prostrata	10	<1

Bulbostylis barbata	15	3
Corchorus sidoides subsp. *sidoides*	50	<1
Crotalaria crispata	50	<1
Enneapogon purpurascens	15	<1
Eragrostis laniflora	70	<1
Eragrostis tenuiculmis	50	<1
Eriachne aristidea	15	2
Eriachne pulchella	15	<1
Grevillea wickhamii	400	3
Haloragis gossei	15	<1
Hibiscus coatesii	25	<1
Lepidium pholidogynum	10	<1
Portulaca pilosa	5	<1
Pterocaulon sphacelatum	25	<1
Ptilotus exaltatus	10	<1
Ptilotus polystachyus var. *polystachyus*	10	<1
Schizachyrium fragile	10	<1
Sclerolaena lanicuspis	25	<1
Sida arenicola	120	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Trianthema turgidifolia	5	<1
Trichodesma zeylanicum	15	<1
Triodia epactia	90	10
Triodia pungens	90	2
Triodia wiseana	110	60
Bonamia media	Opportunistic	
Mukia maderaspatana	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Trianthema triquetra	Opportunistic	

QUADRAT 26

Approximate Location: Drainage line at base of hill
Datum (WGS84): 404038E; 7531240N
26A 403662E; 7530995N
Soil: Silty clay
Rocks: N/A
Topography: Drainage line
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* over Open Scrub of *Acacia retivenea* and *Grevillea wickhamii*
Vegetation Condition: 2
Notes: At the base of hills. Quadrat follows the drainage line varying in width from 4-10m



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	2
Acacia colei	250	<1
Acacia retivenea	150	35
Acacia synchronicia (narrow leaf form)	50	<1
Anthobolus leptomerioides	60	<1

Bulbostylis barbata	15	<1
Cymbopogon procerus	70	1
Dactyloctenium radulans	15	<1
Dodonaea coriacea	150	1
Enneapogon purpurascens	15	1
Eragrostis laniflora	50	<1
Eragrostis laniflora	30	<1
Eriachne aristidea	20	<1
Eriachne mucronata	50	20
Eucalyptus leucophloia	700	5
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	5	<1
Grevillea wickhamii	200	35
Hibiscus coatesii	100	2
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	60	5
Ptilotus exaltatus	10	<1
Rulingia kempeana	180	5
Scaevola parvifolia subsp. *pilbarae*	30	2
Schizachyrium fragile	30	5
Senna glutinosa subsp. *glutinosa*	150	8
Solanum centrale	30	<1
Solanum lasiophyllum	50	<1
Triodia pungens	110	15
Abutilon otocarpum	Opportunistic	
Acacia victoriae	Opportunistic	
Blumea tenella	Opportunistic	
Corymbia opaca	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Goodenia vilmoriniae	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Keraudrenia velutina subsp. *elliptica*	Opportunistic	
Ptilotus macrocephalus	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Stenopetalum decipiens	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Vigna lanceolata	Opportunistic	

QUADRAT 27

Approximate Location: At north bore but away from the disturbance
Datum (WGS84): 400435E; 7535690N
Soil: Varying between brown silty loam and red sand
Rocks: N/A
Topography: Flat area near bore
Field Vegetation Description: Low Woodland of *Eucalyptus camaldulensis* and *Corymbia opaca* over Open Heath of *Indigofera georgei* and Annual Tussock Grassland of *Sorghum plumosum* and *Chrysopogon fallax*
Vegetation Condition: 2
Notes: Closer to the location of the bore is a lot of **Cenchrus ciliaris*. Area flooded at times. *Eucalyptus camaldulensis* in places has up to 40% cover



TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	70	<1
Acacia colei	700	20
Calotis plumulifera	10	<1
**Cenchrus ciliaris*	70	3
Centipeda minima subsp. *macrocephala*	10	5
Chrysopogon fallax	100	35
Cleome viscosa	25	<1
Corymbia opaca	1000	5
Cymbopogon procerus	70	<1

Eragrostis cumingii	25	3
Eragrostis tenuiculmis	50	5
Eucalyptus camaldulensis	900	10
Eulalia aurea	75	5
Evolvulus alsinoides var. *villosicalyx*	15	<1
Indigofera colutea	70	5
Indigofera georgei	150	35
Mukia maderaspatana	Twiner	<1
Phyllanthus lacunellus	20	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	35	<1
Rutidosis helichrysoides	45	10
Setaria surgens	45	5
Sorghum plumosum	200	35
Sporobolus australasicus	15	<1
Vigna lanceolata	Twiner	2
Ammannia multiflora	Opportunistic	
Aristida holathera	Opportunistic	
Chrysocephalum apiculatum	Opportunistic	
Macgregoria racemigera	Opportunistic	
Triodia longiceps	Opportunistic	

QUADRAT 28

Approximate Location: Along track to north bore
Datum (WGS84): 403194E; 7531383N
28A 405417E; 7528980N
Soil: Silty clay
Rocks: Rocky slopes of quartzite rocks and schist
Topography: All slopes to ridge
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* over Closed Hummock Grassland of *Triodia* species
Vegetation Condition: 2
Notes: Occurred on a few hillslopes. Possibly unburnt for several years

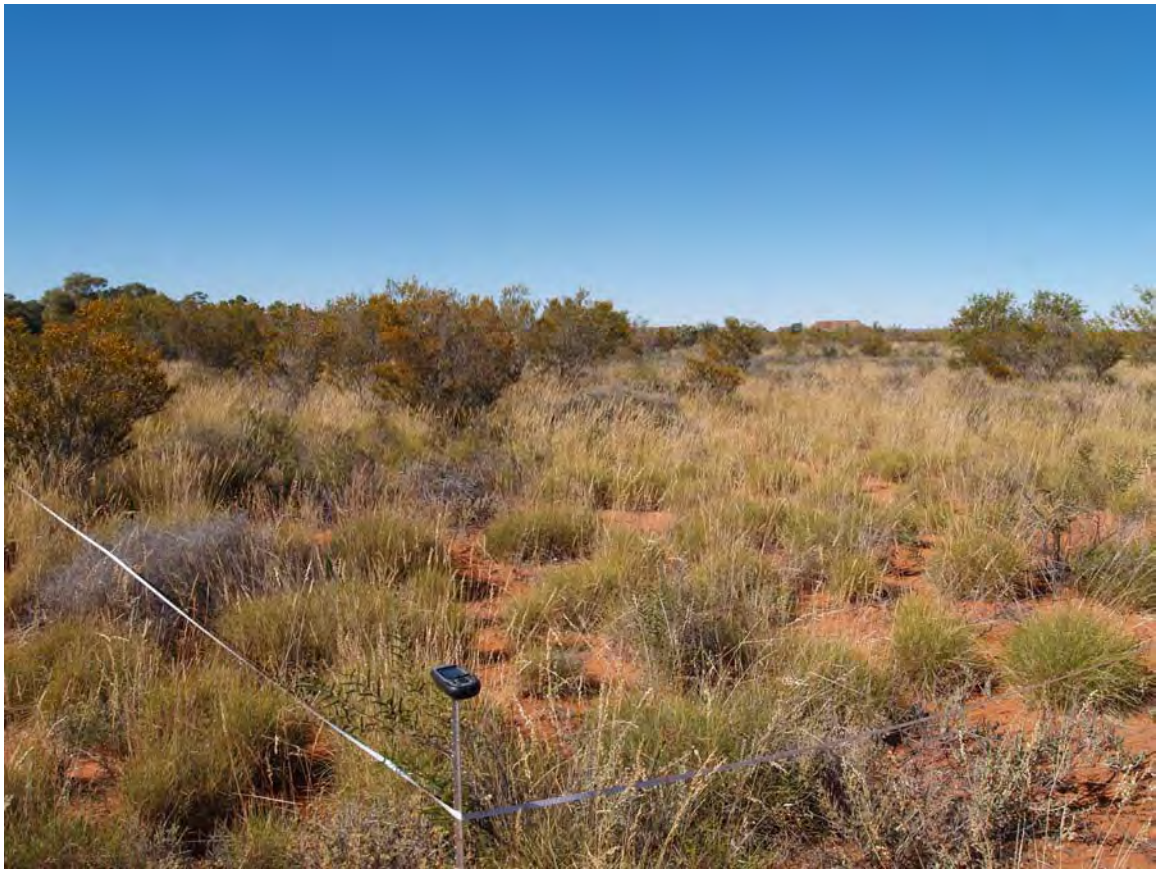


TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia	250	2
Acacia synchronicia (narrow leaf form)	175	1
Brachyachne prostrata	10	<1
Eriachne pulchella	10	<1
Eucalyptus leucophloia	600	5
Fimbristylis dichotoma	15	<1
Grevillea wickhamii	20	<1
Mukia maderaspatana	Twiner	<1
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	35	<1

Sclerolaena diacantha	20	<1
Sclerolaena lanicuspis	25	<1
Senna glutinosa subsp. *glutinosa*	50	<1
Senna glutinosa subsp. *pruinosa*	30	<1
Senna notabilis	10	<1
Sida cardiophylla	20	<1
Sporobolus australasicus	10	<1
Trianthema turgidifolia	20	<1
Triodia pungens	110	45
Triodia wiseana	110	45
Xerochloa laniflora	10	<1
Dactyloctenium radulans	Opportunistic	
Dicrastylis costelloi var. *eriantha*	Opportunistic	

QUADRAT 29

Approximate Location: Track to north bore
Datum (WGS84): 400538E; 7535273N
29A 400877E; 7535011N
Soil: Red sand dune
Rocks: N/A
Topography: Slightly raised dune
Field Vegetation Description: Open Scrub of *Acacia dictyophleba* and *Acacia validinervia* over Low Shrubland of *Otion simplicifolium* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	250	15
Acacia validinervia	300	10
Aristida holathera	50	<1
Bonamia rosea	70	5
Cassytha filiformis	Twiner	<1
Eragrostis eriopoda	30	<1
Grevillea eriostachya	200	1
Halgania solanacea	25	1
Indigofera boviperda subsp. *boviperda*	30	1
Lachnostachys roseoazurea	50	5

Otion simplicifolium	60	25
Paraneurachne muelleri	70	1
Petalostylis cassioides	100	5
Ptilotus schwartzii subsp. *schwartzii*	50	<1
Scaevola parvifolia subsp. *pilbarae*	20	3
Sida arenicola	120	<1
Sida cardiophylla	40	<1
Triodia basedowii	90	25
Acacia colei	Opportunistic	
Calytrix carinata	Opportunistic	
Dicrastylis georgei	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila longifolia	Opportunistic	
Eriachne ciliata	Opportunistic	
Grevillea wickhamii	Opportunistic	
Hakea lorea	Opportunistic	
Paspalidium rarum	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Sorghum plumosum	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 30

Approximate Location: Track to north bore
Datum (WGS84): 401632E; 7534122N
30A 4021035E; 7533670N
Soil: Red loamy sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia dictyophleba* over Open Grassland of *Aristida inaequiglumis* over Hummock Grassland of *Triodia basedowii*, *Triodia pungens* and *Triodia schinzii*
Vegetation Condition: 2
Notes: Gradually blends into the west end of the airstrip

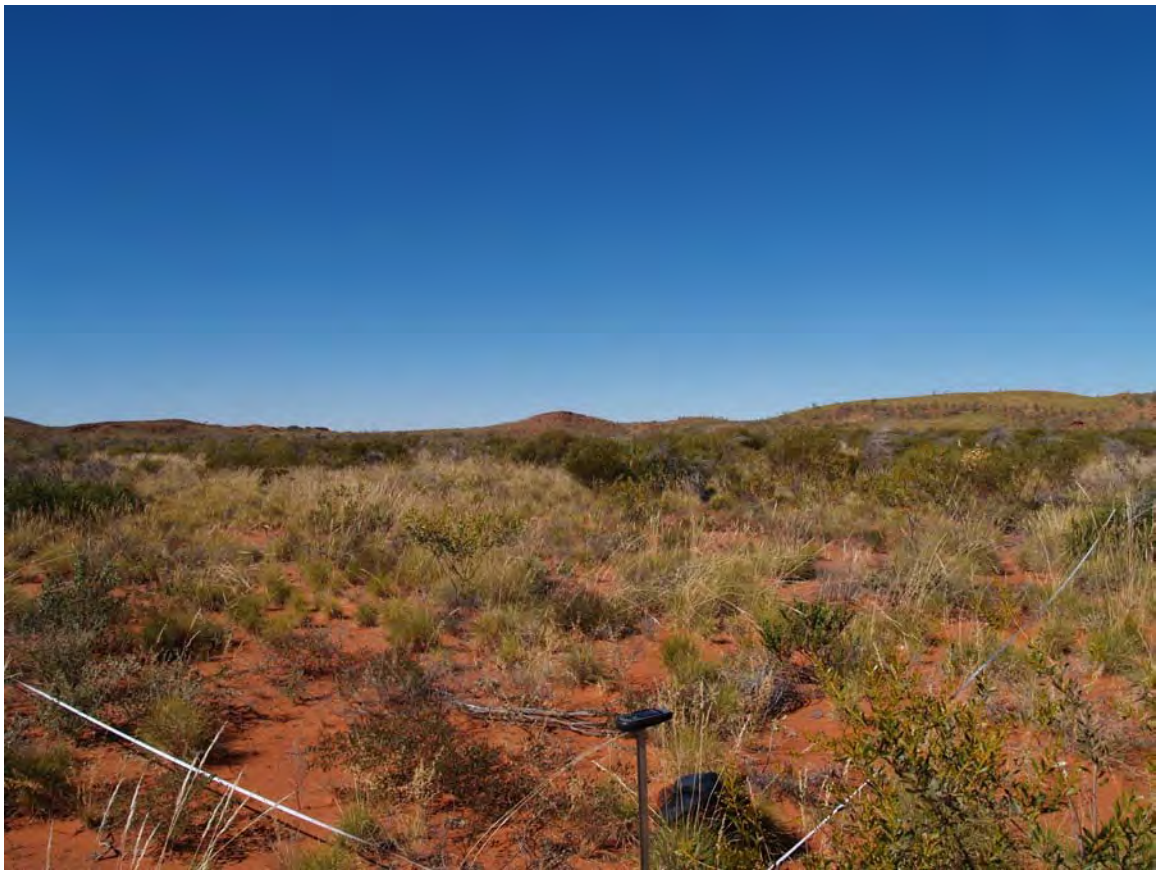


TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	30	<1
Acacia dictyophleba	300	40
Acacia validinervia	200	<1
Aristida holathera	50	<1
Aristida inaequiglumis	100	5
Bonamia rosea	30	1
Bulbostylis barbata	15	<1
Calotis plumulifera	30	<1
Chrysocephalum apiculatum	70	2
Corymbia opaca	400	<1

Eragrostis eriopoda	50	<1
Eragrostis tenuiculmis	50	<1
Eremophila forrestii subsp. *forrestii*	70	2
Euphorbia australis	2	<1
Euphorbia boophthona	70	<1
Evolvulus alsinoides var. *villosicalyx*	30	<1
Fimbristylis dichotoma	35	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia armitiana	50	<1
Lachnostachys roseoazurea	80	2
Melhania oblongifolia	30	<1
Paraneurachne muelleri	70	5
Polycarpaea corymbosa	10	<1
Pterocaulon sphacelatum	105	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Sida excedentifolia	109	<1
Sida fibulifera	10	<1
Trichodesma zeylanicum	40	<1
Triodia basedowii	110	10
Triodia pungens	100	35
Triodia schinzii	120	5
Tripogon loliiformis	5	<1
Vigna lanceolata	Twiner	<1
Zornia albiflora	5	<1
Acacia ancistrocarpa	Opportunistic	
Acacia colei	Opportunistic	
**Cenchrus ciliaris*	Opportunistic	
Dicrastylis georgei	Opportunistic	
Eucalyptus odontocarpa	Opportunistic	
Grevillea ? striata	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Grevillea wickhamii	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	

QUADRAT 31

Approximate Location: Current track into lease from Telfer track. At the lease boundary
Datum (WGS84): 407448E; 7531752N
31B 406473E; 7531808N
31D 407099E; 7531480N
31E 407066E; 7530793N
Soil: Red sand
Rocks: N/A
Topography: Sand dune
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa*, *Acacia ligulata* and *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Open areas with very few to no shrubs. Possibly killed by fire



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	2-30
Acacia dictyophleba	300	15-20
Acacia ligulata	250	2-20
Bonamia rosea	50	2
Calytrix carinata	70	<1
Dicrastylis georgei	70	5
Dodonaea coriacea	50	<1
Grevillea eriostachya	200	1

Halgania solanacea	35	<1
Lachnostachys roseoazurea	30	<1
Petalostylis cassioides	70	3
Ptilotus obovatus	50	<1
Scaevola parvifolia subsp. *pilbarae*	25	<1
Stylobasium spathulatum	70	<1
Triodia basedowii	100	85
Acacia colei	Opportunistic	
Aristida holathera	Opportunistic	
Calotis plumulifera	Opportunistic	
Chrysocephalum eremaeum	Opportunistic	
Eragrostis eriopoda	Opportunistic	
Goodenia armitiana	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Hakea lorea	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Rulingia loxophleba	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Solanum lanceolata	Opportunistic	

QUADRAT 32

Approximate Location: Track into current camp
Datum (WGS84): 406002E; 7531530N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Sida echinocarpa* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Only on south side of track so must have been heavily disturbed previously. Angled bore present near SE corner. Not a very large area approximately 200m x 200m

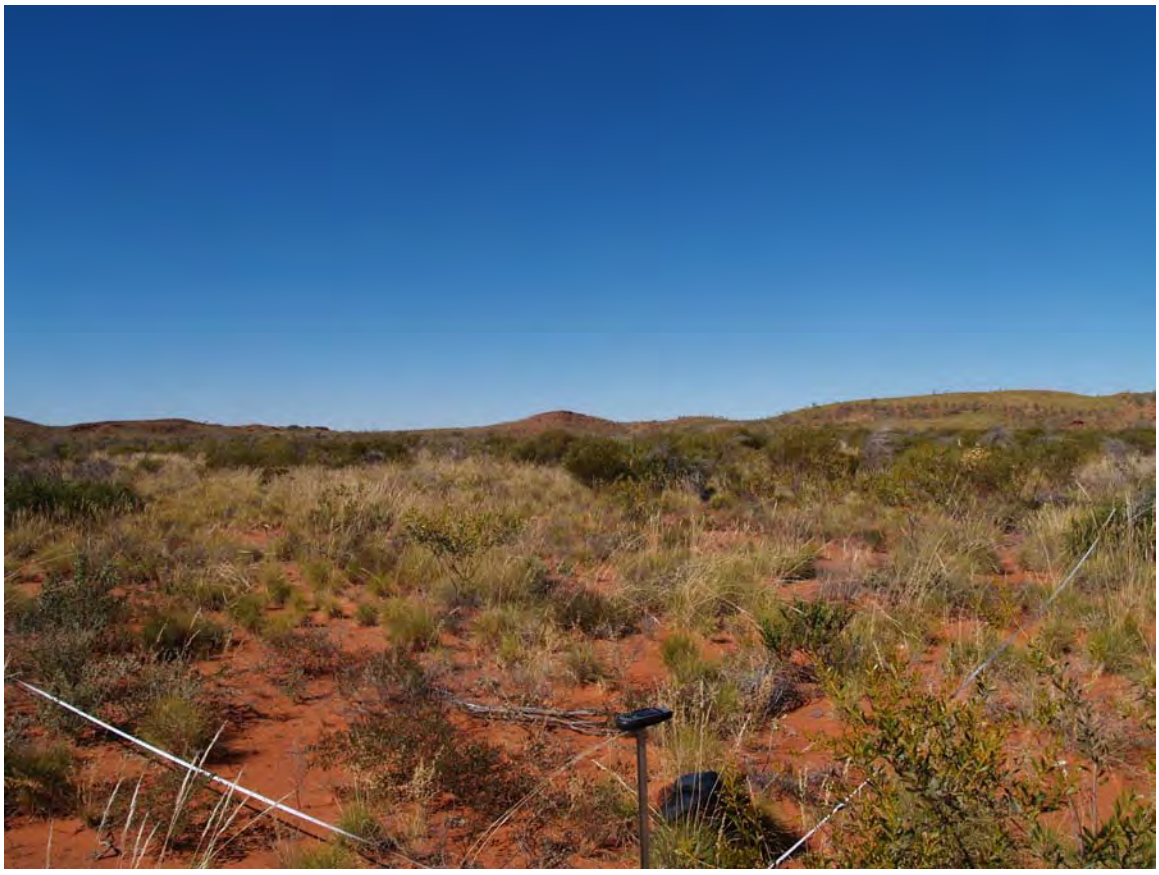


TAXON	HEIGHT (cm)	% COVER
Acacia melleodora	120	1
Aristida holathera	35	<1
Dodonaea coriacea	70	<1
Eragrostis eriopoda	35	<1
Eriachne aristidea	30	<1
Euphorbia australis	15	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	35	<1
Hakea lorea	110	<1
Haloragis gossei	15	<1

Lachnostachys roseoazurea	50	10
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	50	1
Senna seedlings	2	<1
Sida cardiophylla	25	10
Sida echinocarpa	175	15
Streptoglossa decurrens	90	<1
Trianthema pilosa	2	<1
Trichodesma zeylanicum	70	<1
Triodia basedowii	80	70
Acacia ancistrocarpa	Opportunistic	
Corchorus laniflorus	Opportunistic	
Grevillea wickhamii	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 33

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404882E; 7528428N
33A 404451E; 7528845N
33B 404696E; 7528979N
33C 404832E; 7529036N
33D 405178E; 7528998N
33E 405410E; 7528524N
33F 405180E; 7528077N
33G 404940E; 7527874N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub dominated by *Acacia ancistrocarpa* over Low Shrubland dominated by *Bonamia rosea* and *Indigofera monophylla* over Closed Hummock Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes:

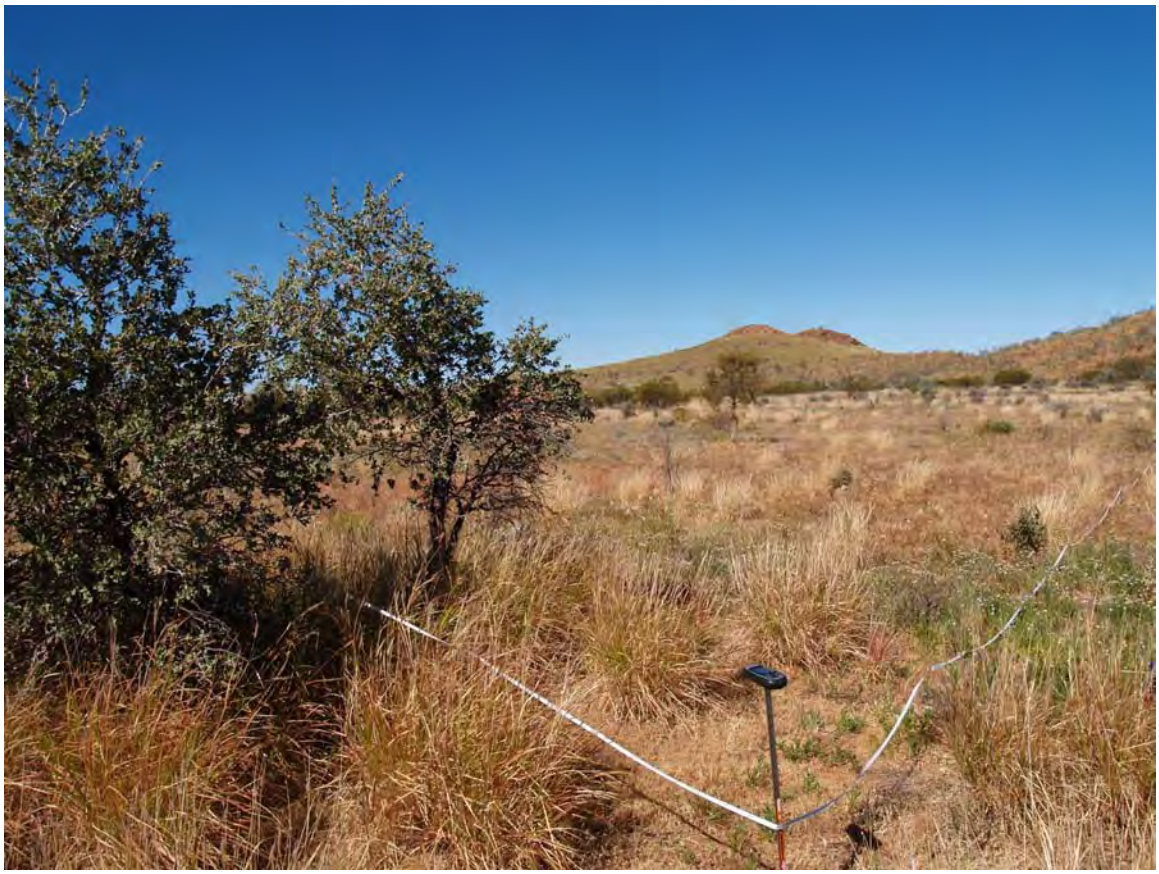


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia ligulata	175	2
Acacia melleodora	200	2
Aristida holathera	15	<1

Bonamia rosea	70	10
Corchorus sidoides subsp. *sidoides*	50	1
Dicrastylis georgei	70	3
Dodonaea coriacea	50	<1
Eragrostis laniflora	80	<1
Gossypium australe	150	<1
Hibiscus coatesii	60	<1
Indigofera monophylla	50	3-10
Oldenlandia pterospora	15	<1
Ptilotus astrolasius subsp. *astrolasius*	60	1
Ptilotus obovatus	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Sida arenicola	120	<1
Sida cardiophylla	50	<1
Streptoglossa decurrens	90	1
Triodia basedowii	90	70
Triodia schinzii	110	15
Buchnera linearis	Opportunistic	
Bulbostylis barbata	Opportunistic	
Calotis plumulifera	Opportunistic	
Dactyloctenium radulans	Opportunistic	
Dampiera candicans	Opportunistic	
Dysphania rhadinostachya subsp. *rhadinostachya*	Opportunistic	
Eriachne aristidea	Opportunistic	
Euphorbia boophthona	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Goodenia vilmoriniae	Opportunistic	
Haloragis gossei	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Polycarpaea corymbosa	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Solanum centrale	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 34

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404384E; 7528335N
Soil: Claypan
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia inaequilatera* and *Acacia ancistrocarpa* over Herbs of mixed taxa dominated by *Calotis plumulifera*
Vegetation Condition: varied between 3 and 5
Notes: Large amount of **Cenchrus ciliaris* around the quadrat. Occasional small open areas of fine mud. Whole area surrounded by *Acacia inaequilatera* and *Acacia ancistrocarpa* over **Cenchrus ciliaris*



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	350	2
Acacia inaequilatera	350	<1
Aristida contorta	50	2
Aristida holathera	40	10
Aristida inaequiglumis	100	<1
Calocephalus knappii	10	20
Calotis plumulifera	30	50
**Cenchrus ciliaris*	90	20
Chrysocephalum apiculatum	50	<1
Cleome viscosa	70	2

Corchorus laniflorus	60	2
Crotalaria crispata	10	<1
Dactyloctenium radulans	15	5
Dysphania rhadinostachya subsp. *rhadinostachya*	20	<1
Eragrostis tenuiculmis	40	<1
Eremophila forrestii subsp. *forrestii*	80	1
Euphorbia australis	2	<1
Fimbristylis dichotoma	35	<1
Gomphrena canescens subsp. *canescens*	10	<1
Gossypium australe	100	2
Hakea lorea	250	1
Heliotropium diversifolium	15	<1
Hibiscus sturtii	50	<1
Indigofera colutea	5	1
Mukia maderaspatana	twiner	<1
Perotis rara	15	25
Pluchea tetranthera	60	<1
Portulaca oleracea	10	<1
Portulaca pilosa	5	1
Pterocaulon sphacelatum	20	<1
Ptilotus macrocephalus	45	1
Ptilotus obovatus	80	1
Ptilotus polystachyus var. *polystachyus*	70	1
Rhagodia eremaea	60	<1
Salsola tragus	50	1
Sclerolaena cuneata	50	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna artemisioides subsp. *helmsii*	60	1
Senna glutinosa subsp. *glutinosa*	15	2
Sida cardiophylla	50	1
Sida echinata	30	<1
Sida fibulifera	30	1
Sida platycalyx	50	10
Solanum lasiophyllum	30	<1
Sorghum plumosum	150	1
Streptoglossa liatroides	40	<1
Trianthema triquetra	1	<1
Tripogon loliiformis	70	3
Triraphis mollis	25	1
Vigna lanceolata	twiner	<1
Alternanthera nodiflora	Opportunistic	
Eragrostis tenellula	Opportunistic	
Lepidium pholidogynum	Opportunistic	
Pluchea rubelliflora	Opportunistic	
Sclerolaena lanicuspis	Opportunistic	

QUADRAT 35

Approximate Location: This area walked only so no definite tracks etc to locate exactly. Drainage line
Datum (WGS84): 405111E; 7527939N
Soil: Red silty loam
Rocks: N/A
Topography: Drainage line
Field Vegetation Description: Open Scrub of *Acacia eriopoda* and *Acacia ancistrocarpa* over Grassland of *Sorghum plumosum* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes:

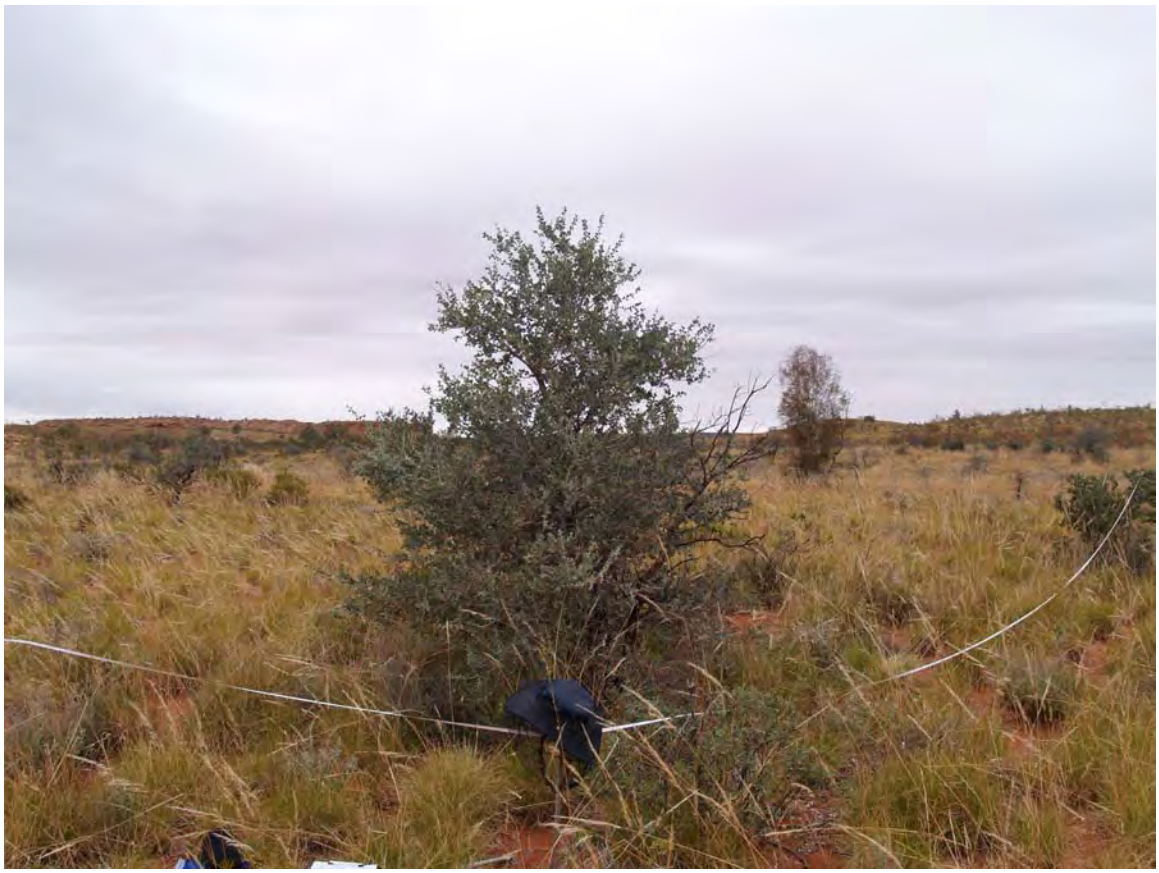


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia colei	250	<1
Acacia eriopoda	350	35
Aristida inaequiglumis	90	3
Bonamia rosea	50	<1
Bulbostylis barbata	10	<1
Calotis plumulifera	30	<1
**Cenchrus ciliaris*	75	15
Crotalaria crispata	10	<1
Dactyloctenium radulans	10	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1

Eragrostis eriopoda	50	1
Eragrostis laniflora	15	<1
Euphorbia boophthona	50	<1
Gomphrena canescens subsp. *canescens*	25	<1
Gossypium australe	50	<1
Grevillea wickhamii	200	1
Heliotropium diversifolium	15	<1
Hibiscus sturtii	35	<1
Indigofera colutea	10	<1
Paraneurachne muelleri	70	2
Polycarpaea corymbosa	15	<1
Portulaca pilosa	15	<1
Pterocaulon sphacelatum	30	<1
Ptilotus macrocephalus	70	<1
Ptilotus polystachyus var. *polystachyus*	75	<1
Senna artemisioides subsp. *oligophylla*	70	1
Senna artemisioides subsp. *helmsii*	50	<1
Sorghum plumosum	110	25
Trichodesma zeylanicum	50	<1
Triodia pungens	150	50
Vigna lanceolata	twiner	<1
Whiteochloa airoides	90	2
Cymbopogon procerus	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	

QUADRAT 36

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404782E; 7527778N
36A 404468E; 7527714N
36B 403885E; 7527438N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia inaequilatera* over Open Shrubland of *Acacia* species over Closed Hummock Grassland dominated by *Triodia schinzii*
Vegetation Condition: 3
Notes: Occasional groups of *Acacia ancistrocarpa* but generally very open grassland



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	150	5
Acacia colei	100	<1
Acacia inaequilatera	400	5
Acacia ligulata	120	<1
Acacia melleodora	150	2
Aristida inaequiglumis	90	<1
Bonamia rosea	70	10
Cleome viscosa	15	<1
Crotalaria crispata	10	<1
Eragrostis eriopoda	50	<1

Eremophila forrestii subsp. *forrestii*	70	<1
Eriachne aristidea	15	<1
Eucalyptus camaldulensis	450	<1
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia vilmoriniae	10	<1
Gossypium australe	70	<1
Haloragis gossei	10	<1
Indigofera monophylla	50	2
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	70	1
Ptilotus macrocephalus	35	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	90	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Senna artemisioides subsp. *oligophylla*	80	2
Senna artemisioides subsp. *helmsii*	60	1
Senna glutinosa subsp. *pruinosa*	30	<1
Senna notabilis	10	<1
Sida arenicola	130	<1
Sida cardiophylla	75	1
Solanum lasiophyllum	30	<1
Streptoglossa decurrens	30	1
Trianthema pilosa	5	<1
Tribulus hirsutus	5	<1
Trichodesma zeylanicum	15	<1
Triodia basedowii	90	10
Triodia schinzii	110	70
Vigna lanceolata	twiner	<1
Whiteochloa airoides	70	<1
Acacia retivenea	Opportunistic	
Acacia synchronicia	Opportunistic	
Calotis plumulifera	Opportunistic	
**Cenchrus ciliaris*	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Grevillea wickhamii	Opportunistic	
Hakea lorea	Opportunistic	
Hibiscus sturtii	Opportunistic	
Mollugo molluginis	Opportunistic	
Paspalidium rarum	Opportunistic	
Perotis rara	Opportunistic	
Portulaca pilosa	Opportunistic	
Ptilotus clementii	Opportunistic	
Ptilotus exaltatus	Opportunistic	
Ptilotus helipteroides	Opportunistic	
Sida echinocarpa	Opportunistic	
Sorghum plumosum	Opportunistic	

Trachymene oleracea subsp. *oleracea*	Opportunistic	
Waltheria indica	Opportunistic	

QUADRAT 37

Approximate Location: Drainage line
Datum (WGS84): 403730E; 7527142N
37A 403635E; 7526923N
Soil: Silty clay
Rocks: Scattered quartz rocks on the surface
Topography: Drainage line
Field Vegetation Description: Open Scrub of *Acacia acradenia* and *Grevillea wickhamii* over Low Open Heath of *Keraudrenia velutina* subsp. *elliptica* and Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Quadrat was linear along the drainage line



TAXON	HEIGHT (cm)	% COVER
Acacia acradenia	175	35
Acacia eriopoda	60	1
Bulbostylis barbata	15	<1
Crotalaria crispata	70	<1
Eucalyptus aspera	400	1
Eucalyptus leucophloia	400	2
Grevillea wickhamii	300	35
Hybanthus aurantiacus	30	<1
Keraudrenia velutina subsp. *elliptica*	50	40
Paraneurachne muelleri	70	5
Sporobolus australasicus	15	<1

Triodia pungens	70	60
Acacia retivenea	Opportunistic	
Pterocaulon sphacelatum	Opportunistic	
Streptoglossa decurrens	Opportunistic	

QUADRAT 38

Approximate Location: Middle of proposed accommodation village
Datum (WGS84): 403503E; 7526828N
Soil: Silty loam
Rocks: Numerous rocks on the surface
Topography: Lower slope
Field Vegetation Description: Open Shrubland of *Acacia wanyu* over Low Shrubland of *Eremophila spathulata* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Quartzite scree slope and outcropping schist. Area consists of a series of rounded hillocks



TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	25	<1
Acacia wanyu	200	3-10
Aristida contorta	20	10
Aristida holathera	20	<1
Boerhavia gardneri	4	<1
Bulbostylis barbata	15	2
**Cenchrus ciliaris*	50	<1
Cleome viscosa	35	3
Corchorus sidoides subsp. *sidoides*	40	11
Enneapogon purpurascens	14	<1
Eremophila spathulata	90	20

Euphorbia boophthona	40	<1
Evolvulus alsinoides var. villosicalyx	60	<1
Fimbristylis dichotoma	15	<1
Gomphrena canescens subsp. *canescens*	5	<1
Gomphrena cunninghamii	30	<1
Goodenia vilmoriniae	10	<1
Heliotropium tenuifolium	14	2
Indigofera monophylla	30	<1
Maireana melanocoma	30	<1
Paspalidium rarum	5	<1
Polycarpaea corymbosa	15	2
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	30	1
Ptilotus helipteroides	35	2
Ptilotus macrocephalus	25	<1
Salsola tragus	10	<1
Sclerolaena lanicuspis	10	<1
Senna artemisioides subsp. *helmsii*	90	1
Senna glutinosa x subsp. *luerssenii*	90	1
Senna notabilis	5	<1
Sida brownii	40	1
Sida platycalyx	30	<1
Solanum lasiophyllum	40	<1
Streptoglossa decurrens	10	1
Trachymene oleracea subsp. *oleracea*	40	3
Trianthema triquetra	2	<1
Tribulus suberosus	30	<1
Triodia pungens	110	50
Abutilon lepidium	Opportunistic	
Acacia acradenia	Opportunistic	

QUADRAT 39

Approximate Location: Track to village
Datum (WGS84): 404385E; 7527063E
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Burnt over 5 years



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	2
Acacia coriacea subsp. *pendens*	200	<1
Acacia eriopoda	300	25
Acacia wanyu	150	10
Aristida holathera	60	<1
Bulbostylis barbata	15	<1
Calandrinia ptychosperma	10	<1
Cleome viscosa	70	<1
Corchorus sidoides subsp. *sidoides*	50	<1
Cymbopogon procerus	70	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1

Enneapogon purpurascens	50	<1
Eragrostis eriopoda	70	<1
Eremophila forrestii subsp. *forrestii*	50	1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia vilmoriniae	70	<1
Haloragis gossei	15	<1
Keraudrenia velutina subsp. *elliptica*	50	<1
Paraneurachne muelleri	90	2
Polycarpaea corymbosa	30	<1
Ptilotus exaltatus	30	<1
Ptilotus helipteroides	90	<1
Schizachyrium fragile	70	<1
Senna artemisioides subsp. *oligophylla*	70	1
Senna glutinosa subsp. *pruinosa*	90	1
Trachymene oleracea subsp. *oleracea*	50	<1
Trichodesma zeylanicum	50	<1
Triodia basedowii	70	80
Triodia pungens	70	5
Euphorbia boophthona	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Ptilotus schwartzii subsp. *schwartzii*	Opportunistic	
Sida excedentifolia	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Tribulus macrocarpus	Opportunistic	

QUADRAT 40

Approximate Location: Along track to borrow pit on main track into site
Datum (WGS84): 407024E; 7520857N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Grevillea eriostachya*, *Acacia ligulata* and *Acacia dictyophleba* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Still in the same community as KIN41 but there are occasional dense areas of *Grevillea* species, *Hakea lorea* scattered through



TAXON	HEIGHT (cm)	% COVER
Acacia ligulata	300	10
Acacia dictyophleba	350	15
Anthobolus leptomerioides	120	1
Aristida holathera	40	<1
Bonamia rosea	50	5
Calytrix carinata	70	<1
Eragrostis eriopoda	50	<1
Euphorbia boophthona	30	<1
Fimbristylis dichotoma	50	<1
Grevillea eriostachya	350	8
Hibiscus coatesii	50	<1

Lepidium phlebopetalum	2	<1
Oldenlandia pterospora	10	<1
Paspalidium rarum	5	<1
Ptilotus polystachyus var. *polystachyus*	50	<1
Scaevola parvifolia subsp. *pilbarae*	40	1
Senna artemisioides subsp. *oligophylla*	120	<1
Sida cardiophylla	50	<1
Solanum centrale	50	<1
Stylobasium spathulatum	100	1
Trichodesma zeylanicum	30	<1
Triodia basedowii	100	60
Grevillea stenobotrya	Opportunistic	
Hakea lorea	Opportunistic	
Triodia bitextura	Opportunistic	

QUADRAT 41

Approximate Location: To north of track out to Telfer Road
Datum (WGS84): 406687E; 7532020N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Animal survey area as peg 245 recorded and there were 3 closed pit traps, raised about 1 foot above the ground level. Burnt more than 10 years but several dead *Acacias*



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	300	25
Anthobolus leptomerioides	70	<1
Aristida holathera	25	<1
Dicrastylis georgei	50	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	5	<1
Eragrostis tenuiculmis	70	<1
Eriachne aristidea	15	<1
Eriachne pulchella	10	<1
Fimbristylis ? oxystachya	20	<1
Haloragis gossei	10	<1
Heliotropium diversifolium	15	<1

Lachnostachys roseoazurea	50	<1
Oldenlandia pterospora	10	<1
Petalostylis cassioides	70	<1
Ptilotus schwartzii subsp. *schwartzii*	60	<1
Scaevola parvifolia subsp. *pilbarae*	20	2
Sida echinocarpa	25	<1
Solanum centrale	50	<1
Trichodesma zeylanicum	10	<1
Triodia basedowii	110	90
Acacia ancistrocarpa	Opportunistic	
Acacia coriacea subsp. *pendens*	Opportunistic	
Acacia ligulata	Opportunistic	
Aristida contorta	Opportunistic	
Bonamia rosea	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eragrostis eriopoda	Opportunistic	
Euphorbia boophthona	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Grevillea eriostachya	Opportunistic	
Hakea lorea	Opportunistic	
Melhania oblongifolia	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Polygala isingii	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Sida cardiophylla	Opportunistic	
Sida cordifolia	Opportunistic	

QUADRAT 42

Approximate Location: Near Borrow Pit at the base of the hills
Datum (WGS84): 407084E; 7530602N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia* species dominated by *Acacia dictyophleba* over Hummock Grassland dominated by *Triodia basedowii*
Vegetation Condition: 2
Notes: Recent burn. Community ends at KIN31E



TAXON	HEIGHT (cm)	% COVER
Acacia ligulata	200	10
Acacia dictyophleba	200	15-30
Aristida holathera	25	<1
Bonamia rosea	50	5
Calytrix carinata	70	<1
Eragrostis eriopoda	50	<1
Fimbristylis ? oxystachya	60	<1
Jacksonia aculeata	50	<1
Lachnostachys roseoazurea	50	<1
Lepidium phlebopetalum	2	<1

Oldenlandia pterospora	2	<1
Paraneurachne muelleri	60	<1
Petalostylis cassioides	70	1
Scaevola parvifolia subsp. *pilbarae*	30	2
Sida excedentifolia	20	<1
Sida cardiophylla	50	<1
Stylobasium spathulatum	200	10
Trichodesma zeylanicum	25	<1
Triodia basedowii	90	65
Triodia schinzii	130	5
Euphorbia australis	Opportunistic	
Grevillea eriostachya	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Grevillea wickhamii	Opportunistic	
Schizachyrium fragile	Opportunistic	
Sida tesquorum	Opportunistic	

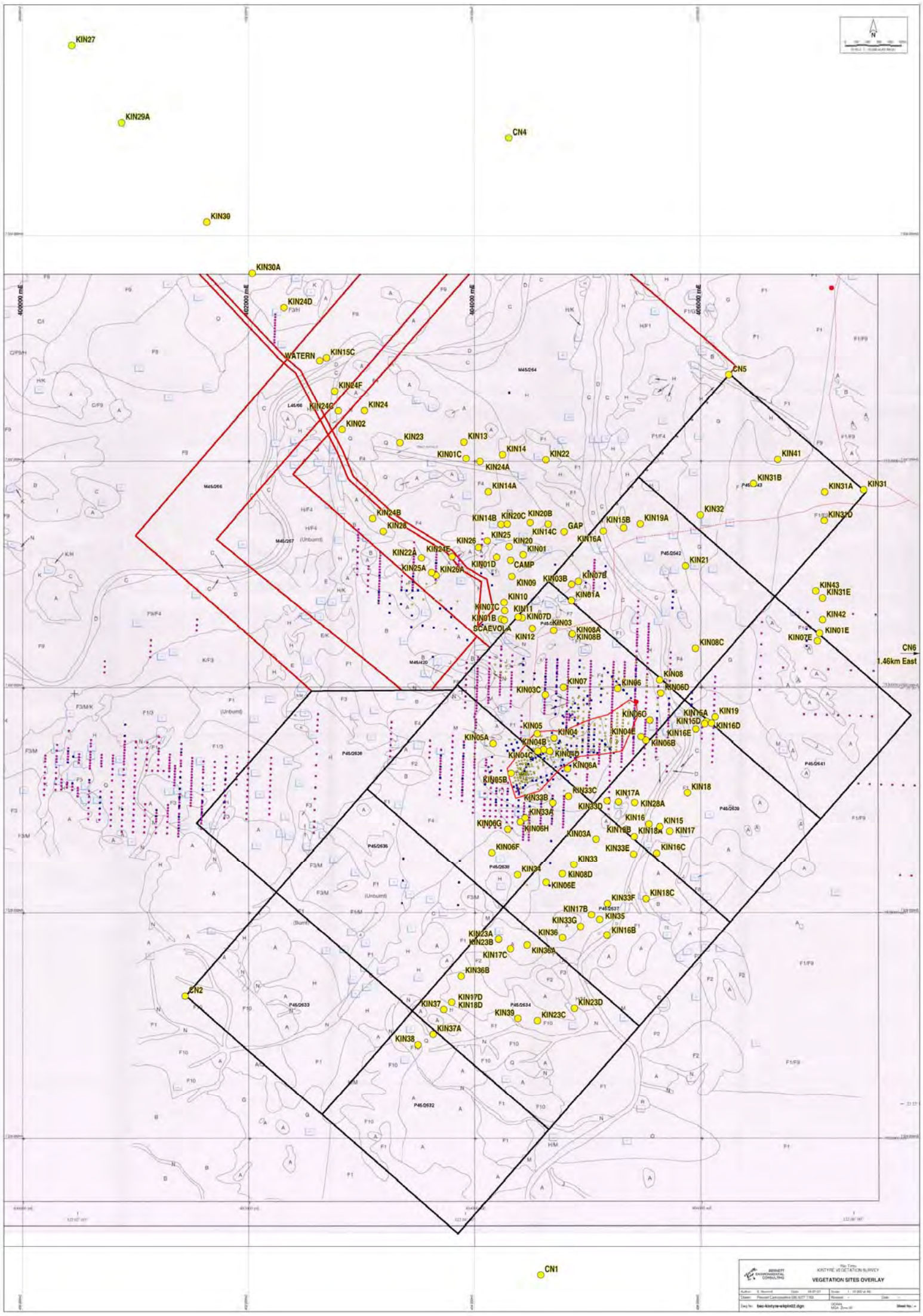
APPENDIX C

Bennett Environmental Consulting Pty Ltd Quadrats overlain on Hart Simpson and Associates Pty Ltd mapping

LEGEND

HART SIMPSON and ASSOCIATES PL	MAP ABBREVIATION
Woodlands	
1. *Corymbia opaca* Woodland	**C**
2. Riverine Woodland	**D**
Shrublands	
1. *Acacia dictyophleba* Shrubland	**I**
2. *Acacia aneura* Shrubland	**R**
Steppes	
1. Hummock Grass Steppe	**A**
2. *Acacia ancistrocarpa* and *Acacia ligulata* Shrub Steppe	**F1**
3. *Acacia retivenia* Shrub Steppe	**F2**
4. *Acacia inaequilatera* Shrub Steppe	**F3**
5. Mixed Low Shrub Steppe	**F4**
6. *Grevillea/Acacia* Shrub Steppe	**F8**
7. *Acacia dictyophleba* Shrub Steppe	**F9**
8. *Acacia wanyu* Shrub Steppe	**F10**
9. Open Shrub Steppe	**G**
10. Mallee Steppe	**O**
11. Tree Steppe	**B**
Grasslands	
1. *Xerochloa laniflora* Grassland	**L**
Scrubs	
1. Chenopod Dwarf Scrub	**E**
Shrub Savanna	**H**
Complexes	
1. Sand Dune Complex	**J**
2. Claypan Complex	**K**
3. Scald Complex	**M**
4. Drainage Line Complex	**N**
5. Bare Stony Slope	**P**
6. White Quartzite Scree Complex	**Q**

ABBREVIATIONS	MEANING
CN(n)	Lease boundary corner point
KIN(n)	2007 quadrats
WATERN	Water monitoring point


KIN27
KIN29A
KIN39
CN4
KIN30A
KIN24D
WATERN
KIN15C
KIN24F
KIN24G
KIN24
KIN02
KIN23
KIN13
KIN01C
KIN14
KIN22
KIN24A
KIN14A
CN5
KIN41
KIN31B
KIN31A
KIN31
KIN32
KIN31D
KIN24B
KIN28
KIN14B
KIN20C
KIN20B
KIN14C
GAP
KIN15B
KIN19A
KIN26
KIN25
KIN20
KIN01
KIN16A
KIN22A
KIN24E
KIN01D
CAMP
KIN21
KIN25A
KIN26A
KIN09
KIN03B
KIN07B
KIN01A
KIN43
KIN31E
KIN10
KIN07C
KIN11
KIN07D
KIN01B
SCAEVOLA
KIN03
KIN08A
KIN08B
KIN12
KIN42
KIN01E
KIN07E
KIN08C
CN6
1.46km East
KIN08
KIN07
KIN06
KIN06D
KIN03C
KIN06C
KIN15A
KIN19
KIN15D
KIN16D
KIN05
KIN04
KIN04E
KIN16E
KIN05A
KIN04B
KIN06B
KIN04C
KIN04D
KIN06A
KIN05B
KIN18
KIN33C
KIN17A
KIN33B
KIN28A
KIN33D
KIN33A
KIN16
KIN15
KIN06G
KIN06H
KIN18B
KIN18A
KIN17
KIN03A
KIN06F
KIN33E
KIN16C
KIN33
KIN34
KIN08D
KIN06E
KIN33F
KIN18C
KIN17B
KIN35
KIN33G
KIN36
KIN16B
KIN23A
KIN23B
KIN36A
KIN17C
KIN36B
CN2
KIN37
KIN17D
KIN18D
KIN23D
KIN39
KIN23C
KIN37A
KIN38
CN1
KINTYRE VEGETATION SURVEY
VEGETATION SITES OVERLAY

FLORA AND VEGETATION
Kintyre Lease



Prepared for:
Cameco Australia, Kintyre Project

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July 2010

STATEMENT OF LIMITATIONS

Scope of Services

This report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Eleanor Bennett ("the Author"). In some circumstances a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services.

Reliance on Data

In preparing the report, the Author has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, the Author has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. The Author will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to the Author.

Environmental Conclusions

In accordance with the scope of services, the Author has relied upon the data and has conducted environmental field monitoring and/or testing in the preparation of the report. The nature and extent of monitoring and/or testing conducted is described in the report.

The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

Within the limitations imposed by the scope of services, the field assessment and preparation of this report have been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable environmental consultants under similar circumstances. No other warranty, expressed or implied, is made.

Report for Benefit of Client

The report has been prepared for the benefit of the Client and no other party. The Author assumes no responsibility and will not be liable to any other person or organisation for or in relation to any matter dealt with or conclusions expressed in the report, or for any loss or damage suffered by any other person or organisation arising from matters dealt with or conclusions expressed in the report (including without limitation matters arising from any negligent act or omission of the Author or for any loss or damage suffered by any other party relying upon the matters dealt with or conclusions expressed in the report). Other parties should not rely upon the report or the accuracy or completeness of any conclusions and should make their own enquiries and obtain independent advice in relation to such matters.

Other Limitations

The Author will not be liable to update or revise the report to take into account any events or emergent circumstances or facts occurring or becoming apparent after the date of the report. The scope of services did not include any assessment of the title to or ownership of the properties, buildings and structures referred to in the report nor the application or interpretation of laws in the jurisdiction in which those properties, buildings and structures are located.

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SUMMARY

Bennett Environmental Consulting Pty Ltd undertook a survey between 25th June and 4th July 2007 and 27th April and 4th May 2010 of the Kintyre Lease. Exploration drilling had occurred in the area in the 1990's and had recommenced in late 2009. Hart Simpson and Associates Pty Ltd (1994 and 1997) had undertaken intensive vegetation surveys including the preparation of a vegetation map. The 2007 vegetation survey was limited to the proposed drill area as identified then and the areas proposed for the village and associated infrastructure, whereas the 2010 survey was to complete the whole lease. It was agreed by the Department of Environment and Conservation that as the mapping of Hart had been so intense that permanent quadrats were only required to be established in each of the different vegetation units that Hart mapped. Prior to the 2007 there had been good rainfall but in 2009 a fire had burnt through a large extent of the area and 2010 had been a very dry season.

The method to be used was to meet the requirements of the Environmental Protection Authority Guidance No 51 (2004). Dr van Leeuwen, a research officer at the Department of Environment and Conservation confirmed that 50m x 50m quadrats were to be used. A permanent dropper was left at the north west corner of each quadrat at the completion of the assessment.

A total of 48 vascular plant families, 149 genera and 323 taxa (species, subspecies and varieties) were recorded during the survey. Poaceae (grass family), and Fabaceae (previously Papilionaceae, Caesalpiniaceae and Mimosaceae) were the dominant families with 32 and 16 genera and 60 and 59 taxa respectively. The other dominant family was Malvaceae (previously Sterculiaceae and Malvaceae) with 10 genera and 38 taxa. These 3 families represent 6.2% of the total number of families, 38.9% of the total number of genera and 48.9% of the total number of taxa. One priority flora was recorded in 2007 but none were seen in 2010. It was the Priority 3 Flora, *Comesperma pallidum* and was recorded from within the area where it is intended to undertake exploration drilling.

The variation in the vegetation within the site varied with the rocks and associated soils. The hillslopes in the northern section of the lease had scattered shrubs of *Acacia robeorum*, Grevillea *wickhamii* and *Senna glutinosa* as the dominant shrubs. The hillslopes where *Acacia retivenea* occurred were only recorded from the southern area of the lease where the rocks were more schistose than in the northern area. *Eucalyptus leucophloia* was only recorded on a few hillslopes and was not a common taxon.

The sandy soils typically included *Triodia basedowii* and *Triodia schinzii* associated with *Acacia ligulata* and *Stylobasium spathulatum*. The latter taxon was more common on the raised dunes rather than on the flatter sandy soils. *Dicrastylis georgei* and *Lachnostachys roseoazurea* were typically associated with the sandy soils across the lease.

The drainage lines varied with the taxa located on the hill slopes or flat areas. As an example *Acacia retivenia* was common in the drainage lines in the south of the lease but less common in the north of the lease. *Grevillea wickhamii* occurred across all vegetation units and did not appear to be restricted to a specific soil.

A total of 34 vegetation units were recorded during the 2007 and 2010 surveys. These are listed below according to habitat.

Hillsides

- The northern hillsides, around the proposed exploration camp site were basically covered in *Triodia epactia* and *Triodia wiseana.*
- Open Heath dominated by *Acacia retivenea* over Hummock Grassland of *Triodia* species with quartzite and schistose rocks.
- Woodland of *Eucalyptus leucophloia* over Scattered Herbs of *Ptilotus calostachyus* and Scattered Grasses of *Eriachne mucronata* or Hummock Grassland of *Triodia pungens.*

- Low Open Shrubland of *Indigofera monophylla* and *Senna glutinosa* subsp. *glutinosa* over Open Herbs dominated by *Cleome viscosa* and *Boerhavia gardneri* over Grassland dominated by *Triodia pungens*.

At the base of hills

- Low Shrubland of *Eremophila tietkensii.* This vegetation was open with the main cover consisting of small rocks.
- Open Shrubland of *Acacia wanyu* over Low Shrubland of *Eremophila tietkensii* over Hummock Grassland of Triodia *pungens.*
- High Open Shrubland of *Acacia synchronicia* over Low Open Shrubland dominated by *Eremophila tietkensii* over Grassland of *Triodia wiseana.*
- Open Shrubland of *Acacia robeana* over Very Open Tussock Grassland of *Triodia angusta*.

Sand dunes

The sand dunes were all low, only rising slightly above the level of the plain. Typically they included a greater number of taxa than the rocky soils with *Triodia schinzii* typically the dominant grass usually in association with *Triodia basedowii*.

Red sandy soils - Flat

- *Acacia inaequilatera* dominant.
- *Acacia dictyophleba* dominant.
- *Acacia ancistrocarpa* dominant typically associated with *Acacia ligulata, Acacia dictyophleba* and *Acacia inaequilatera.*
- *Acacia ligulata* dominant.
- *Acacia melleodora* dominant.
- *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii*.
- *Senna* taxa dominant.
- *Grevillea* taxa dominant.
- *Hakea lorea* over *Triodia basedowii*.
- Grassland of *Triodia basedowii*.

Lower Slope Above Creek

- Low Open Forest of *Acacia aneura* subsp. *macrocarpa*.
- Low Open Woodland of *Eucalyptus odontocarpa*.

Drainage lines

- Hill sides.
- Scree at base of hills.
- Drainage lines at the base of hills.
- Red sandy soils – flat ground.

Creek lines

- Within the creeks themselves the vegetation was a High Open Woodland of *Eucalyptus camaldulensis* over Annual Tussock Grassland of several taxa including *Sorghum plumosum*.
- On the floodplain above the banks the vegetation was Low Open Woodland of *Corymbia opaca* over Grassland dominated by **Cenchrus ciliaris* and *Sorghum plumosum*.

Claypans

- Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa* over bare ground.
- Low Shrubland dominated by *Tephrosia brevidens* over Very Open Herbs dominated by *Heliotropium corymbosum* over Tussock Grassland dominated by *Chrysopogon fallax.*
- Open Grassland of *Xerochloa laniflora* and *Dactyloctenium radulans*.
- Tussock Grassland of **Cenchrus ciliaris, Aristida inaequilatera*, *Xerochloa laniflora* and *Eragrostis eriopoda.*
- Areas of nearly bare ground.
- Shrubland of *Eremophila forrestii* subsp. *forrestii* over Low Open Shrubland dominated by *Sclerolaena* species over Annual Tussock Grassland of *Aristida contorta.*

- Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Tussock Grassland dominated by **Cenchrus ciliaris.*
- Low Open Shrubland of *Sclerolaena* species.

None of the vegetation units recorded for the survey area are listed by the Department of Environment and Conservation as Threatened or Priority Ecological Communities. Three communities listed by Kendrick (2001) as of conservation significance for the Rudall River area were recorded from the site. These are:

- Shrubland, mulga scrub which has the Beard Vegetation Code 39;
- *Triodia wiseana* Grass Steppe on stony hills which has the Beard Vegetation Code 157; and
- Mixed Shrub Steppe between sandhills with *Triodia schinzii* which has the Beard Vegetation Code of 136.

A comparison was made between the vegetation units recorded and those of Hart *et al*. (1994, 1997). Fire has changed the make up of the units between the surveys although when the quadrats and opportunistic sites were overlain on the original vegetation map there was a reasonable correlation between them. Quadrats have now been placed in each of the units mapped by Hart.

Five introduced taxa were recorded during the current survey, none of which are Declared Weeds (Department of Agriculture and Food, 2010). These were **Cenchrus ciliaris*, **Cucumis melo* subsp. *agrestis*, **Citrullus lanatus*, **Aerva peruviana* and **Bidens bipinnata*. **Cenchrus ciliaris* (Buffel grass) was introduced into the pastoral areas originally as fodder for stock but has become a common weed throughout the Pilbara and Kimberley Regions of Western Australia. This weed was common in several areas of the lease, in particular where the soil had been ripped at the completion of the original exploration survey. Care will need to be exercised by the company to ensure this weed is not spread further, particularly into areas where it currently is not recorded.

**Cucumis melo* subsp. *agrestis* (an introduced melon) occurred typically as individual plants through the area. This had an elongated fruit, which is not edible.

**Citrullus lanatus* was recorded in damp soil close to creeks. Where it occurred it formed dense areas over the ground with several green and cream mottled, round fruits up to 150mm wide. Several of the fruits had been opened, presumably by donkeys and camels and the seed scattered on the ground.

**Aerva javanica* (Kapok bush) was recorded from Kintyre Hill which had been ripped after the original exploration phase. In May 2010 this area had had some exploration drilling which was intended to become more intensive later that year. As the area where this taxon occurs is small it is recommended that it be removed prior to any further disturbance. It is important that this taxon is not distributed further.

**Bidens bipinnata* (Beggar's ticks) was only recorded along the creek banks. It was reasonably common but would be difficult to control as it appears to be spread by water.

It is recommended that after a significant rainfall which stimulates the growth, that an additional survey is undertaken to record annual and ephemeral taxa. After the recent fire it is anticipated that there would be many additional taxa recorded.

When exploration of the area occurs it is essential that only the area required for the development of infrastructure and drilling is disturbed. Vehicles moving from a heavily infested weed area into one with limited or no weeds, should be checked to ensure that no weeds are being transported on the vehicles. Radiators, body undersurface and tyres in particular must be checked. No vehicle should be driven across the vegetation but should remain on prepared tracks.

The lease is an area of ‘outback’ Western Australia and should be respected for its uniqueness. There have been no pastoral leases through the area (pers. comm.. Shorty, the Indigenous assistant in 2007) but there are many feral animals including donkeys and camels. The disturbance by European man has been limited mainly due to its inaccessibility and although there are several other exploration teams from other mining companies about to undertake drilling it is essential that the environment is not degraded with these developments.

1. INTRODUCTION

1.1 Background

In 2007 Bennett Environmental Consulting Pty Ltd (Bennett Environmental Consulting Pty Ltd, 2007) undertook a flora and vegetation survey of areas nominated by the client for the proposed disturbance within the lease to the north of Rudall River National Park. The tenements were P45/2632 – P45/2637; P45/2639 – P45/2643; M45/420, M45/264, M45/266, M45/267 and L45/66.



Diagram 1. Location of Kintyre project (extracted from the Cameco website http://www.cameco.com/exploration/major_projects/australia/kintyre/)

Martinick and Associates (1986) undertook a flora and vegetation and fauna survey. This survey recorded the vegetation of the area provisionally related to their topography, when recorded six formations, seventeen associations and three complexes were recorded. One hundred and forty plant taxa were recorded but this was much lower than expected due to the dry season prior to the survey. The vegetation was mapped at a scale of 1: 10 000 scale and the vegetation descriptions followed that of Beard (1975). This survey and report established the mapping symbols which have continued to be used by later surveyors. Martinick and Associates (1987d) in April 1986 collected baseline samples of soil and additional plants so they could act as reference points for the comparison of future contaminates. In September 1986, Dr Hart who was employed by Martinick and Associates (Martinick and Associates 1986b) undertook an additional flora survey following good rainfall when a detailed flora collection was made. Additional flora collections were made in 1986 (Martinick and Associates 1986a,c).

Hart, Simpson and Associates Pty Ltd (1990 and 1993) undertook additional flora and fauna surveys in the same area as Martinick and Associates (1986 and 1987a,b,c). In 1990 Hart collected plant specimens which he submitted to the Western Australian and Pilbara Herbaria. The total number of taxa recorded was 398 in 183 genera. During these surveys Dr Hart listed the flora recorded and the vegetation units at the site and he mapped the area using the map symbols established by Martinick and Associated (1986). The work undertaken by Hart is very detailed and is the one which is accepted as the detailed vegetation mapping for the lease.

Cameco Australia contracted Bennett Environmental Consulting Pty to complete the survey of the Kintyre lease. A meeting was held with the Department of Environment and Conservation and Cameco Australia on 17th March 2010 where it was agreed that additional permanent

quadrats needed to placed in the remainder of the lease to ensure that all vegetation units identified by Dr Hart were surveyed.

1.2 Scope of Works

The requirements for the 2010 project as agreed to by officers at the Department of Environment and Conservation (Van Leeuwen, 2010):

i. Conduct a targeted survey of the lease for:
   - Threatened Flora listed under the Commonwealth Environment Protection and Biodiversity Conservation Act (EPBC Act);
   - Declared Rare and Threatened Flora listed under the WA Wildlife Conservation (Rare Flora) Notice 2010;
   - Priority Flora recognised by Department of Environment and Conservation (DEC);
   - TECs listed under the Commonwealth EPBC Act;
   - TECs endorsed by the Minister of the Environment;
   - PECs recognised by DEC; and
   - Declared weeds listed under the Agriculture and Related Resources Protection Act, 1976 and other environmental weed species. Co-ordinate locations and photographs of the above are to be provided.

ii. Review the existing vegetation mapping to ensure the entire lease is surveyed;
iii. Describe condition of the vegetation communities or areas using a published rating scale;
iv. Field check to confirm previous vegetation mapping;
v. Place permanent quadrats in each of the different vegetation units identified by Hart (1994 and 1997);
vi. Provide a list of flora including weed taxa and significant flora; and
vii. Describe the representation in a regional context of each vegetation community.

2. LIMITATIONS

There were several limitations on the project.

1. The area had experienced a very hot burn within the previous 12 months; and
2. Rainfall had been below average.

The access problems of the 2007 survey were not as limiting in 2010 as there is now an exploration camp and several tracks have been reopened or established to allow monitoring of drill areas and piezometers. Exploratory drilling had also commenced.

3. REGIONAL METHODOLOGY

3.1 Climate

The climate of the area is arid tropical with summer rain. The annual average rainfall is 200-250mm. The Bureau of Meteorology (2007) provides the following information for Telfer, which is approximately 90km north of the Kintyre site.

Table 1. Average temperatures and rainfall for Telfer aero

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years	
Temperature															
Mean maximum temperature (°C)	40.5	38.4	37.4	34.4	29.0	25.4	25.2	28.2	32.7	37.0	39.4	40.1	34.0	32	1974 2007
Mean minimum temperature (°C)	26.0	25.2	23.8	20.5	15.3	11.9	10.5	12.5	16.4	20.7	23.3	25.3	19.3	31	1974 2007
Rainfall															
Mean rainfall (mm)	48.2	104.0	81.7	19.1	19.7	13.9	12.8	6.1	2.3	2.4	15.5	49.4	379.5	33	1974 2007

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years	
Decile 5 (median) rainfall (mm)	34.2	55.3	57.9	4.9	3.2	4.4	0.2	0.0	0.0	0.0	7.6	31.3	346.7	32	1974 2007
Mean number of days of rain ≥ 1 mm	5.0	6.6	4.3	1.8	2.0	1.6	1.1	0.7	0.5	0.4	1.7	3.9	29.6	33	1974 2007

3.2 Geology and Landform

Beard (1975) described the geology of the area as consisting of quaternary sandplain with longitudinal (seif) dunes developed over Middle Proterozoic sedimentary rocks which are exposed in numerous, low rocky hills.

The area varies considerably from:

- steep ranges and stony hills, comprising fine-grained sedimentary rocks along with basic dykes. Shallow stony earthy loams dominate in this area;
- Partially dissected pediments with some low stony hills. Red alkaline soils are dominant, with shallow stony soils on the steeper slopes; and
- Plains with variable proportion of linear sand dunes. The chief soils are red sand on the dunes.

A detailed account of the Kintyre deposit is provided by Porter GeoConsultancy Pty Ltd (1994). The Kintyre uranium he deposit lies within the Rudall Complex which comprises two suites, older, possibly Archaean, granite gneisses with inliers of quartzo-feldspathic gneisses, schists, iron formations and mafic/ultramafic gneisses, and a younger suite dominated by quartzite, quartz-muscovite schist and lesser BIF, metachert, graphitic schist, marble, chlorite-carbonate schists and metabasalt. The latest deformation in the complex is dated at between 1530 and 1330 Ma.

The Rudall Complex is overlain above a marked angular unconformity by the Coolbro Sandstone of the Yeeneena Group which comprises quartz sandstone with rare thin carbonaceous mudstone and shale interbeds and conglomerate bands. This Group was deformed at around 1130 Ma.

The Kintyre ore zone occurs within chlorite-quartz schists, chlorite-carbonate-quartz schists and variably chloritic and garnetiferous quartzite (metachert) associated with carbonates in the axial zone of a recumbent, gently ENE plunging antiform. The dominant style of mineralisation comprises F1 cleavage controlled pitchblende veining which forms discrete ore zones within the upper limb of the F1 antiform. Chlorite, dolomite, ankerite and calcite are dominant vein gangue, with either or both carbonate and chlorite predominating. Weaker disseminated pitchblende is also recognised. Accessory and trace bismuth, bismuthinite, chalcopyrite, bornite, galena and gold are associated with the pitchblende.

3.3 Vegetation

The Interim Biogeographical Regionalisation for Australia (IBRA) (Thackway and Cresswell, 1995) recognises 85 bioregions. The IBRA is used as the common unit to compare biological and biophysical attributes. Bioregions represent a landscape-based approach to classifying the land surface and each region is defined by a set of major environmental influences, which shape the occurrence of flora and fauna and their interaction with the physical environment. The study area is in the Little Sandy Desert (LSD1 – Rudall Subregion), which consists of sparse shrub-steppe over *Triodia basedowii* on stony hills, with River Gum communities, and bunch grasslands on alluvial deposits in and associated with ranges. The climate is arid with summer rainfall (Kendrick, 2001).

Prior to the above classification Beard (1980) classified the vegetation of Western Australia. Western Australia was divided into three main Botanical Provinces, Southwest, Eremaean and Northern. The Kintyre project is within the Keartland Botanical District of the Eremaean

Botanical Province (Beard, 1990). The Keartland Botanical District is described as shrub steppe of *Acacia*, *Grevillea* and *Triodia* species on and between dunes with patches of Desert oak (*Allocasuarina decaisneana*) and Mulga (*Acacia aneura*). He mapped the vegetation of the study site as:

- *Triodia wiseana* Grass Steppe on stony hills (abbreviated t_3Hi) and
- Mixed shrub steppe between sandhills with *Triodia schinzii* (abbreviated $a_n Sr^t_p$Hi).

Dr Hart was employed by Martinick and Associates (1986 and 1987) when the vegetation was mapped and the map units determined. Dr. R. Hart, of Hart Simpson and Associates (1990 and 1992) later undertook additional surveys. In this report the vegetation units recorded from the lease are listed and mapped using the map units of Martinick and Associates (1987) which were also used in mapping by Hart Simpson and Associates. . For the area surveyed a total of 25 vegetation units (associations) were recorded (see Table 2 (one of which L, was not recorded in the lease)) which were representative of 7 vegetation/landform units. The 7 vegetation/landform units are:

1. Shrubs and spinifex on flat plains with silty sands;
2. Stony hills and scree slopes;
3. Sand dunes and sandy soils;
4. River channels;
5. Shrublands and woodlands in drainage channels;
6. Clayey or silty soils; and
7. Claypans.

Table 2. Map symbol, vegetation unit and landform (Martinick and Associates 1987).

Symbol	Vegetation Unit	Landform
WOODLANDS		
C	Drainage line Woodland of *Corymbia opaca*	Minor drainage lines
D	Woodland of *Eucalyptus camaldulensis*	Larger river channels
SHRUBLANDS[1]		
I	*Acacia dictyophleba* Shrubland over *Triodia basedowii* and *Triodia pungens*	Drainage lines on flat ground where is outwash from hills
R	Mulga Shrubland	Wash away on edge of river
STEPPES		
A	Hummock Grass Steppe[2] dominated by *Triodia wiseana*	Stony hills
F1	*Acacia ancistrocarpa* and *Acacia ligulata* over *Triodia basedowii*	Flat plains
F2	*Acacia retivenia* Shrub Steppe[i] over *Triodia wiseana*	Stony hills
F3	*Acacia inaequilatera* Shrub Steppe over *Triodia basedowii* and *Triodia pungens*	Low lying areas with slightly clayey soil
F4	Mixed Low Shrub Steppe over *Triodia basedowii*	Flat plains
F8	*Grevillea/Acacia* Shrub Steppe over mixed *Triodia* species on sand	Flat areas of sandy soils
F9	*Acacia dictyophleba* Shrub Steppe over *Triodia basedowii*	Flat plains
F10	*Acacia wanyu* Shrub Steppe over *Triodia wiseana*	Scree slopes, lower slopes of stony hills
G	Open Shrub Steppe over *Triodia basedowii*	Flat plains
MALLEE STEPPE		
O	Mallees of *Eucalyptus odontocarpa* over *Triodia basedowii*	Flat area of sandy soil
TREE STEPPE		
B	Trees of *Eucalyptus brevifolia* over *Triodia wiseana*	Stony hills

[1] Shrubland – Shrubs 1.5-4m tall with a cover of 20-40%
[2] Grass steppe – Varies from almost pure *Triodia* species to Shrub steppe

GRASSLAND		
L	Grassland[3]	Small areas below scree slopes
Symbol	**Vegetation Unit**	**Landform**
SHRUB SAVANNA[4]		
H	Sennas over grass	Low lying areas
SCRUBS		
E	Chenopod Dwarf Scrub	Low lying areas adjacent to claypans
COMPLEXES		
J	Sand dunes	Sand dunes
K	Claypans with little or no vegetation	Claypans with impeded or internal drainage
M	Sparse shrubs on clay soils	Low lying areas of impeded drainage
N	Drainage lines of *Acacia* and other scrubs over *Triodia pungens*	Drainage lines in stony hills or as outwash channels
P	Bare Stony Slope	Scree slope below stony hill
Q	White quartzite scree slopes	Apron around stony hills

Often in mapping Dr Hart would indicate that a complex of more than one unit occurred together eg. F1/F4. One of the vegetation units mapped by Martinick and Associates (1987) , *Acacia dictyophleba* Shrubland, Symbol I, was not recorded within the lease area so is not included in the table above. It is recorded close to but east of the lease. *Acacia dictyophleba* was a common shrub within the survey area

3.4 Conservation Significance

The conservation significance of flora and ecological communities is classified at a Commonwealth, State and Local level on the basis of various Acts and Agreements (EPA *Guidance Statement No. 51*, EPA 2004).

Commonwealth Level:

- *EPBC Act 1999*: The Department of the Environment, Water, Heritage and the Arts (DEWHA) lists Threatened Flora and Ecological Communities, which are determined by the Threatened Species Scientific Committee according to criteria set out in the Act (DEWHA 2010). The Act lists flora that are considered to be of conservation significance under one of six categories.

State Level:

- *Wildlife Conservation Act 1950*: At a State level, native flora species are protected under the *Wildlife Conservation Act 1950 - Wildlife Conservation (Rare Flora) Notice.* A number of plant species are assigned an additional level of conservation significance based on a limited number of known populations and the perceived threats to these locations. Species of the highest conservation significance are gazetted Declared Rare Flora (DRF) under subsection 2 of section 23F of the *Wildlife Conservation Act 1950.* It is an offence to take or damage DRF without Ministerial approval. Section 23F of the *Wildlife Conservation Act* (1950) defines 'to take' as "to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means" (Department of Environment and Conservation, 2010a).
- DEC Priority list: DEC produces a list of Priority species and ecological communities (PEC's) that have not been assigned statutory protection under the *Wildlife Conservation Act 1950.* Priority Flora are under consideration for declaration as 'Rare Flora', classified as in urgent need of further survey (Priority One to Three) or require monitoring every 5-10 years (Priority Four). The list of Priority Ecological Communities identifies those that need further investigation before nomination for Threatened Ecological Community status (Table 3).

[3] Grassland – Dominated by non-*Triodia* species
[4] Shrub savannah – Shrubs and grasses present but dominated by non- *Triodia* species

Local Level:

- Species may be considered of local conservation significance because of their patterns of distribution and abundance. Although not formally protected by legislation, such species are acknowledged to be in decline as a result of threatening processes, primarily habitat loss through land clearing.

3.4.1 Significant Flora

Prior to the field work being undertaken a search of the Department of Environment and Conservation Rare Flora Database was undertaken within the area, 22^0 00' - 23^0 00' S and 121^0 00' - 123^0 00' E (GDA94). This resulted in five Priority 1 Flora, seven Priority 2 Flora, fourteen Priority 3 Flora and three Priority 4 Flora, which are listed in Table 5.

Table 3 presents the definitions of Declared Rare and the four Priority Flora ratings under the Wildlife Conservation Act (1950) as extracted from Department of Environment and Conservation (2010a). Table 4 presents the definitions of the threatened species under the Environmental Protection and Biodiversity Conservation Act, 1999 (Department of the Environment, Water, Heritage and the Arts, 2010).

Table 3. State Level - Code and description of Rare and Priority Flora

Code	Code Declared Rare and Priority Flora Categories
R	DRF (Declared Rare Flora) -Extant Taxa. Taxa, which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection.
X	DRF (Declared Rare Flora) -Presumed Extinct Taxa. Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently.
1	Priority One -Poorly Known Taxa. Taxa, which are known from one or a few (generally <5) populations, which are under threat.
2	Priority Two -Poorly Known Taxa. Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat.
3	Priority Three -Poorly Known Taxa. Taxa, which are known from several populations, at least some of which are not believed to be under immediate threat.
4	Priority Four -Rare Taxa. Taxa which are considered to have been adequately surveyed and which whilst being rare, are not currently threatened by any identifiable factors.

Table 4. Commonwealth Level - Categories of Threatened Flora Species (Environmental Protection and Biodiversity Conservation Act, 1999)

Code	Code Declared Rare and Priority Flora Categories
Ex	Extinct Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of this species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa which at any particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	Endangered Taxa, which is not critically endangered, and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with

	the prescribed criteria.
Code	**Code Declared Rare and Priority Flora Categories**
CD	Conservation Dependent Taxa which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Table 5. Prioirity Flora listed for the area, 22^0 00' - 23^0 00' S and 121^0 00' - 123^0 00' E (GDA94) with a description extracted from Western Australian Herbarium (2010a)

STATUS	TAXON	DESCRIPTION
1	*Halosarcia* sp. Yanneri Lake (S.van Leeuwen 3002)	Erect shrub, 1 m high, bulbous swollen succulent stems, red, blue, purple. Fl. Oct. White brown gritty loam over calcrete. Low-lying, calcareous salt flat with open scrub.
1	*Lepidium amelum*	Erect, spreading shrub, 0.3–1 m high, plants glabrous; leaves sessile, stem-clasping. Fl. white, May–Aug. Sandy loams & stony, calcareous, alkaline soils. Hummock grassland, low open woodland, disturbed sites.
1	*Philotheca eremicola*	Shrub, ca 0.4 m high, leaves congested, narrowly fusiform, ca 2.5 mm long, glabrous, glossy; sepals with brown glands. Red skeletal laterite. Rocky slopes in shrubland.
1	*Ptilotus tetrandrus*	Annual, herb, 0.15–0.3 m high. Fl. Oct. Loamy sand.
1	*Stackhousia clementii*	Dense broom-like perennial, herb, to 0.45 m high. Fl. green, yellow, brown. Skeletal soils. Sandstone hills.
2	*Acacia auripila*	Tree, to 3 m high, bark grey & fissured. Fl. yellow, Aug. Rocky quartz soils. Hillsides, gullies.
2	*Dampiera atriplicina*	Spreading, robust shrub, to 0.5(–1.2) m high. Fl. pink, May–Jul. Red sand. Sand ridges.
2	*Eremophila revoluta* ms	Shrub, 0.25–0.8 m high. Fl. blue, purple, Jul–Aug. Rocky clay, red sand. Rocky hills & plains, sandplains.
2	*Gonocarpus ephemerus*	Procumbent annual or perennial, herb, 0.07–0.5 m high. Fl. yellow, red, Aug. Sand. Along drainage lines.
2	*Goodenia hartiana*	Erect to spreading, multistemmed perennial, herb or shrub (sub-shrub). Fl. blue, purple, Aug – Sep. Sand. Sand dune swales, sandhills.
2	*Goodenia virgata*	Ascending to erect, virgate perennial, herb, to 0.4 m high. Fl. yellow, Jul. Red sandy loam. Near salt pans.
2	*Thysanotus* sp. Desert East of Newman (RP Hart 964)	Self supporting perennial, herb (with tuberous roots), distinguished by the long, equal anthers and pseudo-cymose branching. Fl. Aug–Oct. Red-brown loamy sand or red sand, sometimes silty. Sand plain, pisolitic buckshot plain.
3	*Acacia bromilowiana* ms	No information provided.
3	*Bulbine pendula* ms	Upright annual, herb, to 0.1 m high, with succulent foliage. Cracking clay pan. Margins of tracks, tussock grassland.
3	*Calandrinia porifera*	Prostrate herb. Fl. pink, Sep. Granite rocks.
3	*Comesperma pallidum*	Erect shrub, 0.7–2 m high. Fl. yellow, cream, purple, May–Aug. Red sand. Sandplains & dunes.
3	*Daviesia arthropoda*	Spiny, bushy shrub, to 1 m high. Fl. yellow, brown. Dunes.
3	*Fimbristylis sieberiana*	Shortly rhizomatous, tufted perennial, grass-like or herb (sedge), 0.25–0.6 m high. Fl. brown, May–Jun. Mud, skeletal soil pockets. Pool edges, sandstone cliffs.
3	*Frankenia glomerata*	Prostrate shrub. Fl. pink, white, Nov. White sand.
3	*Fuirena incrassata*	Annual, grass-like or herb (sedge), 0.1–0.3 m high, perianth of 3 bristles and 3 clawed scales; scales 3-veined in basal part and thickened distally. Fl. May–Aug. Sand, sandy clay. Swamps, creek beds, claypans, semi-saline lakes.
3	*Gonocarpus pycnostachyus*	Erect annual, herb, 0.1–0.15 m high. Fl. green, red. Sand or clay soils. Wet depressions, granite rocks.

3	*Goodenia modesta*	Herb, to 0.5 m high. Fl. yellow, Jan–Dec. Red loam, sand.
STATUS	**TAXON**	**DESCRIPTION**
3	*Goodenia pascua*	Ascending to erect herb, to 0.5 m high. Fl. yellow, May–Aug. Red sandy soils. Basaltic plains.
3	*Goodenia purpurascens*	Erect perennial or annual, herb, 0.1–0.3 m high. Fl. blue, purple, white, yellow, Jan/Apr–Jun/Sep/Dec. Clay, mud. Swamps & seasonally wet depressions.
3	*Mimulus repens*	Prostrate annual or perennial, herb. Fl. blue, purple, Aug–Nov. Sand, clay. Margins of lakes & watercourses.
3	*Sauropus arenosus*	Spreading shrub, 0.5–1 m high. Fl. yellow, green, red, pink, May. Red sand dunes.
4	*Acacia balsamea*	Rounded or infundibular shrub, 1–2.5 m high. Red earth & gravel. Rocky hills, granite breakaways.
4	*Comesperma viscidulum*	Shrub, to ca 0.7 m high.
4	*Ptilotus mollis*	Compact, perennial shrub, to 0.5 m high, soft grey foliage. Fl. white, pink, May/Sep. Stony hills and screes.

3.4.2 Significant Ecological Communities

The potential threatened ecological communities that occur in the Pilbara were checked on the website of the Department of Environment and Conservation (2010c). Two Threatened Ecological Communities are listed for the Pilbara Region but neither occur in the vicinity of Kintyre. Twenty nine Priority Ecological Communities are listed for the Pilbara of which one: 'Riparian vegetation including phreatophytic species associated with creek lines and watercourses of Rudall River. It occurs in the semi permanent pools along courses of Rudall River. Threats: weed invasion, altered hydrological flows, inappropriate fire regimes.' This is listed as Priority 3 PEC.

Priority 3 communities are known ecological communities

(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or;
(ii) communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;
(iii) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes.

Although not listed as Threatened or Priority Ecological Communities, Kendrick (2001) listed three wetland vegetation units for the Little Sandy Desert Bioregion. These are:

(i) Upper Rudall River draining into Lake Dora;
(ii) Small permanent rockhole wetlands associated with hills and ranges; and
(iii) Small artificial water sources constructed along the Canning Stock Route.

In addition Kendrick (2001) listed the Beard vegetation units, which are of reservation priority in this bioregion (Table 6).

Table 6. Reservation Priority of Beard Vegetation Units

Beard Veg Code	Ecosystem Description	Reservation Priority
39	Shrubland, mulga scrub	H
98	Hummock grasslands, shrub steppe; kanji over soft spinifex and *Triodia basedowii*	L
99	Hummock grasslands, shrub steppe; *Acacia coriacea* and hakea over *Triodia basedowii*	L
117	Hummock grasslands, shrub steppe; soft spinifex	L

125	Bare areas, salt lakes	H
Beard Veg Code	**Ecosystem Description**	**Reservation Priority**
134	Mosaic; Hummock grasslands, open tree steppe; desert bloodwood and feathertop spinifex (on) sandhills/Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills	H
136	Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills	M
152	Hummock grasslands, shrub steppe; soft and hard spinifex, soft spinifex	M
157	Hummock grasslands, shrub steppe; Hard spinifex *Triodia wiseana*	M
1251	Low woodland; coolabah and paperbark (*Melaleuca* sp.)	H

H = High Priority; M = Moderate Priority; L = Low Priority

4. METHODS

The remnant vegetation in the area was surveyed using the methods set out in the EPA Guidance No 51 (2004). Tracks were driven and transects walked through the bushland and all vegetation variations noted by Hart Simpson and Associates Pty Ltd (1994) within the proposed exploration and infrastructure areas were targeted.

Permanent 50m x 50m quadrats were set up using a compass and oriented due N,S,E,W, with one (1) peg left at the NW corner. Where the remnant bushland was very narrow (eg along creeks) a strip quadrat was surveyed. Where this method was used is indicated in the quadrat data in Appendix B. Quadrats were placed to record the variation at the site. All species, including weeds were recorded. The vegetation, flora and weed surveys were conducted concurrently. This method was endorsed by S. Van Leeuwen, the DEC person responsible for botanical surveys within the Pilbara Region (email received 20/04/2010). For each quadrat the following was recorded in the field:

- GPS reading (WGS84, equivalent to Geocentric Datum of Australia 1994 (GDA94) at NW corner;
- Digital photograph taken at the NW corner;
- Soil type;
- Presence, size and type of any outcropping rocks;
- Topography – eg. Ridge, upper slope, middle slope, lower slope, drainage line, minor creek, major creek, wetland;
- Aspect where this is applicable;
- Vegetation condition using the scale of Keighery (1994);
- Presence of any Declared Rare or Priority Flora or other significant flora;
- Additional information including dieback, age since fire, predators, erosion, weeds, grazing, tracks etc.; and
- All species were listed together with their percentage cover within the quadrat and average height.

The nearby area outside of the quadrat was also surveyed to record additional (opportunistic) species for that vegetation unit. In addition where the same vegetation unit was recorded any additional taxa were added to the flora list. These additional locations are listed in Appendix B with the suffix A, B, C, D etc.

All species unknown in the field were collected, pressed and identified later using appropriate keys and by comparison with collections housed at the Western Australian Herbarium. A collection of each Rare or Priority Flora seen was made and forms completed and sent to the Rare Flora section of the Department of Conservation and Land Management. The pressed and dried specimens will be sent to the Western Australian Herbarium for inclusion in their collection.

5. RESULTS

The results are a combination of the 2 surveys. Field work was undertaken between 25th June and 4th July inclusive in 2007 and between 27th April and 4th May 2010. Good rainfall had been recorded prior to April and May 2007, but none before the 2010 survey. The area was very dry and a hot burn had occurred through the lease. A total of 112 permanent quadrats, 42 in 2007 and 70 in 2010 were established. The number of taxa recorded in 2010 for each quadrat was much lower than in 2007 due to the lack of rainfall in the area resulting in fewer plants and many of those disintegrating beyond recognition. In the few areas where the native vegetation had not been ravaged by fire the number of taxa recorded was higher.

5.1 Vegetation Associations

Hart Simpson and Associates Pty Ltd (HSA) undertook detailed vegetation mapping (See Appendix C). He described the vegetation units at the site using the format of Beard (1975). All the different vegetation complexes identified by HSA were targeted for the placement of quadrats. In Table 7 the vegetation complexes of Hart Simpson are listed together with the placement of quadrats surveyed in 2007 and 2010 by Bennett Environmental Consulting PL.

Table 7. Placement of quadrats in Hart Simpson Associates Mapping Units

HART SIMPSON ASSOCIATES Pty Ltd		BENNETT ENVIRONMENT CONSULTING Pty Ltd QUADRATS
VEGETATION COMPLEXES	**MAP SYMBOL**	
Woodlands		
1. *Corymbia opaca* Woodland	C	KIN44, KIN53, KIN91, KIN96
2. Riverine Woodland	D	KIN15, KIN27, KIN109
Shrublands		
1. *Acacia dictyophleba* Shrubland	I	Outside
2. *Acacia aneura* Shrubland	R	KIN73
Steppes		
1. Hummock Grass Steppe	A	KIN01, KIN04, KIN09, KIN25, KIN47, KIN85
2. *Acacia ancistrocarpa* and *Acacia ligulata* Shrub Steppe	F1	KIN03, KIN20, KIN24, KIN31, KIN32, KIN33, KIN41, KIN42, KIN48, KIN67, KIN94, KIN101
3. *Acacia retivenia* Shrub Steppe	F2	KIN17, KIN70
4. *Acacia inaequilatera* Shrub Steppe	F3	KIN06, KIN22, KIN36, KIN86, KIN89
5. Mixed Low Shrub Steppe	F4	KIN11, KIN13, KIN46, KIN50, KIN51, KIN106, KIN107
6. *Grevillea/Acacia* Shrub Steppe	F8	KIN40, KIN66, KIN112
7. *Acacia dictyophleba* Shrub Steppe	F9	KIN14, KIN21, KIN29, KIN35, KIN52, KIN55, KIN56, KIN57, KIN59
8. *Acacia wanyu* Shrub Steppe	F10	KIN39, KIN99
9. Open Shrub Steppe	G	KIN60, KIN110
10. Mallee of *Eucalyptus odontocarpa*	O	KIN30, KIN74
11. Tree Steppe of *Eucalyptus leucophloia*	B	KIN10, KIN45, KIN62,KIN69
Grasslands		
1. *Xerochloa laniflora* Grassland	L	KIN84
Scrubs		
1. Chenopod Dwarf Scrub	E	KIN79
Shrub Savanna	H	KIN18, KIN19, KIN54, KIN58, KIN76, KIN87, KIN95
Complexes		
1. Sand Dune Complex	J	KIN05, KIN07, KIN08, KIN12, KIN16, KIN61, KIN65, KIN111
2. Claypan Complex – little or no vegetation	K	KIN34, KIN78, KIN81
3. Sparse shrubs on clay soils	M	, KIN68, KIN71, KIN72

HART SIMPSON ASSOCIATES Pty Ltd		BENNETT ENVIRONMENT CONSULTING Pty Ltd QUADRATS
VEGETATION COMPLEXES	MAP SYMBOL	
4. Drainage Line Complex	N	KIN02, KIN26, KIN37, KIN43, KIN92, KIN102, KIN105
5. Bare Stony Slope	P	No quadrat placed in this unit
6. White Quartzite Scree Complex	Q	KIN23, KIN28, KIN83, KIN100, KIN103
Overlap of Complexes	F1/F9	KIN38, KIN75
	F3/M	KIN49, KIN90, KIN93
	H/M	KIN97, KIN98
	F1/G	KIN63
	H/K	KIN64
	E/H/K	KIN77
	K/F3	KIN80
	F9/F4	KIN82
	F1/F3	KIN88
	H/F	KIN104
	F1/F4	KIN 19A, KIN21, KIN108

In the 2007 survey quadrat KIN11 was completely degraded being a Closed Tussock Grassland of **Cenchrus ciliaris*. In 2010 that area had been included in the development of the accommodation and associated infrastructure.

5.2 Vegetation Associations

The vegetation unit of each quadrat recorded during the survey is described using the vegetation layers given in Table 8. The descriptions use that developed by Trudgen for work undertaken in the Pilbara Region of Western Australia.

Table 8. Vegetation Classification (from Trudgen, 2002)

LIFE FORM/ HEIGHT CLASS	CANOPY COVER				
	DENSE 70 % - 100%	MID DENSE 30% - 70%	SPARSE 10% - 30%	VERY SPARSE 2% - 10%	SCATTERED <2%
Trees >30 m	High Closed Forest	High Open Forest	High Woodland	High Open Woodland	Scattered Tall Trees
Trees 10-30 m	Closed Forest	Open Forest	Woodland	Open Woodland	Scattered Trees
Trees <10	Low Closed Forest	Low Open Forest	Low Woodland	Low Open Woodland	Scattered Low Trees
Shrubs > 2 m	Closed Scrub	Open Scrub	High Shrubland	High Open Shrubland	Scattered Tall Shrubs
Shrubs 1 - 2 m	Closed Heath	Open Heath	Shrubland	Open Shrubland	
Shrubs < 1 m	Low Closed Heath	Low Open Heath	Low Shrubland	Low Open Shrubland	
Herbs/Sedges/Grasses	Closed Herb, Sedge, *Grassland	Herb, Sedge, *Grassland	Open Herb, Sedge, *Grassland	Very Open Herb, Sedge, *Grassland	Scattered Herbs, Sedges, Grasses
Ferns	Closed Ferns	Ferns	Open Ferns	Very Open Ferns	
Mosses, liverworts	Closed Mosses	Mosses	Open Mosses	Very Open Mosses	

*Grasslands are then divided into:

- Tussock Grasslands (Perennial tussock species) eg *Eragrostis* species
- Hummock Grasslands (*Triodia* and *Plectrachne* species that form hummocks)
- Curly Spinifex Grasslands (*Plectrachne pungens*) that does not form hummocks
- Annual Tussock Grassland (eg annual *Sorghum* species)

The vegetation associations recorded from the survey area is recorded below. Detailed information for each quadrat is provided in Appendix B and their location is mapped in Appendix C.

i Hillsides

Three distinct hillside vegetation associations recorded.

- The northern hillsides, around the proposed exploration camp site were basically covered in *Triodia epactia* and *Triodia wiseana*. On some slopes spindly shrubs of *Acacia pyrifolia* were recorded. This vegetation was recorded from KIN01, KIN04, KIN28, KIN69and KIN83.
- Open Heath dominated by *Acacia retivenea* over Hummock Grassland of *Triodia* species with rocks of quartzite and schistose rocks. This was represented by quadrat KIN17, KIN47 and KIN70.
- Woodland of *Eucalyptus leucophloia* over Scattered Herbs of *Ptilotus calostachyus* and Scattered Grasses of *Eriachne mucronata* or Hummock Grassland of *Triodia pungens*. This was represented by KIN45 and KIN62.
- Low Open Shrubland of *Indigofera monophylla* and *Senna glutinosa* subsp. *glutinosa* over Open Herbs dominated by *Cleome viscosa* and *Boerhavia gardneri* over Grassland dominated by *Triodia pungens*. This was represented by KIN85.

ii Scree at the base of hills

Three distinct vegetation associations were recorded. All were recorded from quartzite scree slope and outcropping schist lower slopes.

- Low Shrubland of *Eremophila tietkensii*. This vegetation was open with the main cover being of small rocks. It was recorded from KIN23.
- Open Shrubland of *Acacia wanyu* over Low Shrubland of *Eremophila tietkensii* over Hummock Grassland of *Triodia pungens.* It was recorded from KIN38 and KIN99.
- High Open Shrubland of *Acacia synchronicia* over Low Open Shrubland dominated by *Eremophila tietkensii* over Grassland of *Triodia wiseana.* It was recorded from KIN100.
- Open Shrubland of *Acacia robeana* over Very Open Tussock Grassland of *Triodia angusta*. It was recorded from KIN103.

iii Sand dunes

The sand dunes were all low, only rising slightly above the level of the plain. Typically they included a greater number of taxa than the rocky soils with *Triodia schinzii* typically the dominant grass usually in association with *Triodia basedowii*. This vegetation association was represented by quadrats KIN07, KIN08, KIN16, KIN61 and KIN65.

iv Red sandy soils - Flat

This group of quadrats varied only slightly from the sand dunes as they also included several other taxa. The main variation was in the depth of the sand, although *Triodia basedowii* tended to be more dominant than in the sand dune quadrats. In several of the areas *Acacia acradenia* formed dense stands and was typically associated with *Acacia ligulata* (especially on the eastern side of the lease) and *Acacia dictyophleba*. The main variation observed was in the dominant taxa as illustrated below.

- *Acacia inaequilatera* dominant as observed at KIN22, KIN24, KIN36M KIN 50, KIN51, KIN86, KIN89, KIN90, and KIN98.
- *Acacia dictyophleba* dominant as observed at KIN14, KIN29, KIN52, KIN55, KIN59, KIN63, and KIN108.
- *Acacia ancistrocarpa* dominant but not in monoculture stands but typically associated with *Acacia ligulata*, *Acacia dictyophleba* and *Acacia inaequilatera.* This was observed at KIN03, KIN05, KIN06, KIN09, KIN10, KIN11, KIN12, KIN13, KIN21, KIN25, KIN31, KIN32, KIN33, KIN46, KIN48, KIN49, KIN67, KIN75, KIN82, KIN88, KIN94, KIN97, KIN101, KIN106 and KIN107.
- *Acacia ligulata* dominant as observed at KIN64.
- *Acacia melleodora* dominant as observed at KIN111 and KIN112.
- *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii* as represented by quadrat KIN39.
- *Senna* taxa dominant as observed at KIN18, KIN19, KIN41, KIN42, KIN54, KIN58, KIN93, KIN95 and KIN104.
- *Grevillea* taxa dominant as observed at KIN40, and KIN66.
- *Hakea lorea* over *Triodia basedowii* as observed at KIN56 and KIN57.

- Grassland of *Triodia basedowii* as observed at KIN60, KIN71 and KIN110.

v. Lower Slope Above Creek

- Low Open Forest of *Acacia aneura* subsp. *macrocarpa* as observed at KIN73.
- Low Open Woodland of *Eucalyptus odontocarpa* as observed at KIN30 and KIN74.

vi. Drainage lines

In the field however the vegetation could be divided into that occurring on:

- Hill sides

Open Shrubland of *Acacia* species sometimes dominated by *Acacia retivenea* over Low Open Heath of *Tephrosia rosea* var. *rosea* over Open Grassland of mixed taxa. This was represented by quadrat KIN92 and KIN102.

- Scree at base of hills

1) Low Open Woodland of *Eucalyptus leucophloia* over Open Scrub of *Acacia retivenea* and *Grevillea wickhamii.* This was represented by quadrat KIN26.
2) Open Scrub of *Acacia acradenia* and *Grevillea wickhamii* over Low Open Heath of *Keraudrenia velutina* subsp. *elliptica* and Hummock Grassland of *Triodia pungens.* This was represented by quadrat KIN37.

- Drainage lines at the base of hills

1) Open Scrub of *Acacia eriopoda* and *Acacia ancistrocarpa* over Tussock Grassland *Eriachne* species or Hummock Grassland of *Triodia pungens*. This was represented by quadrat KIN35.
2) Open Scrub of *Acacia ancistrocarpa* and *Grevillea wickhamii* over Hummock Grassland of *Triodia pungens*. This was represented by quadrats KIN02 and KIN20.
3) High Open Shrubland of *Acacia eriopoda* and *Grevillea wickhamii* over Open Grassland of *Triodia schultzii* and *Triodia pungens*. This was represented by quadrat KIN43.

- Red sandy soils – flat ground

1) Open Heath of *Acacia colei* over Annual Tussock Grassland. This was represented by quadrat KIN105.
2) Open Scrub of *Acacia adsurgens* over Hummock Grassland of *Triodia pungens.* This was represented by quadrat KIN72.

vii Creek lines

This includes the creek and the banks above the creek.

- Within the creeks itself the vegetation was a High Open Woodland of *Eucalyptus camaldulensis* over Annual Tussock Grassland of several taxa including *Sorghum plumosum*. All banks of the creek were dominated by **Cenchrus ciliaris*, possibly due to distribution by flood waters, camels, donkeys and kangaroos. This was represented by quadrats KIN15, KIN27 and KIN109.
- On the floodplain above the banks the vegetation was Low Open Woodland of *Corymbia opaca* over Grassland dominated by **Cenchrus ciliaris* and *Sorghum plumosum*. All the areas where this vegetation was recorded the weed **Cenchrus ciliaris* was an understorey dominant. This was represented by KIN44, KIN53, KIN91 and KIN96.

viii Claypans

Claypans were dominant towards the northern side of the lease.

- Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa* over bare ground. This was represented by quadrat KIN68. There was a marked change in soil and vegetation with the adjoining area represented by quadrat KIN67.
- Low Shrubland dominated by *Tephrosia brevidens* over Very Open Herbs dominated by *Heliotropium corymbosum* over Tussock Grassland dominated by *Chrysopogon fallax*. This was represented by quadrat KIN76.
- Open Grassland of *Xerochloa laniflora* and *Dactyloctenium radulans*. This was represented by quadrats KIN77.
- Tussock Grassland of **Cenchrus ciliaris, Aristida inaequilatera, Xerochloa laniflora* and *Eragrostis eriopoda* as represented by quadrat KIN84.
- Areas of nearly bare ground. These areas were observed in 2010 but in the 2007 survey a herbfield with occasional scattered shrubs of *Acacia inaequilatera* and *Acacia acradenia* was recorded at quadrat KIN34. Although it had commenced to dry off at the time

of the survey a diversity of annual taxa was recorded. It is anticipated that these areas of bare ground would be similar after good rainfall.

- Shrubland of *Eremophila forrestii* subsp. *forrestii* over Low Open Shrubland dominated by *Sclerolaena* species over Annual Tussock Grassland of *Aristida contorta*. Occasional shrubs of *Acacia inaequilatera* were present. This vegetation was recorded from quadrats KIN79, KIN80.
- Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Tussock Grassland dominated by **Cenchrus ciliaris.* This was represented by quadrat KIN81and KIN87.
- Low Open Shrubland of *Sclerolaena* species as recorded from quadrat KIN78.

5.3 Vegetation Condition

The vegetation condition recorded for each of the quadrats is included in Appendix B.

Table 9. Explanation of Vegetation Condition Rating (Keighery, 1994)

Rating	Description	Explanation
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure covers repeated fire, aggressive weeds, dieback, logging, grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure covers frequent fires, aggressive weeds at high density, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure includes frequent fires, presence of very aggressive weeds, partial clearing, dieback and grazing.

Table 10 provides a summary of the vegetation condition recorded using the vegetation rating provided in Table 9. Due to fire frequency and severity and presence of feral animals the highest rating that could be applied was 2, excellent.

Table 10. Vegetation Condition recorded during the survey

Rating	Description	Quadrat Reference
2	Excellent	KIN01, KIN02, KIN03, KIN06, KIN07, KIN08, KIN14, KIN16, KIN17, KIN18, KIN19, KIN20, KIN21, KIN23, KIN24, KIN25, KIN26, KIN27, KIN28, KIN29, KIN30, KIN35, KIN37, KIN38, KIN39, KIN40, KIN41, KIN42, KIN45, KIN47, KIN60, KIN62, KIN78, KIN79, KIN82, KIN89, KIN94, KIN99, KIN100, KIN103, KIN107
2-3	Excellent to very good	KIN04, KIN05, KIN12, KIN31, HIN32, KIN33, KIN46, KIN50, KIN51, KIN52, KIN57, KIN63, KIN65, KIN66, KIN67, KIN68, KIN69. KIN70, KIN71, KIN74, KIN77, KIN83, KIN85, KIN87, KIN92, KIN97, KIN104, KIN105, KIN111, KIN112
3	Very good	KIN13, KIN43, KIN48, KIN49, KIN55, KIN56, KIN59, KIN61, KIN72, KIN73, KIN75, KIN80, KIN88, KIN90, KIN95, KIN96, KIN101, KIN106, KIN108, KIN110
2-4	Excellent to good	KIN15
3-4	Very good to good	KIN22, KIN44, KIN76, KIN81, KIN91, KIN93, KIN98

4	Good	KIN10, KIN36, KIN 53, KIN54, KIN58, KIN64, KIN84, KIN86, KIN102, KIN109
3-5	Very good to degraded	KIN34
4-5	Good to degraded	KIN09
5	Degraded	KIN11

As there were very few weeds recorded from the site the vegetation condition of the area was typically excellent to very good. There were occasional areas where **Cenchrus ciliaris* was dense and the condition then was degraded to completely degraded but these were typically only small areas, yet this taxon was reasonably common. Several of the tracks to the bores had plants of **Cenchrus ciliaris* along the edges.

Fire through the area appears to be relatively frequent and severe, killing many plants which then regenerate from seed or underground stems. In addition there was evidence of camels and donkeys through the area as evidenced from scats and hoof prints. These animals would eat the plants and assist with the transportation of weeds through the area.

It is essential that with the proposed exploration drilling and future mining of the area that care is taken to ensure additional weeds are not introduced. This should ensure that the very good vegetation condition is retained. Where quadrats established during this current survey occur adjacent to any disturbance, these could continue to be monitored to ensure that the condition is not compromised and that weeds are not introduced.

5.4 Significant Ecological Communities

No Threatened Ecological or Priority Ecological Communities are recorded for the study area. The PEC that occurs in the Rudall River National Park occurs in permanent pools along the river. No pools were recorded along either major creek during the 2010 survey.

Three of the ten Beard (1975) communities listed by Kendrick (2001) as of reservation status for the region were recorded during the surveys. These are:

- Shrubland, mulga scrub which has the Beard Vegetation Code 39. This unit was found in the south eastern area of the lease but in an area not proposed for any development. It was small in area and occurred on a sandy slope above a creek. Quadrat KIN73 was placed in this community (see Appendix B).
- *Triodia wiseana* Grass Steppe on stony hills which has the Beard Vegetation Code 157. Quadrat KIN01 is representative of this community as may be quadrat KIN100 but the latter includes low shrubs.
- Mixed Shrub Steppe between sandhills with *Triodia schinzii* which has the Beard Vegetation Code of 136. Although there are several areas where Triodia schinzii was the dominant grass there was only one quadrat KIN111 where it occurred between sand hills.

5.5 Taxa

A total of 48 vascular plant families, 149 genera and 323 taxa (species, subspecies and varieties) were recorded during the survey. Poaceae (grass family), and Fabaceae (previously Papilionaceae, Caesalpiniaceae and Mimosaceae) were the dominant families with 32 and 16 genera and 60 and 59 taxa respectively. The other dominant family was Malvaceae (previously Sterculiaceae and Malvaceae) with 10 genera and 38 taxa. These 3 families represent 6.2% of the total number of families, 38.9% of the total number of genera and 48.9% of the total number of taxa. Appendix A has the complete list of taxa recorded and Appendix B lists the taxa recorded for each quadrat.

A vegetative wattle with hairy phyllodes was collected from several sites. This was shown to B. Maslin, the researcher of wattles at the Western Australian Herbarium who thinks it may be the juvenile form of *Acacia eriopoda*, regrowing after fire. He requires a flowering collection to determine its status. In this report it is referred to as *Acacia* affin. *eriopoda*. If, when a flowering collection is made and it still has hairy phyllodes it will be a new taxon.

5.6 Significant Taxa

No significant taxa were recorded during the 2010 survey but a Priority 3 taxon, *Comesperma pallidum*, was recorded during the 2007 survey. *Comesperma pallidum* was recorded from KIN06. It was a lax shrub obtaining support from a shrub of *Acacia ancistrocarpa*. One plant only was observed. No photograph was taken of this taxon in the field but the one included in FloraBase (Western Australian Herbarium, 2010a) is indicated below.



Photograph of *Comesperma pallidum* extracted from FloraBase

5.7 Introduced Taxa

A total of 5 weeds were recorded during the current survey. All have been determined as weeds by the Western Australian Herbarium (2010a) and Department of Conservation and Land Management (1999). The rating allocated to each weed by CALM (1999) is based on three criteria:

Invasiveness – ability to invade natural bushland in good to excellent condition or ability to invade waterways;

Distribution – wide current or potential distribution including consideration of known history of wide spread distribution elsewhere in the world; and

Environmental impacts – Ability to change the structure, composition and function of ecosystems. In particular an ability to form a monoculture in a vegetation community.

Ratings indicate the following:

High indicates this weed is prioritised for control and/or research ie prioritising funding to it;

Moderate indicates control or research effort should be directed to it if funds are available, however it should be monitored (possibly a reasonably high level of monitoring);

Mild indicates monitoring of the weed and control where appropriate; and

Low indicates that this species would require a low level of monitoring.

Table 11. Weeds recorded during the survey classified according to CALM (1999)

SCIENTIFIC NAME	COMMON NAME	CALM RATING	INVASIVENESS	IMPACTS
**Cenchrus ciliaris*	Buffel grass	High	✓	✓
**Aerva javanica*	Kapok bush	High	✓	✓
**Citrullus lanatus*	Pie melon	Low		
**Bidens bipinnata*	Beggar's ticks	To be assessed		
**Cucumis melo* subsp. *agrestis*	Melon	To be assessed		

Those weeds rated as high are the ones that should be targetted for removal. Two of the weeds recorded during the survey have not as yet been assessed for their environmental impact.

**Cenchrus ciliaris* was relatively common throughout the area. It was dominant on the edge of the creek lines and where areas had previously been ripped for rehabilitation. The clay pan, which was not adjacent to previous mining acitivity, also recorded dense areas of this taxon. Camels and donkeys are common introduced animals in the area so together with native animals would aid in its dispersal. When exploration drilling occurs it is essential that care be taken to ensure this taxon is not dispersed into areas where it currently does not occur.

**Citrullus lanatus* was recorded in damp soil close to creeks. This plant formed dense areas over the ground with several green and cream mottled, round fruits up to 150mm wide. Several of the fruits had been opened, presumably by donkeys and camels and the seed scattered on the ground.

**Cucumis melo* subsp. *agrestis* was also recorded from several locations. It occurs as scattered plants and nowhere was observed as a dense mass. The elongated fruits of this taxon are characteristic making it readily recognised.

**Aerva javanica* was only recorded from Kintyre Hill in both 2007 and 2010 on hill slopes that had previously been ripped and rehabilitated after preliminary drilling in the 1990's. In the 2007 survey some plants were recorded from KIN11, a degraded site which in 2010 had been developed. This taxon, although common in the Pilbara and Kimberley areas of Western Australia could be readily eliminated from this site. It is imperative that this taxon is not introduced into other areas of the site particularly as the extended drilling programme at the site is due to commence later in 2010. In 2007 there was no track to Kintyre Hill but in 2010 there was a ring road up to the top. Vehicles traverse this road and some preliminary disturbance at the summit prior to further drilling had already occurred when the survey in May 2010 was undertaken. It is essential that this taxon is not spread further over the lease as it appears to be restricted to this hill. Control of this weed should be undertaken.

**Bidens bipinnata* was recorded on the bank of the southern arm of the creek, at several of the locations sampled. This would be very difficult to control as it spread when the creek floods.

In addition **Portulaca oleracea* is listed by FloraBase (Western Australian Herbarium 2010a) as an introduced plant but in Hussey *et.al,* (2007) it is stated that it is regarded as a native in most of the State but as a weed in the southwest. It is not included as a weed in this report.

The area surveyed had previously been drilled and a camp established. When this was closed the disturbed area was ripped and left to rehabilitate naturally. The last area was ripped in March 2002. Generally those ripped areas had regenerated well, but many have encouraged the growth of **Cenchrus ciliaris.* Many of the degraded areas observed in 2007 where previous disturbance areas had been ripped, in 2010 now had the accommodation and associated infrastructure erected. Plants of **Cenchrus ciliaris* were recorded along many of the tracks that had been constructed to bores etc. with the current exploration phase.

Hart Simpson and Associates Pty Ltd also recorded **Pseudognaphalium luteoalbum*, **Emex australis*, **Brassica tournefortii*, **Sonchus oleraceus* and **Mesembryanthemum crystallinum*, none of which were recorded during the 2007 and 2010 surveys.

6. COMPARISON WITH HART SIMPSON AND ASSOCIATES PTY LTD (1994 AND 1997)

The vegetation mapping undertaken by Hart Simpson and Associates Pty Ltd was ground truthed for the areas surveyed. Dr Hart's mapping is very detailed and was accurate but due to fires etc since the original survey some of the vegetation units described were now found to have blended across other vegetation units.

Hart Simpson and Associates Pty Ltd discussed the significance of fire. Dr Hart stated that the burnt and unburnt areas were strikingly different and could be readily distinguished by the size of the *Triodia* plants and height of the shrubs. Most of the taxa at the site are killed by fire and need to regenerate from seed, however when the fire was not severe some *Triodia* plants survived. Some of the units he described were not as distinguishable as he suggested, in particular community M where *Senna* species were dominant. In the eastern and northern areas where he located this community it was not as apparent in 2007 and 2010, yet where it was located in the western and southern areas it was distinctive.

The two degraded quadrats established in 2007, KIN11 and KIN13 were not described by Hart. Quadrat KIN11 was dominated by **Cenchrus ciliaris* but in 2010 that area had been used for the establishment of buildings. Quadrat KIN13 is the old ripped airstrip which was dominated by *Aristida inaequiglumis* and was still undeveloped in 2010.

Hart Simpson and Associates Pty Ltd undertook a detailed vegetation and flora assessment of the whole lease and beyond. The 2007 survey was only of the proposed exploration and development areas at that time but in 2010 the survey of the total lease was completed.

7. DISCUSSION

A large part of the area surveyed in 2007 had previously been drilled and a camp established. When this was closed the disturbed area was ripped and left to rehabilitate naturally, the last occurring in March 2002. Generally those ripped areas had regenerated well, but many have encouraged the growth of **Cenchrus ciliaris.* On the positive side *Triodia* species have regenerated well, even in the harsher rocky soils of the hillsides. Similarly the shrub taxa are also regrowing so with time it would blend well with the surrounding undisturbed vegetation at the site.

In 2010 the current drilling programme had utilised some of the ripped areas, excluding the airstrip, for the establishment of the village and associated roads and infrastructure. Also constructed is an upgraded road into the camp from Telfer which is slightly north of that used in 2007. The track used in 2007 has been closed which is a positive move, as it ensures that the Aboriginal significant site, the claypan, will continue to be protected.

One priority flora, *Comesperma pallidum* a Priority 3 flora was found in 2007 but no additional plants were located in 2010. It was recorded from within the area where it is intended to undertake exploration drilling. Only one plant was located along the transects walked.

The vegetation within the site varied with the rock types and associated soils. Hillslopes with *Acacia retivenea* were only recorded from the southern area of the lease where the rocks were more schistose than in the northern area. *Eucalyptus leucophloia* was recorded on a few hillslopes generally in protected areas on the slopes.

The sandy soils typically included *Triodia basedowii* and *Triodia schinzii* associated with *Acacia ligulata* and *Stylobasium spathulatum*. The latter taxon was more common on the raised dunes rather than on the flatter sandy soils. *Dicrastylis georgei* and *Lachnostachys roseoazurea* were typically associated with the sandy soils across the lease.

The drainage lines recorded varied directly with the taxa located on the adjacent hill slopes and flat areas. As an example *Acacia retivenia* was common in the drainage lines to the south

of the lease but less common in the north of the lease. *Grevillea wickhamii* occurred across all vegetation units and did not appear to be restricted to a specific soil.

Care will need to be taken with any development at the site to ensure that weeds, in particular **Cenchrus ciliaris* and **Aerva peruviana* are not transported into areas where they do not presently occur. The small area of **Aerva peruviana* on Kintyre Hill, which had previously been ripped and left to rehabilitate has now had drilling commenced on this hill. The seed of this taxon is light and fluffy and is readily carried by wind. This taxon should be controlled immediately as the area it occupies is small and drilling rigs etc have already commenced exploratory drilling of the area. A careful check must be made to ensure that this taxon is not spread further. Plants must be removed immediately they are observed. Plants of **Cucumis melo* subsp. *agrestis* were recorded in several locations but it was not a dominant at any of them. Opportunistically removing fruits whenever they are observed should reduce its potential to spread. One area of this taxon observed in 2010 had had the fruits opened and eaten by some animals. None of the weeds were listed as Declared Weeds.

A very hot and destructive fire had burnt most of the site in 2010. Fire has a major impact on the environment as most of the taxa recorded from the site need to regenerate from seed, with only a few suckering from underground stems. *Hakea lorea* is one of the exceptions as it regrows from the underground stem. Driving across *Triodia* plants also kills them so it was excellent to see that tracks to the bores etc had been established with this current exploration phase.

No detailed survey was undertaken outside of the lease area but as the track between the site and the road to Telfer was driven the major vegetation units associated with the sandy soils, sand dunes and rocks were observed to be the same as those at the site.

A comparison was made between the vegetation units of Hart Simpson and Associates Pty Ltd and the quadrats of the current survey. The GPS points of the current survey were provided to Pinpoint Cartographics for placing on the Hart Simpson and Associates Pty Ltd map. This resulted in the plots in Appendix C. Table 2 lists the map symbols used in this map.

All of the units described by Hart and Simpson and Associates Pty Ltd have had permanent quadrats established and taxa recorded. In addition in the mapping Dr Hart included some complexes of different units eg H/K, which indicates that complex has some of the characteristics of Units H, and K. Some of the quadrats over lain on the mapping of Hart are not included in his mapping unit but more closely resembled a different unit, indicating that subsequent fires etc have altered the vegetation.

Acacia aneura was stated by Hart as being restricted in the Pilbara and is also listed as being of conservation consideration by Kendrick (2001). Several stands of Mulga were also observed along the track between Kintyre and Telfer. A few plants of a mallee, *Eucalyptus odontocarpa*, were observed during the 2007 survey but a large stand was recorded in 2010. None of the vegetation units present are listed by the Department of Environment and Conservation (2010b) as Threatened or Priority Ecological Communities.

The variations observed between 2007 and 2010 indicate that time since fire can result in a marked difference in the constitution of the vegetation units.

Although no formal survey was undertaken of the vegetation outside of the area surveyed, it would appear that the same vegetation units are all included in the Rudall River National Park and along the track to Telfer. This is based on observation as the track between the Kintyre site and Talawana track and between Kintyre and Telfer were traversed in the car.

With the proposed development it is essential that care is taken to ensure that weeds are not moved from areas of infestation to those with no or limited weeds, in particular **Aerva peruviana* which currently only occurs in a very small area.

It is recommended that an additional survey be undertaken after a significant rainfall that stimulates growth is recorded. This should result in the recording of additional annual and ephemeral taxa.

8. ACKNOWLEDGEMENTS

Canning Resources is thanked for having one of their staff in the field during the time that the 2007 vegetation survey was undertaken. In 2010, Cameco provided excellent assistance with the provision of transport, advice and location of tracks.

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Colin Reeves is thanked for preparing the Hart vegetation maps and upgrading the datum to WGS84.

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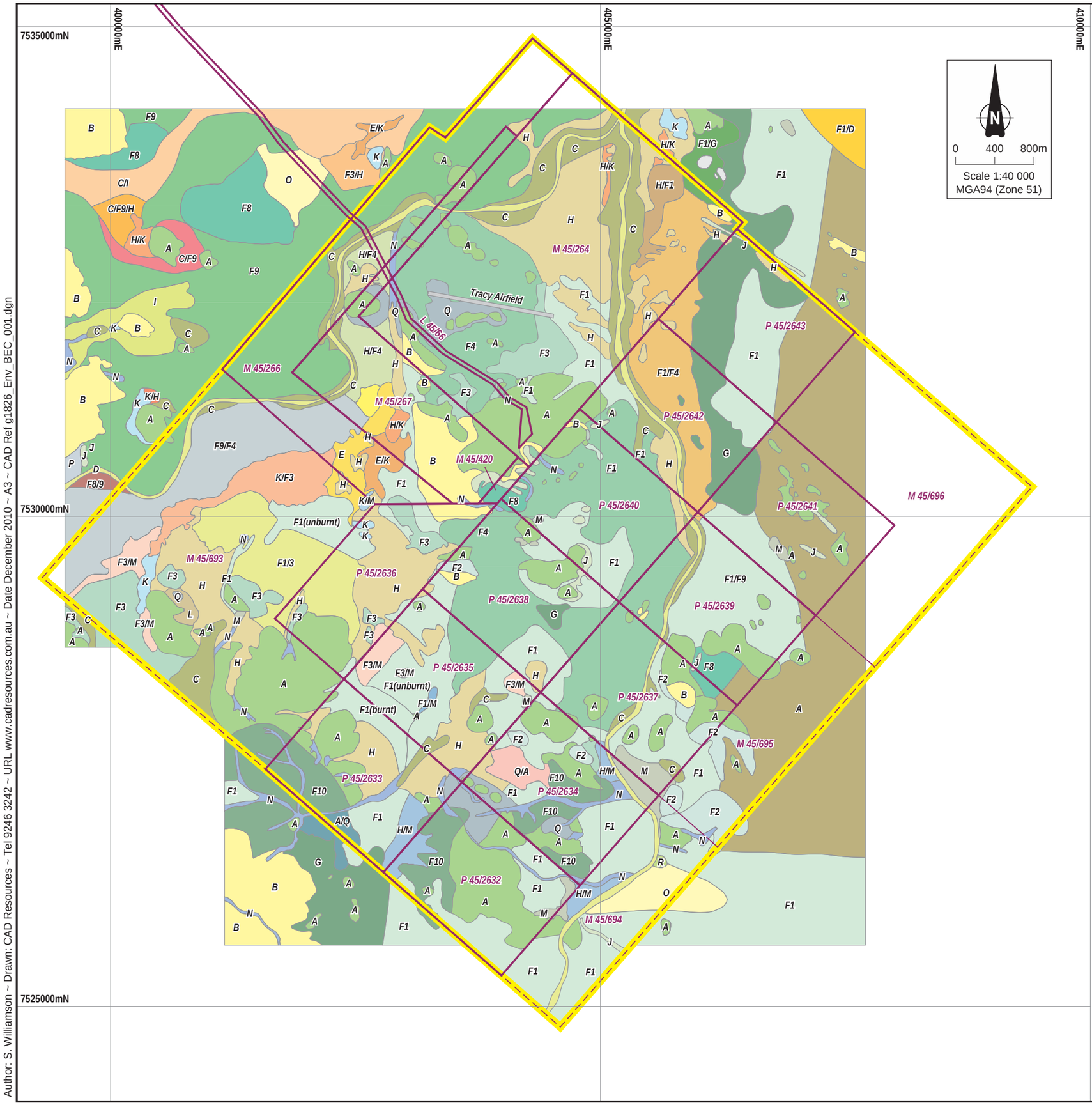

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Cameco

LEGEND

- Live Tenement
- Pending Tenement
- Project Area

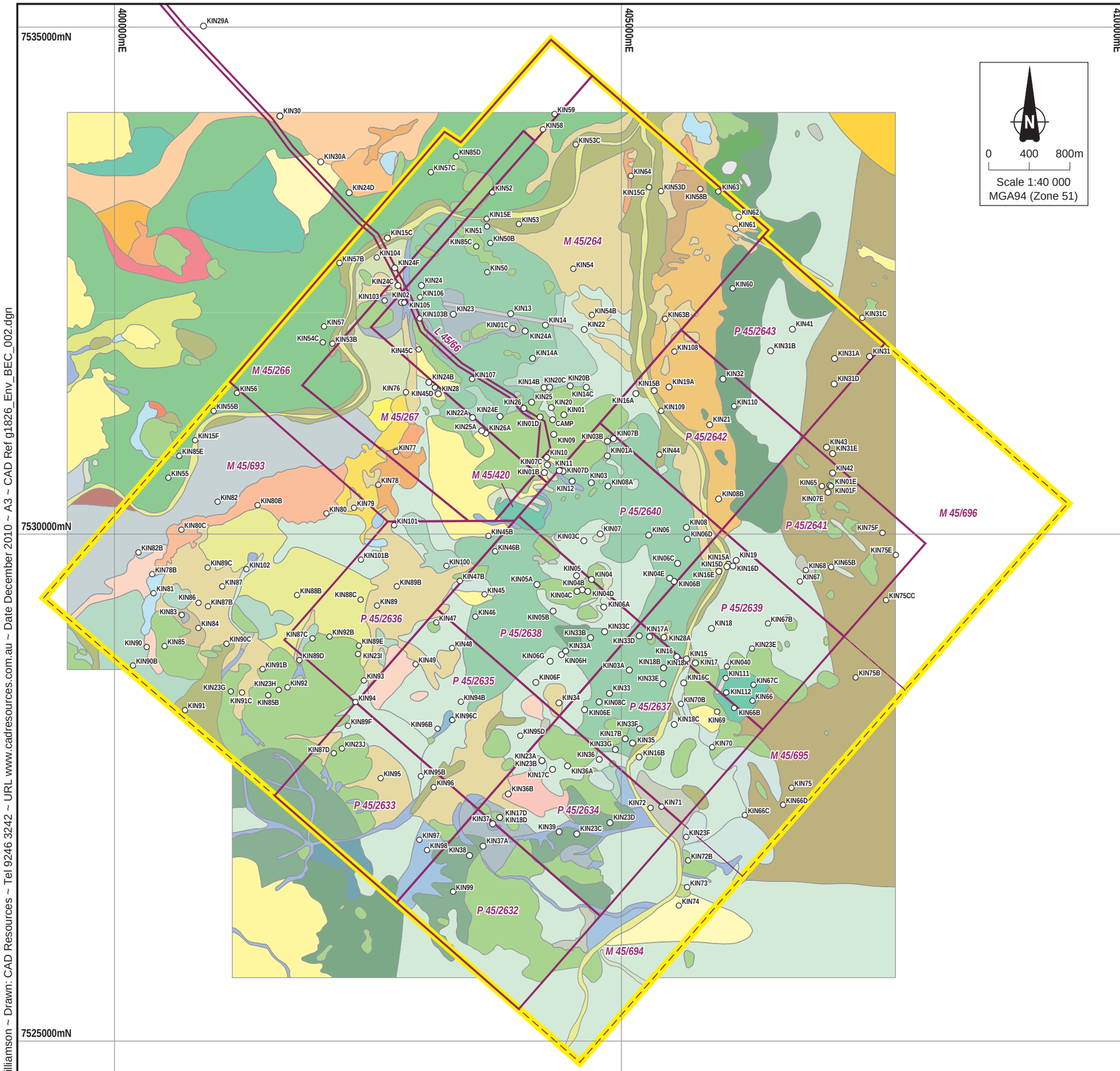
VEG	DESCRIPTION 1	DESCRIPTION 2
C	Woodlands	Woodland of *Eucalyptus centralis*
D	Woodlands	Woodland of *Eucalyptus obtusa* in river channels
I	Shrublands	*Acacia dictyophleba* over the hard spinifex *Triodia basedowii* and the soft spinifex *Triodia pungens*
R	Shrublands	Mulga shrubland
A	Hummock Grass Steppe	Hard spinifex *Triodia wiseana*
F1	Shrub Steppes	*Acacia ancistrocarpa* and *A. ligulata* over the hard spinifex *Triodia basedowii*
F2	Shrub Steppes	*Acacia retivenia* over the hard spinifex *Triodia wiseana*
F3	Shrub Steppes	*Acacia inaequilatera* over the hard spinifex *Triodia basedowii* and the soft spinifex *Triodia pungens*
F4	Shrub Steppes	Mixed low shrubs over the hard spinifex *Triodia basedowii*
F8	Shrub Steppes	Grevillea and Acacia shrubs over mixed spinifex on sand
F9	Shrub Steppes	*Acacia dictyophleba* over the hard spinifex *Triodia basedowii*
F10	Shrub Steppes	*Acacia wanyu* over the hard spinifex *Triodia wiseana*
G	Shrub Steppes	Sparse shrubs over the hard spinifex *Triodia basedowii*
O	Mallee Steppe	Mallees of *Eucalyptus odontocarpa* over the hard spinifex *Triodia basedowii*
B	Tree Steppe	Trees of *Eucalyptus leucophloia* over the hard spinifex *Triodia wiseana*
L	Grasslands	*Xerochloa laniflora* grassland
E	Scrubs	Chenopod dwarf scrub
H	Shrub Savanna	Cassias over grass
J	Complexes	Sand dunes
K	Complexes	Claypans with little or no vegetation
M	Complexes	Sparse shrubs on clay soils
N	Complexes	Drainage lines of Acacia and other shrubs over the soft spinifex *Triodia pungens*
P	Complexes	Bare stony slopes
Q	Complexes	White quartzite scree slopes
	Airfield	Tracy Airfield

Vegetation Mapping by Bennett Environmental Consulting (2010)
Vegetation Mapping Captured by Pinpoint Cartographics

Kintyre Joint Venture Project
Vegetation Units of the Project Area

Author: S. Williamson Date: December 2010

Author: S. Williamson ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ Date December 2010 ~ A3 ~ CAD Ref g1826_Env_BEC_001.dgn



Cameco

LEGEND

- Live Tenement
- Pending Tenement
- Project Area

VEG	DESCRIPTION 1	DESCRIPTION 2
C	Woodlands	Woodland of *Eucalyptus centralis*
D	Woodlands	Woodland of *Eucalyptus obtusa* in river channels
I	Shrublands	*Acacia dictyophleba* over the hard spinifex *Triodia basedowii* and the soft spinifex *Triodia pungens*
R	Shrublands	Mulga shrubland
A	Hummock Grass Steppe	Hard spinifex *Triodia wiseana*
F1	Shrub Steppes	*Acacia ancistrocarpa* and *A. ligulata* over the hard spinifex *Triodia basedowii*
F2	Shrub Steppes	*Acacia retivenia* over the hard spinifex *Triodia wiseana*
F3	Shrub Steppes	*Acacia inaequilatera* over the hard spinifex *Triodia basedowii* and the soft spinifex *Triodia pungens*
F4	Shrub Steppes	Mixed low shrubs over the hard spinifex *Triodia basedowii*
F8	Shrub Steppes	Grevillea and Acacia shrubs over mixed spinifex on sand
F9	Shrub Steppes	*Acacia dictyophleba* over the hard spinifex *Triodia basedowii*
F10	Shrub Steppes	*Acacia wanyu* over the hard spinifex *Triodia wiseana*
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E	Scrubs	Chenopod dwarf scrub
H	Shrub Savanna	Cassias over grass
J	Complexes	Sand dunes
K	Complexes	Claypans with little or no vegetation
M	Complexes	Sparse shrubs on clay soils
N	Complexes	Drainage lines of Acacia and other shrubs over the soft spinifex *Triodia pungens*
P	Complexes	Bare stony slopes
Q	Complexes	White quartzite scree slopes
	Airfield	Tracy Airfield

Vegetation Mapping by Bennett Environmental Consulting (2010)
Vegetation Mapping Captured by Pinpoint Cartographics

Kintyre Joint Venture Project
Vegetation Unit Sites of the Project Area
Author: S. Williamson Date: December 2010

Author: S. Williamson ~ Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ Date December 2010 ~ A3 ~ CAD Ref g1826_Env_BEC_002.dgn

APPENDIX A

Taxa listed under vascular plant family

NB. Where a taxon is listed both as a single specific name and a variety of the same name it is because the varieties are only identifiable from flowering examples. For example – *Hibiscus sturtii* (vegetative only), *Hibiscus sturtii* var. *campylochlamys* and *Hibiscus sturtii* var. *platychlamys* both were in flower.

LEGEND

ABBREVIATION	DESCRIPTION
sp.	Species, used where the plant is vegetative
subsp.	Subspecies
forma	Forma
var.	Variety
*	Weed
affin.	Closest to that species
?	Unsure if that is the correct species
x	Hybrid

Vascular Plant Family *Taxon*
Pteridaceae
Cheilanthes sieberi
Marsileaceae
Marsilea hirsuta
Poaceae
Amphipogon caricinus
Aristida contorta
Aristida holathera var. *holathera*
Aristida inaequiglumis
Aristida latifolia
Brachyachne prostrata
**Cenchrus ciliaris*
Chloris pectinata
Chrysopogon fallax
Chrysopogon pallidus
Cymbopogon procerus
Cynodon dactylon
Dactyloctenium radulans
Digitaria ctenantha
Elytrophorus spicatus
Enneapogon polyphyllus
Enneapogon purpurascens
Eragrostis cumingii
Eragrostis dielsii
Eragrostis eriopoda
Eragrostis laniflora
Eragrostis tenellula
Eriachne aristidea
Eriachne benthamii
Eriachne ciliata
Eriachne flaccida
Eriachne mucronata
Eriachne obtusa
Eriachne pulchella
Eriachne sulcata
Eulalia aurea
Eulalia fulva
Iseilema eremaeum
Panicum decompositum
Paractaenum refractum
Paraneurachne muelleri
Paspalidium basicladum
Paspalidium rarum
Perotis rara
Schizachyrium fragile
Setaria surgens
Sorghum plumosum
Sporobolus actinocladus

Vascular Plant Family	*Taxon*
Poaceae (cont.)	
	Sporobolus australasicus
	Themeda triandra
	Tragus australianus
	Triodia angusta
	Triodia basedowii
	Triodia bitextura
	Triodia epactia
	Triodia longiceps
	Triodia pungens
	Triodia schinzii
	Triodia sp. Shovelanna Hill
	Triodia wiseana
	Tripogon loliiformis
	Triraphis mollis
	Whiteochloa airoides
	Whiteochloa cymbiformis
	Xerochloa laniflora
Cyperaceae	
	Bulbostylis barbata
	Cyperus bifax
	Cyperus cunninghamii
	Cyperus iria
	Cyperus rigidellus
	Cyperus squarrosus
	Fimbristylis dichotoma
	Fimbristylis oxystachya
	Fimbristylis ? *oxystachya*
	Lipocarpha microcephala
Moraceae	
	Ficus brachypoda
Proteaceae	
	Grevillea eriostachya
	Grevillea stenobotrya
	Grevillea sp.
	Grevillea ? *striata*
	Grevillea wickhamii subsp. *hispidula*
	Grevillea wickhamii subsp. *aprica*
	Hakea lorea
Santalaceae	
	Anthobolus leptomerioides
	Exocarpos aphyllus
	Santalum lanceolatum
Chenopodiaceae	
	Atriplex semilunaris
	Dysphania plantaginella
	Dysphania rhadinostachya subsp. *rhadinostachya*
	Maireana georgei

Vascular Plant Family	*Taxon*
Chenopodiaceae (cont.)	*Maireana melanocoma*
	Rhagodia eremaea
	Rhagodia spinescens
	Salsola tragus subsp. *tragus*
	Sclerolaena cornishiana
	Sclerolaena crenata
	Sclerolaena cuneata
	Sclerolaena diacantha
	Sclerolaena eriacantha
	Sclerolaena lanicuspis
Amaranthaceae	**Aerva javanica*
	Alternanthera nodiflora
	Amaranthus mitchellii
	Gomphrena canescens subsp. *canescens*
	Gomphrena cunninghamii
	Ptilotus aervoides
	Ptilotus astrolasius var. *astrolasius*
	Ptilotus auriculifolius
	Ptilotus calostachyus
	Ptilotus clementii
	Ptilotus exaltatus
	Ptilotus helipteroides
	Ptilotus macrocephalus
	Ptilotus obovatus
	Ptilotus polystachyus forma *polystachyus*
	Ptilotus schwartzii forma *schwartzii*
Nyctaginaceae	*Boerhavia coccinea*
	Boerhavia gardneri
Gyrostemonaceae	*Gyrostemon tepperi*
Aizoaceae	*Trianthema pilosa*
	Trianthema triquetra
	Trianthema turgidifolia
Molluginaceae	*Glinus oppositifolius*
	Mollugo molluginis
Portulacaceae	*Calandrinia ptychosperma*
	**Portulaca oleracea*
	Portulaca pilosa
Caryophyllaceae	*Polycarpaea corymbosa*
Lauraceae	*Cassytha filiformis*

Vascular Plant Family

Taxon

Cleomaceae

Cleome viscosa

Brassicaceae

Lepidium phlebopetalum
Lepidium pholidogynum
Stenopetalum anfractum
Stenopetalum decipiens

Droseraceae

Drosera indica

Surianaceae

Stylobasium spathulatum

Fabaceae

Acacia acradenia
Acacia adoxa var. *adoxa*
Acacia adsurgens
Acacia affin. *eriopoda* (hairy phyllodes)
Acacia ancistrocarpa
Acacia aneura var. ? *macrocarpa*
Acacia bivenosa
Acacia colei
Acacia coriacea subsp. *pendens*
Acacia dictyophleba
Acacia eriopoda
Acacia inaequilatera
Acacia ligulata
Acacia melleodora
Acacia pyrifolia
Acacia retivenea subsp. *clandestina*
Acacia robeorum
Acacia synchronicia
Acacia tumida
Acacia validinervia
Acacia victoriae
Acacia wanyu
Aeschynomene indica
Crotalaria crispata
Crotalaria cunninghamii
Crotalaria medicaginea
Cullen pogonocarpum
Cullen stipulaceum
Desmodium filiforme
Indigofera boviperda subsp. *boviperda*
Indigofera brevidens
Indigofera colutea
Indigofera georgei
Indigofera linifolia
Indigofera monophylla
Indigofera sp.

Vascular Plant Family	*Taxon*
Fabaceae (cont.)	*Jacksonia aculeata*
	Otion simplicifolium ms
	Petalostylis cassioides
	Rhynchosia minima
	Senna artemisioides subsp. *helmsii*
	Senna artemisioides subsp. *oligophylla*
	Senna ferraria
	Senna glutinosa subsp. *glutinosa*
	Senna glutinosa subsp. *pruinosa*
	Senna glutinosa subsp. x *luerssenii*
	Senna notabilis
	Senna sericea
	Senna venusta
	Swainsona formosa
	Tephrosia arenicola
	Tephrosia densa ms
	Tephrosia rosea var. *clementii*
	Tephrosia rosea var. *glabrior* ms
	Tephrosia rosea var. *rosea*
	Tephrosia sp. Bungaroo Creek
	**Trifolium angustifolium*
	Vigna lanceolata
	Zornia albiflora
Zygophyllaceae	
	Tribulopis angustifolia
	Tribulus hirsutus
	Tribulus macrocarpus
	Tribulus suberosus
	Zygophyllum iodocarpum
Polygalaceae	
	Comesperma pallidum
	Polygala isingii
Euphorbiaceae	
	Euphorbia australis
	Euphorbia boophthona
	Euphorbia coghlanii
Phyllanthaceae	
	Phyllanthus erwinii
	Phyllanthus lacunellus
Celastraceae	
	Macgregoria racemigera
Sapindaceae	
	Dodonaea coriacea

Vascular Plant Family	*Taxon*
Malvaceae	
	Abutilon cunninghamii
	Abutilon lepidum
	Abutilon leucopetalum
	Abutilon macrum
	Abutilon otocarpum
	Abutilon oxycarpum
	Corchorus laniflorus
	Corchorus lasiocarpus
	Corchorus parviflorus
	Corchorus sidoides subsp. *sidoides*
	Corchorus sp.
	Corchorus walcottii
	Gossypium australe
	Hibiscus burtonii
	Hibiscus coatesii
	Hibiscus leptocladus
	Hibiscus sturtii
	Hibiscus sturtii var. *campylochlamys*
	Hibiscus sturtii var. *platychlamys*
	Keraudrenia velutina subsp. *elliptica* ms
	Keraudrenia velutina subsp. *velutina*
	Melhania oblongifolia
	Rulingia kempeana
	Rulingia loxophylla
	Sida arenicola
	Sida brownii
	Sida cardiophylla
	Sida echinocarpa
	Sida excedentifolia ms
	Sida fibulifera
	Sida platycalyx
	Sida sp.
	Sida sp. Rabbit flat
	Sida sp. ? spiciform panicles
	Sida sp. sand dune
	Triumfetta chaetocarpa
	Waltheria indica
	Waltheria virgata
Elatinaceae	
	Bergia perennis subsp. *exigua*
Violaceae	
	Hybanthus aurantiacus
Lythraceae	
	Ammannia baccifera
	Ammannia multiflora

Vascular Plant Family	*Taxon*
Myrtaceae	
	Calytrix carinata
	Corymbia opaca
	Eucalyptus aspera
	Eucalyptus brevifolia
	Eucalyptus camaldulensis
	Eucalyptus kingsmillii subsp. *kingsmillii*
	Eucalyptus ? *kingsmillii* subsp. *kingsmillii*
	Eucalyptus leucophloia subsp. *leucophloia*
	Eucalyptus odontocarpa
Haloragaceae	
	Haloragis gossei
Araliaceae	
	Trachymene oleracea subsp. *oleracea*
Apocynaceae	
	Sarcostemma viminale subsp. *australe*
Convolvulaceae	
	Bonamia media
	Bonamia pannosa
	Bonamia rosea
	Evolvulus alsinoides var. *villosicalyx*
	Ipomoea muelleri
	Polymeria ambigua
Boraginaceae	
	Halgania solanacea
	Heliotropium cunninghamii
	Heliotropium diversifolium
	Heliotropium ovalifolium
	Heliotropium tenuifolium
	Trichodesma zeylanicum var. *grandiflorum*
Lamiaceae	
	Dicrastylis costelloi var. *eriantha*
	Dicrastylis doranii
	Dicrastylis georgei var. *georgei*
	Newcastelia cephalantha
	Newcastelia roseoazurea
Solanaceae	
	Nicotiana benthamiana
	Solanum centrale
	Solanum diversiflorum
	Solanum lasiophyllum
Scrophulariaceae	
	Eremophila forrestii subsp. *forrestii*
	Eremophila latrobei subsp. *glabra*
	Eremophila latrobei var. *latrobei*
	Eremophila longifolia
	Eremophila tietkensii

Vascular Plant Family	*Taxon*
Orobanchaceae	*Buchnera linearis*
Phrymaceae	*Peplidium muelleri*
Plantaginaceae	*Stemodia viscosa*
Rubiaceae	*Canthium latifolium*
	Oldenlandia crouchiana
	Oldenlandia pterospora
	Synaptantha tillaeacea
Cucurbitaceae	**Cucumis melo* subsp. *agrestis*
	Mukia maderaspatana
Campanulaceae	*Wahlenbergia tumidifructa*
Goodeniaceae	*Dampiera candicans*
	Dampiera cinerea
	Goodenia armitiana
	Goodenia heterochila
	Goodenia microptera
	Goodenia sp.
	Goodenia stobbsiana
	Goodenia triodiophila
	Goodenia vilmoriniae
	Scaevola parvifolia subsp. *pilbarae*
	Velleia connata
Asteraceae	**Bidens bipinnata*
	Blumea tenella
	Calocephalus knappii
	Calotis hispidula
	Calotis plumulifera
	Centipeda minima subsp. *macrocephala*
	Chrysocephalum apiculatum
	Chrysocephalum eremaeum
	Pluchea rubelliflora
	Pluchea tetranthera
	Pterocaulon serrulatum
	Pterocaulon sphacelatum
	Rhodanthe humboldtiana
	Rutidosis helichrysoides
	Streptoglossa decurrens
	Streptoglossa liatroides

APPENDIX B

Quadrat Data

NB. Where a taxon is listed both as a single specific name and a variety of the same name it is because the varieties are only identifiable from flowering examples. For example – *Hibiscus sturtii* (vegetative only), *Hibiscus sturtii* var. *campylochlamys* and *Hibiscus sturtii* var. *platychlamys* both were in flower and other taxa.

LEGEND

ABBREVIATION	DESCRIPTION
sp.	Species, used where the plant is vegetative
subsp.	Subspecies
forma	Forma
var.	Variety
*	Weed
affin.	Closest to that species
?	Unsure if that is the correct species
x	Hybrid
sp. Rabbit flat	Name accepted by the Western Australian Herbarium prior to being given a formal name

QUADRAT 01

Approximate Location: Quadrat placed in hills above camp site
Datum (WGS84): 404432E; 7531179N
01A: 404862E; 7530771N
01B: 404242E; 7530608N
01C: 403929E; 7532028N
01D: 404198E; 7531154N
01E: 407058E; 7530480N
01F: 407066E; 7530473N
Soil: Reddish brown silty loam
Rocks: Schistose acid rocks with quartzite rocks. Outcropping varied between sites but the surface was covered in rocks varying in size from 2-20cm
Topography: Whole of knoll - middle, upper slopes and ridge
Field Vegetation Description: Hummock Grassland of *Triodia epactia* and *Triodia wiseana*
Vegetation Condition: 1-2
Notes: This was the common vegetation on the hills and slopes. Occasionally on the very low hills get *Eucalyptus* white bark as small trees



TAXON	HEIGHT (cm)	% COVER
Acacia robeorum	75	<1
Bulbostylis barbata	20	10
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Eriachne pulchella	15	15
Gomphrena canescens subsp. *canescens*	10	<1
Grevillea wickhamii subsp. *hispidula*	175	1
Nicotiana benthamiana	30	<1

TAXON	HEIGHT (cm)	% COVER
Ptilotus exaltatus	15	<1
Schizachyrium fragile	20	50
Sclerolaena lanicuspis	10	1
Senna glutinosa subsp. *pruinosa*	50	<1
Sida excedentifolia	25	<1
Tribulus suberosus	40	<1
Triodia epactia	50	85
Triodia wiseana	40	10
Abutilon lepidum	Opportunistic	
Acacia adoxa var. *adoxa*	Opportunistic	
Acacia ancistrocarpa	Opportunistic	
Atriplex semilunaris	Opportunistic	
Dactyloctenium radulans	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila tietkensii	Opportunistic	
Eriachne ciliata	Opportunistic	
Euphorbia australis	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Goodenia heterochila	Opportunistic	
Goodenia stobbsiana	Opportunistic	
Iseilema eremaeum	Opportunistic	
Maireana georgei	Opportunistic	
Paractaenum refractum	Opportunistic	
Ptilotus calostachyus	Opportunistic	
Rhagodia eremaea	Opportunistic	
Senna sericea	Opportunistic	
Sporobolus australasicus	Opportunistic	
Trianthema triquetra	Opportunistic	
Trianthema turgidifolia	Opportunistic	
Triodia angusta	Opportunistic	
Zygophyllum iodocarpum	Opportunistic	

QUADRAT 02

Approximate Location: Along the track to north bore, near the northern extension of the lease
Datum (WGS84): 402830E; 7432285N
Soil: Reddish brown silty clay
Rocks: Very few, mostly absent
Topography: Flat below hills
Field Vegetation Description: Open Scrub of *Acacia* species over Tussock Grassland of *Eriachne* species
Vegetation Condition: 2
Notes: Narrow belt along a drainage line through the area. Fauna trap 2-4 at 405013E; 7528594N

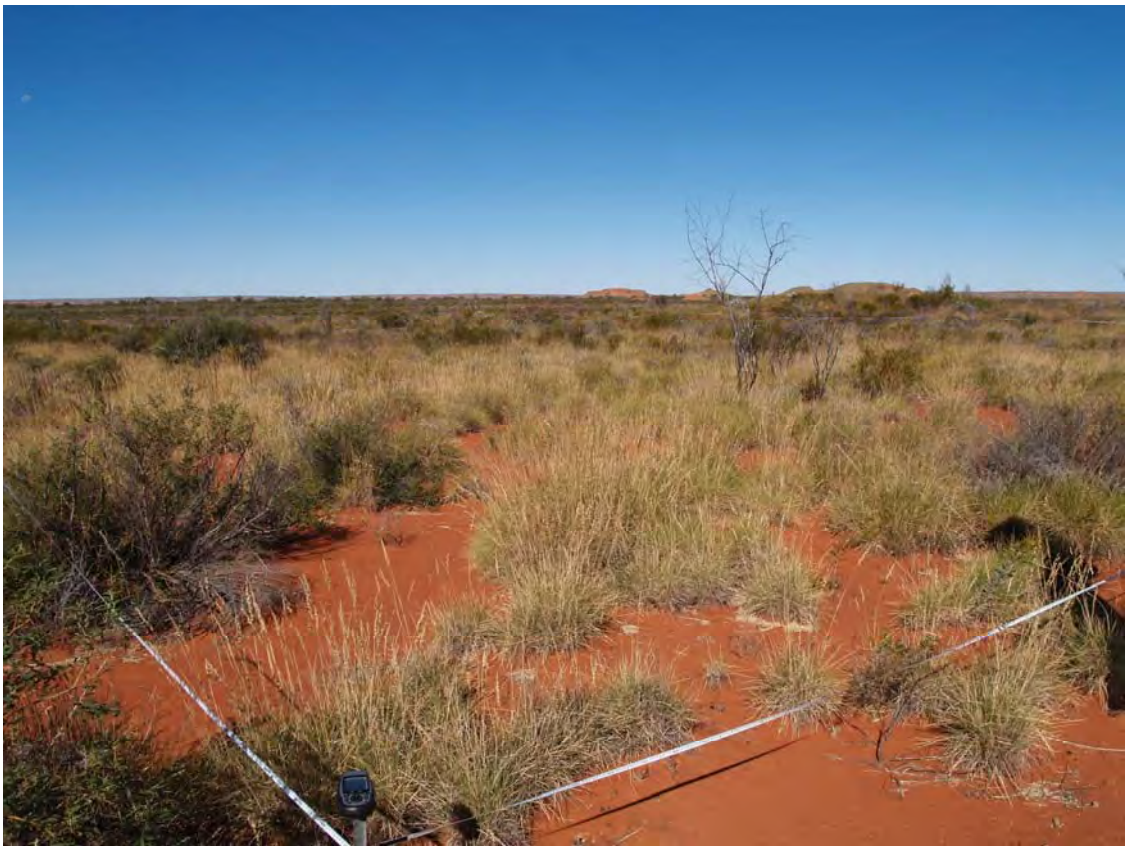


TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	40	1
Acacia colei	400	50
Acacia eriopoda	300	3
Acacia inaequilatera	110	5
Alternanthera nodiflora	30	20
Ammannia baccifera	10	1
Aristida contorta	25	1
Boerhavia coccinea	25	<1
Calotis plumulifera	50	<1
**Cenchrus ciliaris*	70	15
Centipeda minima subsp. *macrocephala*	10	60
Chrysopogon fallax	100	25

TAXON	HEIGHT (cm)	% COVER
Cleome viscosa	40	<1
Corchorus sp.	25	5
Corymbia opaca	600	<1
Crotalaria medicaginea	15	<1
**Cucumis melo* subsp. *agrestis*	Twiner	<1
Cyperus rigidellus	35	1
Dactyloctenium radulans	20	2
Enneapogon polyphyllus	30	1
Eremophila forrestii subsp. *forrestii*	60	1
Eremophila latrobei subsp. *glabra*	100	1
Eragrostis cumingii	30	30
Eriachne flaccida	50	60
Eulalia aurea	90	15
Euphorbia boophthona	20	1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	25	<1
Goodenia sp.	2	2
Gossypium australe	110	2
Hakea lorea subsp. *lorea*	200	<1
Heliotropium tenuifolium	25	<1
Marsilea hirsuta	5	5
Mukia maderaspatana	Twiner	5
Paraneurachne muelleri	70	3
Phyllanthus lacunellus	30	<1
Polycarpaea corymbosa	15	<1
Portulaca pilosa	5	<1
Pterocaulon sphacelatum	20	5
Ptilotus obovatus	70	2
Senna artemisioides subsp. *oligophylla*	100	5
Senna artemisioides subsp. *helmsii*	90	1
Senna glutinosa subsp. x *luerssenii*	110	2
Sporobolus australasicus	15	20
Streptoglossa decurrens	5	<1
Tragus australianus	70	<1
Trichodesma zeylanicum	100	1
Triodia pungens	90	10
Tripogon loliiformis	25	<1
Vigna lanceolata	20	5
Whiteochloa airoides	40	2
Acacia synchronicia	Opportunistic	
Calandrinia ptychosperma	Opportunistic	
Eucalyptus camaldulensis	Opportunistic	
Indigofera linifolia	Opportunistic	
Sclerolaena cornishiana	Opportunistic	

QUADRAT 03

Approximate Location: Area to the south of the hills behind the camp site and towards the area of the proposed exploration drilling
Datum (WGS84): 404703E; 7530508N
03A 405078E; 7528659N
03B 404863E; 7530916N
03C 404630E; 7529934N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia* species dominated by *Acacia ancistrocarpa* over Closed Hummock Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2
Notes: Burnt about 5 years

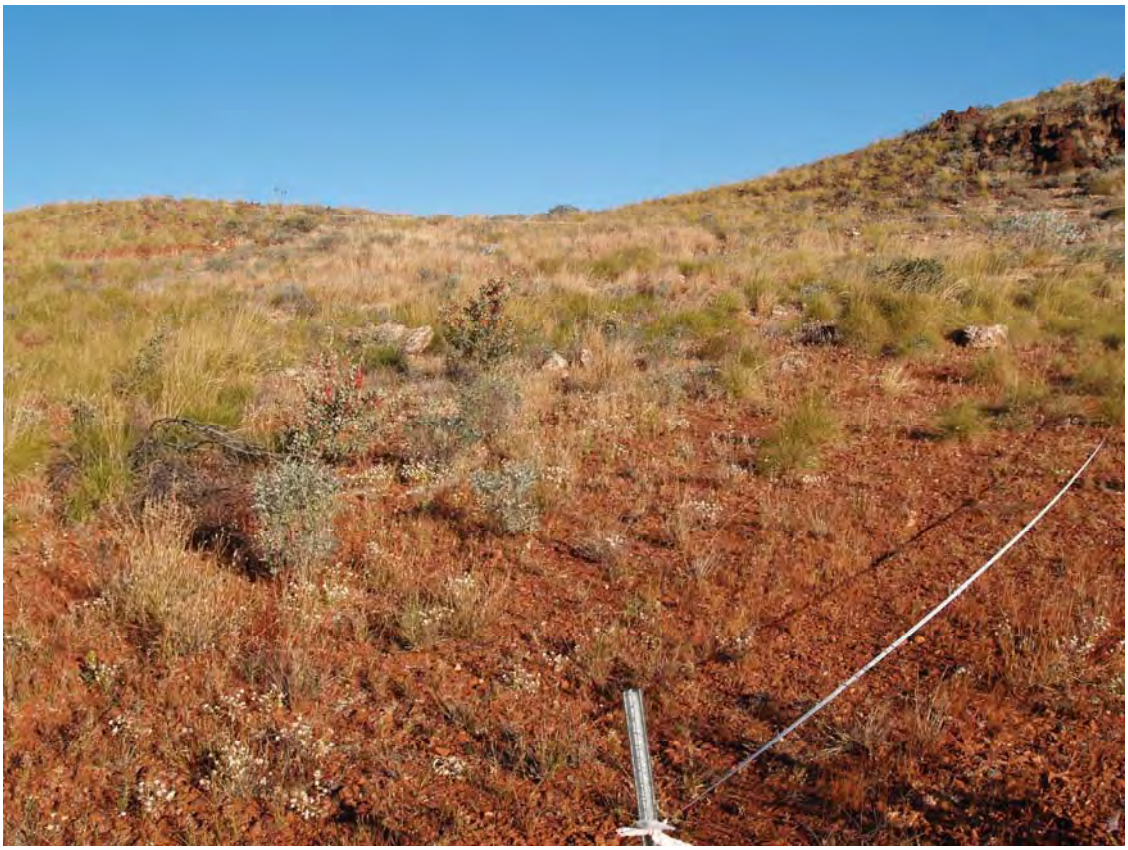


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	400	15 (10% dead)
Acacia melleodora	90	5
Aristida holathera	35	<1
Bonamia rosea	50	1
**Cenchrus ciliaris*	10	<1
Corchorus sidoides subsp. *sidoides*	50	1
Dampiera candicans	40	1
Eragrostis eriopoda	40	5

TAXON	HEIGHT (cm)	% COVER
Eriachne aristidea	10	2
Grevillea wickhamii subsp. *hispidula*	250	15
Hakea lorea subsp. *lorea*	250	2
Haloragis gossei	15	2
Hybanthus aurantiacus	35	5
Indigofera monophylla	50	8
Newcastelia roseoazurea	35	3
Oldenlandia pterospora	10	<1
Paraneurachne muelleri	60	3
Paspalidium rarum	15	2
Petalostylis cassioides	60	5
Scaevola parvifolia subsp. *pilbarae*	40	5
Schizachyrium fragile	70	1
Senna artemisioides subsp. *oligophylla*	60	1
Senna glutinosa subsp. *glutinosa*	110	1
Sida arenicola	100	1
Sida cardiophylla	60	2
Trianthema pilosa	5	1
Trichodesma zeylanicum	70	1
Triodia basedowii	100	35
Triodia pungens	70	1
Triodia schinzii	100	35
Abutilon macrum	Opportunistic	
Acacia colei	Opportunistic	
Acacia retivenea subsp. *clandestina*	Opportunistic	
Calytrix carinata	Opportunistic	
Cassytha filiformis	Opportunistic	
Dicrastylis doranii	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eucalyptus leucophloia subsp.*leucophloia*	Opportunistic	
Grevillea eriostachya	Opportunistic	
Jacksonia aculeata	Opportunistic	

QUADRAT 04

Approximate Location: Hill slope where previously drilled
Datum (WGS84): 404705E; 7529552N
04B 404613E; 7529449N
04C 404562E; 7529436N
04D 404669E; 7529433N
04E 405476E; 7529565N
Soil: Red silty loam
Rocks: Shistose with quartzite. Small amount of outcropping often present
Topography: Middle, upper and ridge
Field Vegetation Description: High Shrubland of *Grevillea wickhamii* subsp. *hispidula* and *Senna glutinosa* subsp. *pruinosa* over Closed Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2-3
Notes: Quadrat area has been ripped and rehabilitated



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	50	<1
Acacia pyrifolia	150	1
**Aerva javanica*	70	1
Aristida holathera	35	2
Boerhavia coccinea	20	1
Bulbostylis barbata	15	2
**Cenchrus ciliaris*	50	15
Cleome viscosa	24	1

TAXON	HEIGHT (cm)	% COVER
Enneapogon polyphyllus	45	2
Enneapogon purpurascens	15	30
Eragrostis eriopoda	40	1
Eriachne aristidea	15	5
Eriachne pulchella	15	2
Gomphrena canescens subsp. *canescens*	20	5
Grevillea wickhamii subsp. *hispidula*	175	5
Heliotropium ovalifolium	50	2
Heliotropium tenuifolium	35	2
Indigofera monophylla	60	8
Oldenlandia crouchiana	30	<1
Oldenlandia pterospora	10	1
Paraneurachne muelleri	50	1
Ptilotus exaltatus	15	<1
Ptilotus helipteroides	40	5
Salsola tragus	30	2
Schizachyrium fragile	40	25
Senna artemisioides subsp. *oligophylla*	70	2
Senna glutinosa subsp. *pruinosa*	110	1
Sporobolus australasicus	30	5
Triodia pungens	90	50
Triodia schinzii	75	1
Acacia eriopoda	Opportunistic	
Acacia melleodora	Opportunistic	
Acacia robeorum	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Eriachne mucronata	Opportunistic	
Euphorbia australis	Opportunistic	
Euphorbia boophthona	Opportunistic	
Mukia maderaspatana	Opportunistic	
Nicotiana benthamiana	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Senna sericea	Opportunistic	
Sida cardiophylla	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Triodia epactia	Opportunistic	

QUADRAT 05

Approximate Location: Below the hills in the previously drilled area
Datum (WGS84): 404559E; 7529640N
05A 404167E; 7529503N
05B 404327E; 7529246N
Soil: Red clayey sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Where the area has been ripped there is a lot of **Cenchrus ciliaris*. The undisturbed areas are in very good condition\.



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	175	8
Acacia melleodora	100	1
Acacia robeorum	40	<1
Aristida holathera	30	<1
Aristida inaequiglumis	80	1
**Cenchrus ciliaris*	60	15
Cleome viscosa	20	1
Corchorus sidoides subsp. *sidoides*	35	2
Corymbia opaca	200	<1

TAXON	HEIGHT (cm)	% COVER
Dicrastylis georgei	60	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Enneapogon purpurascens	15	5
Eragrostis eriopoda	50	3
Eremophila longifolia	125	<1
Eriachne aristidea	30	2
Eriachne pulchella	15	2
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	20	2
Goodenia vilmoriniae	15	<1
Hakea lorea subsp. *lorea*	300	1
Hakea chordophylla	175	3
Haloragis gossei	60	1
Heliotropium ovalifolium	80	5
Hibiscus sturtii	50	1
Indigofera monophylla	50	2
Paraneurachne muelleri	35	3
Paspalidium rarum	15	<1
Petalostylis cassioides	70	6
Portulaca pilosa	10	1
Ptilotus astrolasius subsp. *astrolasius*	40	2
Ptilotus exaltatus	30	2
Ptilotus obovatus	70	<1
Ptilotus polystachyus subsp. *polystachyus*	55	2
Salsola tragus	35	<1
Scaevola parvifolia subsp. *pilbarae*	35	2
Sclerolaena cornishiana	20	<1
Senna artemisioides subsp. *oligophylla*	50	1
Senna ferraria	50	<1
Senna glutinosa subsp. *glutinosa*	300	2
Sida arenicola	100	2
Solanum centrale	35	2
Solanum lasiophyllum	60	3
Sporobolus australasicus	10	<1
Streptoglossa decurrens	30	<1
Tephrosia rosea var. *clementii*	50	<1
Trianthema pilosa	5	1
Triodia basedowii	70	50
Triodia schinzii	110	5
Waltheria virgata	50	<1
Whiteochloa airoides	70	<1
Acacia ligulata	Opportunistic	
Acacia tumida	Opportunistic	
Bonamia rosea	Opportunistic	
Corchorus laniflorus	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Gossypium australe	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Oldenlandia pterospora	Opportunistic	

TAXON	HEIGHT (cm)	% COVER
Pterocaulon sphacelatum	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Trichodesma zeylanicum	Opportunistic	
Triodia pungens	Opportunistic	

QUADRAT 06

Approximate Location:
Datum (WGS84): 405269E; 7529989N
06B 405520E; 7529533N
06C 405553E; 7529711N
06D 405651E; 7529950N
06E 404636E; 7528268N
06F 404157E; 7528537N
06G 404297E; 7528745N
06H 404406E; 7528810N
Soil: Red sand
Rocks: N/A
Topography: Flat between hills
Field Vegetation Description: Open Heath of *Acacia ancistrocarpa* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 1-2
Notes: Fire at quadrat site 4-5 years previously. All shrubs less than 2m tall
Drill bore at 405553E; 7529711N



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	25
Acacia melleodora	150	2
Aristida inaequiglumis	90	3
Bonamia rosea	50	<1
**Cenchrus ciliaris*	15	<1

TAXON	HEIGHT (cm)	% COVER
Cleome viscosa	25	<1
Comesperma pallidum	60	<1
Corymbia opaca	300	<1
Dampiera candicans	50	<1
Dicrastylis georgei	50	5
Dodonaea coriacea	50	1
Eragrostis eriopoda	35	<1
Goodenia vilmoriniae	15	<1
Haloragis gossei	15	<1
Indigofera monophylla	30	7
Paraneurachne muelleri	60	5
Paspalidium basicladum	35	<1
Ptilotus astrolasius subsp. *astrolasius*	30	1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Sida arenicola	30	1
Solanum centrale	45	<1
Streptoglossa decurrens	70	<1
Trichodesma zeylanicum	10	<1
Triodia basedowii	75	75
Acacia eriopoda	Opportunistic	
Acacia ligulata	Opportunistic	
Acacia retivenea subsp. *clandestina*	Opportunistic	
Aristida holathera	Opportunistic	
Calotis plumulifera	Opportunistic	
Calytrix carinata	Opportunistic	
Canthium latifolium	Opportunistic	
Crotalaria crispata	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Dysphania rhadinostachya subsp. *rhadinostachya*	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	
Euphorbia coghlanii	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Indigofera linifolia	Opportunistic	
Jacksonia aculeata	Opportunistic	
Melhania oblongifolia	Opportunistic	
Polycarpaea corymbosa	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Rhagodia spinescens	Opportunistic	
Salsola tragus	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Tephrosia rosea var. *clementii*	Opportunistic	
Whiteochloa airoides	Opportunistic	

QUADRAT 07

Approximate Location:
Datum (WGS84): 404791E; 7530001N
07B 404921E; 7530942N
07C 404269E; 7530684N
07D 404425E; 7530618N
07E 407038E; 7530410N

Soil: Red sand dune. The quadrat site had outcropping rock on the ridge. This was not always the case with the other locations
Rocks: <5%
Topography: Dune all slopes and ridge
Field Vegetation Description: High Shrubland of *Grevillea wickhamii* subsp. *hispidula* over Shrubland of mixed taxa over Closed Hummock Grassland dominated *Triodia basedowii*
Vegetation Condition: 1-2
Notes: Area unburnt for more than 5 years



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	250	3
Acacia melleodora	90	1
Aristida holathera	25	5
Corchorus sidoides subsp. *sidoides*	60	10
Corymbia opaca	100	<1
Dicrastylis georgei	40	5
Eragrostis eriopoda	50	5
Eriachne aristidea	15	<1
Gossypium australe	150	1

TAXON	HEIGHT (cm)	% COVER
Grevillea eriostachya	200	1
Grevillea sp.	70	<1
Grevillea wickhamii subsp. *hispidula*	250	30
Heliotropium diversifolium	15	1
Heliotropium ovalifolium	25	5
Indigofera monophylla	20	1
Paraneurachne muelleri	50	5
Petalostylis cassioides	50	15
Senna artemisioides subsp. *oligophylla*	75	5
Senna artemisioides subsp. *helmsii*	100	5
Senna ferraria	110	2
Sida arenicola	125	1
Stylobasium spathulatum	150	5
Trianthema pilosa	5	1
Trichodesma zeylanicum	15	<1
Triodia basedowii	100	75
Triodia schinzii	110	2
Acacia dictyophleba	Opportunistic	
Acacia retivenea subsp. *clandestina*	Opportunistic	
Calytrix carinata	Opportunistic	
Cassytha filiformis	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Hibiscus sturtii var. *campylochlamys*	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Jacksonia aculeata	Opportunistic	
Ptilotus astrolasius subsp. *astrolasius*	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	

QUADRAT 08

Approximate Location: Pale colour indicated on the aerial photograph
Datum (WGS84): 405642E; 7530067N
08A 404866E; 7530473N
08B 405959E; 7530343N
08C 404780E; 7528344N
Soil: Red sand, slight rise
Rocks: N/.A
Topography: Ridge
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* over Hummock Grass dominated by *Triodia schinzii*
Vegetation Condition: 2
Notes: Equivalent to R.Hart vegetation type J

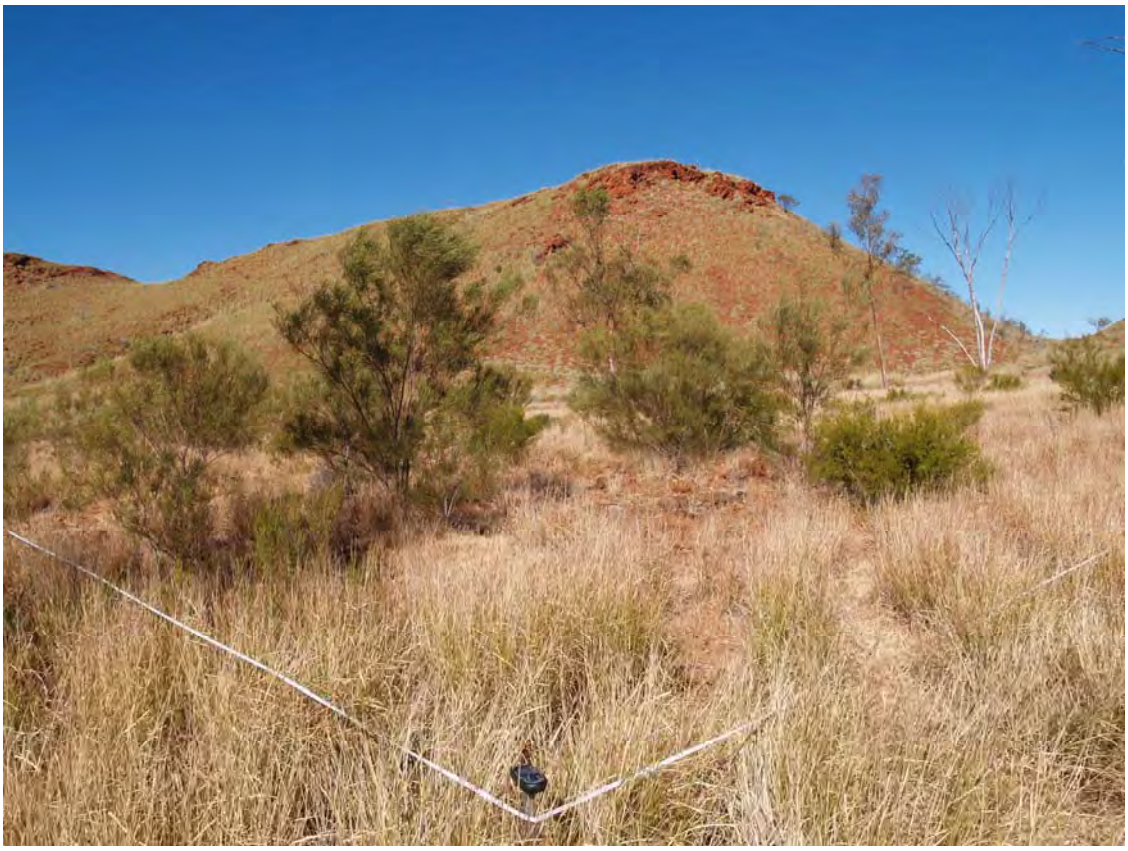


TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	250	3
Acacia melleodora	90	1
Aristida holathera	25	5
Corchorus sidoides subsp. *sidoides*	60	10
Corymbia opaca	100	<1
Dicrastylis georgei	40	5
Eragrostis eriopoda	50	5
Eriachne aristidea	15	<1
Gossypium australe	150	1

TAXON	HEIGHT (cm)	% COVER
Grevillea sp.	70	<1
Grevillea eriostachya	200	1
Grevillea wickhamii subsp. *hispidula*	250	30
Heliotropium diversifolium	15	1
Heliotropium ovalifolium	25	5
Indigofera monophylla	20	1
Paraneurachne muelleri	50	5
Petalostylis cassioides	50	15
Senna artemisioides subsp. *oligophylla*	75	5
Senna artemisioides subsp. *helmsii*	100	5
Senna ferraria	110	2
Sida arenicola	125	1
Stylobasium spathulatum	150	5
Trianthema pilosa	5	1
Trichodesma zeylanicum	15	<1
Triodia basedowii	100	75
Triodia schinzii	110	2
Acacia dictyophleba	Opportunistic	
Acacia retivenea subsp. *clandestina*	Opportunistic	
Calytrix carinata	Opportunistic	
Cassytha filiformis	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Hibiscus sturtii var. *campylochlamys*	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Jacksonia aculeata	Opportunistic	
Ptilotus astrolasius subsp. *astrolasius*	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	

QUADRAT 09

Approximate Location: Proposed exploration accommodation site
Datum (WGS84): 404334E; 7530984N
Soil: Silty clay
Rocks: Shistose quartz with a large number of small angular rocks over the surface
Topography: Flat below hills
Field Vegetation Description: Scattered Low Trees of *Eucalyptus leucophloia* subsp.*leucophloia* over Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 4-5
Notes: Area ripped and left to rehabilitate of own accord. Nearly the whole area is **Cenchrus ciliaris* but is surrounded by hills with the vegetation of KIN01. At this site there were 8 *Eucalyptus* trees, 5 of which were dead and 3 alive



TAXON	HEIGHT (cm)	% COVER
Acacia colei	175	3
Acacia eriopoda	250	10
Acacia melleodora	150	<1
Acacia retivenea subsp. *clandestina*	15	<1
Acacia robeorum	150	5
**Cenchrus ciliaris*	50	65
Cleome viscosa	70	<1
Clianthus formosus	10	<1
Cynodon dactylon	40	1
Dactyloctenium radulans	15	50
Enneapogon polyphyllus	20	<1

TAXON	HEIGHT (cm)	% COVER
Enneapogon purpurascens	15	2
Eriachne aristidea	15	<1
Eucalyptus leucophloia subsp.*leucophloia*	800	2 (2dead)
Euphorbia australis	5	<1
Gomphrena canescens subsp. *canescens*	10	11
Gossypium australe	50	<1
Indigofera georgei	30	<1
Melhania oblongifolia	50	<1
Mukia maderaspatana	Twiner	<1
Pterocaulon sphacelatum	50	<1
Ptilotus exaltatus	55	<1
Salsola tragus	50	<1
Sclerolaena cornishiana	15	<1
Sclerolaena lanicuspis	10	5
Senna ferraria	60	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Streptoglossa decurrens	5	5
Stylobasium spathulatum	200	1.5
Tephrosia rosea var. *clementii*	50	<1
Trianthema triquetra	5	10
Triodia pungens	70	2
Triodia wiseana	60	1
Vigna lanceolata	Twiner	<1
Aristida holathera	Opportunistic	
Fimbristylis oxystachya	Opportunistic	
Lepidium pholidogynum	Opportunistic	
Newcastelia cephalantha	Opportunistic	
Sida fibulifera	Opportunistic	
Triodia epactia	Opportunistic	

QUADRAT 10

Approximate Location: Track between proposed exploration camp and laydown area
Datum (WGS84): 404263E; 7530754N
Soil: Mixture of sand and schist
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* subsp.*leucophloia* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 4
Notes: Between sand dune on south and hill on the north. Quadrat of uneven shape to ensure that it stayed within the same vegetation unit. Western boundary 40m, northern and southern boundary 60m and eastern boundary 30m



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	3
Acacia ancistrocarpa	175	3
Acacia eriopoda	300	5
Acacia melleodora	120	1
Acacia synchronicia (narrow leaf form)	150	2
Aristida holathera	50	<1
Blumea tenella	15	<1
Bonamia rosea	20	<1
Bulbostylis barbata	15	5
Cassytha filiformis	Twiner	<1
**Cenchrus ciliaris*	15	<1

TAXON	HEIGHT (cm)	% COVER
Dactyloctenium radulans	15	1
Dodonaea coriacea	30	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	20	5
Eragrostis laniflora	10	2
Eriachne aristidea	15	<1
Eriachne mucronata	20	<1
Eucalyptus leucophloia subsp.*leucophloia*	700	10
Euphorbia boophthona	10	<1
Gomphrena canescens subsp. *canescens*	10	1
Goodenia heterochila	30	<1
Hybanthus aurantiacus	70	<1
Jacksonia aculeata	40	2 (5% dead)
Mukia maderaspatana	Twiner	<1
Oldenlandia crouchiana	5	<1
Paraneurachne muelleri	50	5
Petalostylis cassioides	60	1
Ptilotus exaltatus	10	<1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Salsola tragus	30	<1
Schizachyrium fragile	15	2
Sclerolaena lanicuspis	10	3
Senna sericea	100	1
Sida arenicola	120	1
Solanum lasiophyllum	50	1
Sporobolus australasicus	5	2
Trachymene oleracea subsp. *oleracea*	10	<1
Trichodesma zeylanicum	10	<1
Triodia pungens	120	60
Keraudrenia velutina subsp. *elliptica*	Opportunistic	

QUADRAT 11

Approximate Location: Proposed exploration laydown area
Datum (WGSD84): 404388E; 7530626N
Soil: Silty loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 5
Notes: Area ripped and allowed to rehabilitate naturally



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	150	2
**Aerva javanica*	50	3
**Cenchrus ciliaris*	70	95
Evolvulus alsinoides var. *villosicalyx*	10	<1
Grevillea wickhamii subsp. *hispidula*	200	1
Hybanthus aurantiacus	25	<1
Indigofera monophylla	35	1
Keraudrenia velutina subsp. *elliptica*	50	5
Paraneurachne muelleri	60	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Salsola tragus	50	<1
Scaevola parvifolia subsp. *pilbarae*	15	<1
Trichodesma zeylanicum	20	<1

QUADRAT 12

Approximate Location: To south of KIN11
Datum (WGS84): 404514E; 7530522N
Soil: Red sand
Rocks: N/A
Topography: Low rise to flat
Field Vegetation Description: Open Heath of mixed taxa over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	175	15
Acacia melleodora	120	2
Aristida holathera	70	2
Bonamia rosea	40	10
Cassytha filiformis	Twiner	<1
**Cenchrus ciliaris*	60	<1
Corchorus sidoides subsp. *sidoides*	60	10
Dicrastylis georgei	60	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Enneapogon purpurascens	25	<1
Eriachne aristidea	20	<1
Eriachne benthamii	60	<1
Eriachne pulchella	35	<1

TAXON	HEIGHT (cm)	% COVER
Euphorbia boophthona	70	<1
Gomphrena canescens subsp. *canescens*	5	<1
Grevillea ? *striata*	70	<1
Grevillea eriostachya	110	1
Hybanthus aurantiacus	50	1
Jacksonia aculeata	35	<1
Keraudrenia velutina subsp. *elliptica*	60	5
Newcastelia roseoazurea	50	<1
Oldenlandia pterospora	10	<1
Paspalidium basicladum	15	<1
Petalostylis cassioides	100	3
Santalum lanceolatum	100	<1
Scaevola parvifolia subsp. *pilbarae*	40	30
Senna artemisioides subsp. *oligophylla*	70	<1
Sida arenicola	120	<1
Sida cardiophylla	50	3
Trianthema pilosa	2	2
Trichodesma zeylanicum	50	<1
Triodia basedowii	90	60
Triodia schinzii	90	5

QUADRAT 13

Approximate Location: Previous airstrip
Datum (WGS84): 403909E; 7532174N
Soil: Silty loam
Rocks: Quartz schist mixture, 5cm or less in size
Topography: Flat
Field Vegetation Description: Closed Grassland of *Aristida inaequiglumis*
Vegetation Condition: 3
Notes: Area ripped after site was decommissioned



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	300	<1
Acacia ancistrocarpa	200	1
Acacia dictyophleba	200	1
Acacia synchronicia	170	1
Aristida holathera	50	2
Aristida inaequiglumis	100	85-95
Boerhavia coccinea	20	<1
Bonamia media	5	<1
Bonamia rosea	30	2
Brachyachne prostrata	2	<1
**Cenchrus ciliaris*	60	2
Cleome viscosa	35	<1
Corchorus sidoides subsp. *sidoides*	60	1

TAXON	HEIGHT (cm)	% COVER
Dactyloctenium radulans	5	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	1
Enneapogon purpurascens	10	<1
Eragrostis eriopoda	70	<1
Eriachne aristidea	15	2
Eriachne mucronata	60	1
Evolvulus alsinoides var. *villosicalyx*	20	<1
Gomphrena canescens subsp. *canescens*	10	<1
Indigofera monophylla	60	<1
Melhania oblongifolia	40	<1
Portulaca pilosa	2	<1
Pterocaulon sphacelatum	5	<1
Ptilotus calostachyus	70	<1
Sclerolaena cornishiana	15	<1
Sclerolaena eriacantha	20	2
Sclerolaena lanicuspis	15	2
Senna artemisioides subsp. *oligophylla*	60	<1
Senna glutinosa subsp. *glutinosa*	75	<1
Senna glutinosa subsp. *pruinosa*	120	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Trianthema triquetra	5	1
Triodia pungens	150	<5
Acacia inaequilatera	Opportunistic	
Eremophila tietkensii	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Mukia maderaspatana	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	

QUADRAT 14

Approximate Location: Southern end of airstrip
Datum (WGS84): 404251E; 7532061N
14A 404125E; 7531734N
14B 404237E; 7531445N
14C 404654E; 7531497N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland to High Open Shrubland of *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia schinzii*
Vegetation Condition: 1-2
Notes: Burnt many years previously



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia dictyophleba	300	30
Acacia inaequilatera	250	5
Aristida contorta	35	<1
Aristida holathera	30	1
Aristida inaequiglumis	110	5
Bonamia rosea	40	5
Bulbostylis barbata	15	<1
Calytrix carinata	70	<1
**Cenchrus ciliaris*	70	1

TAXON	HEIGHT (cm)	% COVER
Cleome viscosa	30	<1
Corchorus sidoides subsp. *sidoides*	35	<1
Corymbia opaca	250	<1
Cymbopogon procerus	70	1
Dicrastylis georgei	40	1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	2
Enneapogon polyphyllus	40	<1
Enneapogon purpurascens	10	<1
Eragrostis eriopoda	70	<1
Eriachne aristidea	35	1
Eriachne mucronata	60	<1
Euphorbia boophthona	20	<1
Euphorbia coghlanii	15	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia microptera	15	<1
Goodenia vilmoriniae	40	<1
Hakea lorea subsp. *lorea*	50	<1
Haloragis gossei	10	<1
Heliotropium diversifolium	15	<1
Hibiscus coatesii	50	<1
Indigofera monophylla	40	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	40	2
Paspalidium basicladum	15	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	10	<1
Ptilotus astrolasius subsp. *astrolasius*	45	<1
Ptilotus polystachyus var. *polystachyus*	35	<1
Scaevola parvifolia subsp. *pilbarae*	40	2
Senna artemisioides subsp. *oligophylla*	90	1
Senna artemisioides subsp. *helmsii*	40	<1
Senna notabilis	10	<1
Sida arenicola	120	<1
Sida echinocarpa	60	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	25	<1
Streptoglossa decurrens	50	<1
Swainsona formosa	5	,1
Tephrosia arenicola	80	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	20	<1
Triodia basedowii	90	5
Triodia schinzii	150	75
Vigna lanceolata	10	<1
Acacia colei	Opportunistic	
Eremophila latrobei subsp. *glabra*	Opportunistic	
Gossypium australe	Opportunistic	
Sclerolaena lanicuspis	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	

QUADRAT 15

Approximate Location: Creek at South bore
Datum (WGS84): 405641E; 7528767N
15A 406056E; 7529699N
15B 405323E; 7531414N
15C 402693E; 7532920N
15D 406041E; 7529679N
15F 403670E; 7533109N
15G 400796E; 7530925N

Soil: Sandy river gravels with sandy banks
Rocks: Scattered rocks carried by river
Topography: Major creek
Field Vegetation Description: Scattered Low Trees to Low Open Woodland of *Eucalyptus camaldulensis* over bare sand in the creek and Tussock Grassland of **Cenchrus ciliaris* on the bank
Vegetation Condition: 2-4
Notes: Several *Eucalyptus* seedlings have germinated in the creek since the last flow of water. Approximately 20% of the quadrat is in the creek bed. Some of the **Cenchrus ciliaris* plants are stabilizing the soil as some individuals are on small individual mounds. Capped bore on the eastern side of the creek near the location of the south bore



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	600	1
Calandrinia ptychosperma	5	<1
Calotis plumulifera	25	<1

TAXON	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	60	70
Corchorus laniflorus	60	<1
Corymbia opaca	900	<1
**Cucumis melo* subsp. *agrestis*	Twiner	<1
Cyperus squarrosus	10	<1
Desmodium filiforme	10	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	5	<1
Eragrostis cumingii	15	<1
Eriachne aristidea	15	<1
Eucalyptus camaldulensis	1000	3
Euphorbia australis	15	<1
Glinus oppositifolius	5	<1
Goodenia vilmoriniae	5	<1
Gossypium australe	150	<1
Indigofera georgei	75	<1
Polycarpaea corymbosa	15	<1
Polymeria ambigua	5	<1
Portulaca pilosa	10	<1
Ptilotus obovatus	50	<1
Rhagodia eremaea	95	5
Rhynchosia minima	Twiner	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	60	<1
Sporobolus australasicus	15	<1
Synaptantha tillaeacea	15	<1
Trianthema pilosa	5	<1
Triodia pungens	110	1
Vigna lanceolata	15	<1
Wahlenbergia tumidifructa	20	<1
Waltheria indica	50	<1
Whiteochloa airoides	60	<1
Abutilon cunninghamii	Opportunistic	
Aeschynomene indica	Opportunistic	
Alternanthera nodiflora	Opportunistic	
Amaranthus mitchellii	Opportunistic	
Ammannia baccifera	Opportunistic	
Ammannia multiflora	Opportunistic	
**Bidens bipinnata*	Opportunistic	
Bonamia media	Opportunistic	
Buchnera linearis	Opportunistic	
Centipeda minima subsp. *macrocephala*	Opportunistic	
Cheilanthes sieberi	Opportunistic	
Chrysopogon pallidus	Opportunistic	
Cleome viscosa	Opportunistic	
Cyperus bifax	Opportunistic	
Cyperus cunninghamii	Opportunistic	
Cyperus iria	Opportunistic	
Digitaria ctenantha	Opportunistic	
Drosera indica	Opportunistic	
Elytrophorus spicatus	Opportunistic	

TAXON	HEIGHT (cm)	% COVER
Eragrostis cumingii	Opportunistic	
Eragrostis tenellula	Opportunistic	
Eriachne ciliata	Opportunistic	
Eulalia aurea	Opportunistic	
Evolvulus alsinoides var. *villosicalyx*	Opportunistic	
Fimbristylis affin. *ciliaris*	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Ipomoea muelleri		
Lipocarpha microcephala	Opportunistic	
Marsilea hirsuta	Opportunistic	
Peplidium muelleri	Opportunistic	
Perotis rara	Opportunistic	
Ptilotus polystachyus subsp. *polystachyus*	Opportunistic	
Setaria surgens	Opportunistic	
Stemodia viscosa	Opportunistic	
Themeda australis	Opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	Opportunistic	

QUADRAT 16

Approximate Location: Bank on the west side of the creek
Datum (WGS84): 405547E; 7528791N
16A 405142E; 7431385N
16B 405174E; 7527801N
16C 405614E; 7528532N
16D 406101E; 7529685N
16E 405961E; 7529632N
Soil: Red silty sand
Rocks: N/A
Topography: Ridge of dune
Field Vegetation Description: Shrubland of mixed taxa over Hummock Grassland of *Triodia* species
Vegetation Condition: 1-2
Notes: At site 16A there was less diversity and more **Cenchrus ciliaris*. The shrubs were dominated by *Acacia ancistrocarpa, Acacia eriopoda* and *Grevillea wickhamii* subsp. *aprica*



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	100	5
Acacia eriopoda	200	10
Acacia melleodora	70	1
Aristida holathera	30	<1
Boerhavia coccinea	30	<1
Bulbostylis barbata	10	<1
**Cenchrus ciliaris*	70	1
Corchorus laniflorus	60	<1

TAXON	HEIGHT (cm)	% COVER
Corchorus sidoides subsp. *sidoides*	30	<1
Crotalaria crispata	15	<1
Dicrastylis georgei	50	<1
Dodonaea coriacea	60	<1
Eragrostis eriopoda	60	<1
Eriachne aristidea	30	<1
Euphorbia australis	2	1
Euphorbia coghlanii	10	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Goodenia vilmoriniae	20	<1
Gossypium australe	200	5
Hakea lorea subsp. *lorea*	110	<1
Heliotropium tenuifolium	15	<1
Melhania oblongifolia	25	<1
Mollugo molluginis	30	<1
Newcastelia roseoazurea	50	<1
Oldenlandia pterospora	10	<1
Polycarpaea corymbosa	10	<1
Polymeria ambigua	10	<1
Ptilotus obovatus	70	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	1
Senna artemisioides subsp. *oligophylla*	50	1
Senna artemisioides subsp. *helmsii*	40	<1
Sida arenicola	125	<1
Sida fibulifera	10	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	110	<1
Streptoglossa decurrens	70	1
Stylobasium spathulatum	175	2
Trianthema pilosa	5	<1
Trichodesma zeylanicum	15	<1
Triodia basedowii	90	80
Triodia pungens	90	<1
Vigna lanceolata	10	<1
Whiteochloa airoides	70	<1
Zornia albiflora	25	<1
Acacia colei	Opportunistic	
Calotis plumulifera	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	
Eriachne mucronata	Opportunistic	
Euphorbia boophthona	Opportunistic	
Glinus oppositifolius	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Haloragis gossei	Opportunistic	
Hibiscus burtonii	Opportunistic	
Ipomoea muelleri	Opportunistic	
Lepidium pholidogynum	Opportunistic	
Panicum decompositum	Opportunistic	
Rhodanthe humboldtiana	Opportunistic	

QUADRAT 17

Approximate Location: Hill slope to the east of south bore
Datum (WGS84): 405729E; 7528730N
17A 405277E; 7528988N
17B 405038E; 7627981N
17C 404321E; 7577679N
17D 403801E; 7527205N
Soil: Sandy loam
Rocks: Chunky quartzite rocks
Topography: Middle, upper slopes and ridge
Field Vegetation Description: Open Heath dominated by *Acacia retivenea* subsp. *clandestina* over Hummock Grassland of *Triodia* species
Vegetation Condition: 1-2
Notes: Burnt recently. This vegetation unit occurred on most hills in the southern section of the lease



TAXON	HEIGHT (cm)	% COVER
Acacia pyrifolia	100	<1
Acacia retivenea subsp. *clandestina*	175	30
Bulbostylis barbata	10	<1
Eriachne aristidea	10	<1
Gomphrena canescens	10	<1
Grevillea wickhamii subsp. *aprica*	200	5
Schizachyrium fragile	10	<1
Sida arenicola	70	<1
Tribulus suberosus	50	<1

TAXON	HEIGHT (cm)	% COVER
Triodia pungens	150	75
Acacia inaequilatera	Opportunistic	
Acacia synchronicia	Opportunistic	
Bonamia rosea	Opportunistic	
Cleome viscosa	Opportunistic	
Corymbia opaca	Opportunistic	
Dicrastylis georgei	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila tietkensii	Opportunistic	
Euphorbia australis	Opportunistic	
Gomphrena cunninghamii	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Indigofera georgei	Opportunistic	
Newcastelia cephalantha	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Ptilotus auriculifolius	Opportunistic	
Ptilotus helipteroides	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Sida fibulifera	Opportunistic	
Stenopetalum anfractum	Opportunistic	
Streptoglossa liatroides	Opportunistic	
Tephrosia rosea subsp. *clementii*	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Trianthema pilosa	Opportunistic	
Triodia epactia	Opportunistic	
Triodia longiceps	Opportunistic	
Triodia schinzii	Opportunistic	
Zygophyllum iodocarpum	Opportunistic	

QUADRAT 18

Approximate Location: Plain above creek on the track to the south bore
Datum (WGS84): 405888E; 7529070N
18A 405417E; 7528681N
18B 405504E; 7528916N
18C 405523E; 7528122N
18D 403801E; 7527205N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* and *Acacia ligulata* over Low Shrubland dominated by *Senna artemisioides* subsp. *helmsii* over Hummock Grassland of *Triodia* species
Vegetation Condition: 1-2
Notes:



TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	50	<1
Acacia ancistrocarpa	300	20
Acacia ligulata	250	5
Aristida holathera	25	3
Bonamia rosea	50	1
Bulbostylis barbata	10	2
**Cenchrus ciliaris*	90	<1
Cleome viscosa	30	<1
Eragrostis cumingii	15	<1

TAXON	HEIGHT (cm)	% COVER
Eragrostis eriopoda	40	<1
Eriachne aristidea	10	<1
Eriachne ciliata	30	1
Euphorbia australis	10	<1
Euphorbia boophthona	15	1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	30	<1
Gomphrena canescens	10	<1
Goodenia triodiophila	15	<1
Haloragis gossei	25	<1
Heliotropium tenuifolium	10	<1
Hibiscus sturtii var. *platychlamys*	30	<1
Indigofera monophylla	50	<1
Mukia maderaspatana	Twiner	<1
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	75	2
Paspalidium rarum	10	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	20	<1
Ptilotus obovatus	100	1
Ptilotus polystachyus var. *polystachyus*	90	2
Rhagodia eremaea	90	1
Salsola tragus	15	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *oligophylla*	100	5
Senna artemisioides subsp. *helmsii*	175	1-20
Sida arenicola	120	1
Solanum lasiophyllum	50	1
Sporobolus australasicus	10	<1
Streptoglossa liatroides	25	<1
Tragus australianus	15	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	20	<1
Triodia basedowii	95	40
Triodia pungens	100	2
Triodia schinzii	110	20
Acacia eriopoda	Opportunistic	
Enneapogon polyphyllus	Opportunistic	
Eremophila latrobei subsp. *latrobei*	Opportunistic	
Eremophila latrobei var. *latrobei*	Opportunistic	
Eremophila longifolia	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Pluchea rubelliflora	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Sida echinocarpa	Opportunistic	
Sida fibulifera	Opportunistic	
Solanum centrale	Opportunistic	

QUADRAT 19

Approximate Location: Along track to south bore
Datum (WGS84): 406133E; 7529739N
19A 405470E; 7531450N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Senna* species
Vegetation Condition: 2
Notes: Dense cover of *Acacia* species away from the quadrat



TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	25	<1
Abutilon otocarpum	60	1
Acacia colei	250	1
Acacia melleodora	150	1
Acacia validinervia	250	5
Aristida holathera	60	<1
Bulbostylis barbata	10	1
Calotis hispidula	5	<1
Calotis plumulifera	25	5
**Cenchrus ciliaris*	50	2
Crotalaria crispata	10	<1
Dactyloctenium radulans	30	<1

TAXON	HEIGHT (cm)	% COVER
Enneapogon polyphyllus	20	<1
Eragrostis eriopoda	50	<1
Eriachne aristidea	20	<1
Euphorbia australis	5	<1
Euphorbia boophthona	40	<1
Evolvulus alsinoides var. *villosicalyx*	15	2
Fimbristylis dichotoma	50	<1
Gomphrena canescens	10	<1
Goodenia triodiophila	25	<1
Goodenia vilmoriniae	20	<1
Hakea lorea subsp. *lorea*	200	<1
Haloragis gossei	20	<1
Heliotropium tenuifolium	30	<1
Newcastelia roseoazurea	50	<1
Mukia maderaspatana	Twiner	<1
Oldenlandia pterospora	15	<1
Paspalidium rarum	10	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	15	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	50	<1
Salsola tragus	15	<1
Scaevola parvifolia subsp. *pilbarae*	50	5
Schizachyrium fragile	20	<1
Sclerolaena cornishiana	25	1
Senna artemisioides subsp. *oligophylla*	150	15
Senna artemisioides subsp. *helmsii*	100	10
Sida arenicola	120	<1
Sida platycalyx	50	3
Solanum lasiophyllum	50	<1
Streptoglossa decurrens	90	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	50	<1
Triodia basedowii	90	70
Triodia pungens	100	5
Acacia dictyophleba	Opportunistic	
Triraphis mollis	Opportunistic	

QUADRAT 20

Approximate Location: Drainage line near camp site
Datum (WGS84): 404380E; 7431248N
20B 404495E; 7531460N
20C 404292E; 7531149N
Soil: Silty mud
Rocks: Scattered stone from the hillside
Topography: Drainage line in the valley
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* and *Grevillea wickhamii* subsp. *aprica* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Quadrat was a strip 60m x 40m as was a narrow vegetation unit at the base of several hillslopes. Burnt regularly



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	20	5
Acacia ancistrocarpa	250	40
Acacia dictyophleba	120	<1
Acacia eriopoda	175	<1
Acacia pyrifolia	175	<1
Acacia synchronicia (narrow leaf form)	50	<1
Aristida holathera	60	1
Aristida inaequiglumis	60	2
Bonamia media	40	<1
Bonamia rosea	35	7

TAXON	HEIGHT (cm)	% COVER
Bulbostylis barbata	15	5
Calotis plumulifera	15	<1
**Cenchrus ciliaris*	70	2
Cleome viscosa	35	<1
Corchorus sidoides subsp. *sidoides*	50	2
Corymbia opaca	400	<1
Dampiera candicans	70	<1
Dodonaea coriacea	50	<1
Dysphania plantaginella	5	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	30	1
Eragrostis tenellula	50	<1
Eriachne aristidea	15	8
Euphorbia boophthona	30	<1
Gomphrena canescens subsp. *canescens*	15	<1
Goodenia vilmoriniae	70	<1
Gossypium australe	70	<1
Grevillea wickhamii subsp. *aprica*	400	15
Hakea lorea subsp. *lorea*	70	<1
Haloragis gossei	15	1
Hibiscus coatesii	45	3
Hybanthus aurantiacus	40	3
Indigofera monophylla	50	2
Keraudrenia velutina subsp. *elliptica*	60	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	50	10
Paspalidium basicladum	25	1
Petalostylis cassioides	55	3
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	20	<1
Ptilotus astrolasius subsp. *astrolasius*	50	<1
Ptilotus calostachyus	70	<1
Ptilotus exaltatus	15	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Schizachyrium fragile	40	<1
Senna artemisioides subsp. *oligophylla*	100	1
Senna glutinosa subsp. *glutinosa*	200	<1
Sida arenicola	140	<1
Sida cardiophylla	60	<1
Solanum lasiophyllum	60	<1
Sporobolus australasicus	15	<1
Tephrosia arenicola	30	<1
Trachymene oleracea subsp. *oleracea*	25	<1
Trianthema turgidifolia	30	<1
Trichodesma zeylanicum	50	<1
Triodia pungens	95	60
Tripogon loliiformis	5	<1
Whiteochloa airoides	60	2

QUADRAT 21

Approximate Location: Near the corner of track into site and track to south bore
Datum (WGS84): 405870E; 7531078N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* and *Acacia melleodora* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Burnt



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	5
Acacia melleodora	150	5
Aristida holathera	15	<1
Calotis plumulifera	15	<1
**Cenchrus ciliaris*	20	<1
Corchorus sidoides subsp. *sidoides*	25	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	<1
Eragrostis eriopoda	30	<1
Eragrostis tenellula	60	<1
Eriachne aristidea	50	<1
Eriachne pulchella	15	<1
Euphorbia australis	1	<1

TAXON	HEIGHT (cm)	% COVER
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	10	<1
Goodenia microptera	50	<1
Hakea lorea subsp. *lorea*	200	<1
Haloragis gossei	15	<1
Newcastelia roseoazurea	50	2
Lipocarpha microcephala	50	<1
Macgregoria racemigera	5	<1
Paraneurachne muelleri	50	5
Polycarpaea corymbosa	20	1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	40	<1
Scaevola parvifolia subsp. *pilbarae*	25	3
Senna artemisioides subsp. *oligophylla*	120	5
Senna artemisioides subsp. *helmsii*	60	2
Sida arenicola	90	<1
Sida cardiophylla	60	1
Sida platycalyx	75	<1
Streptoglossa decurrens	75	2
Stylobasium spathulatum	150	2
Trianthema pilosa	5	<1
Triodia pungens	110	60
Zornia albiflora	5	<1

QUADRAT 22

Approximate Location: East end of airstip
Datum (WGS85): 404634E; 7532017N
22A 403497E; 7531182N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia inaequilatera, Acacia ancistrocarpa* and *Acacia synchronicia* over Open Hummock Grassland of *Triodia* species and Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes: In some areas *Acacia inaequilatera* up to 40% cover

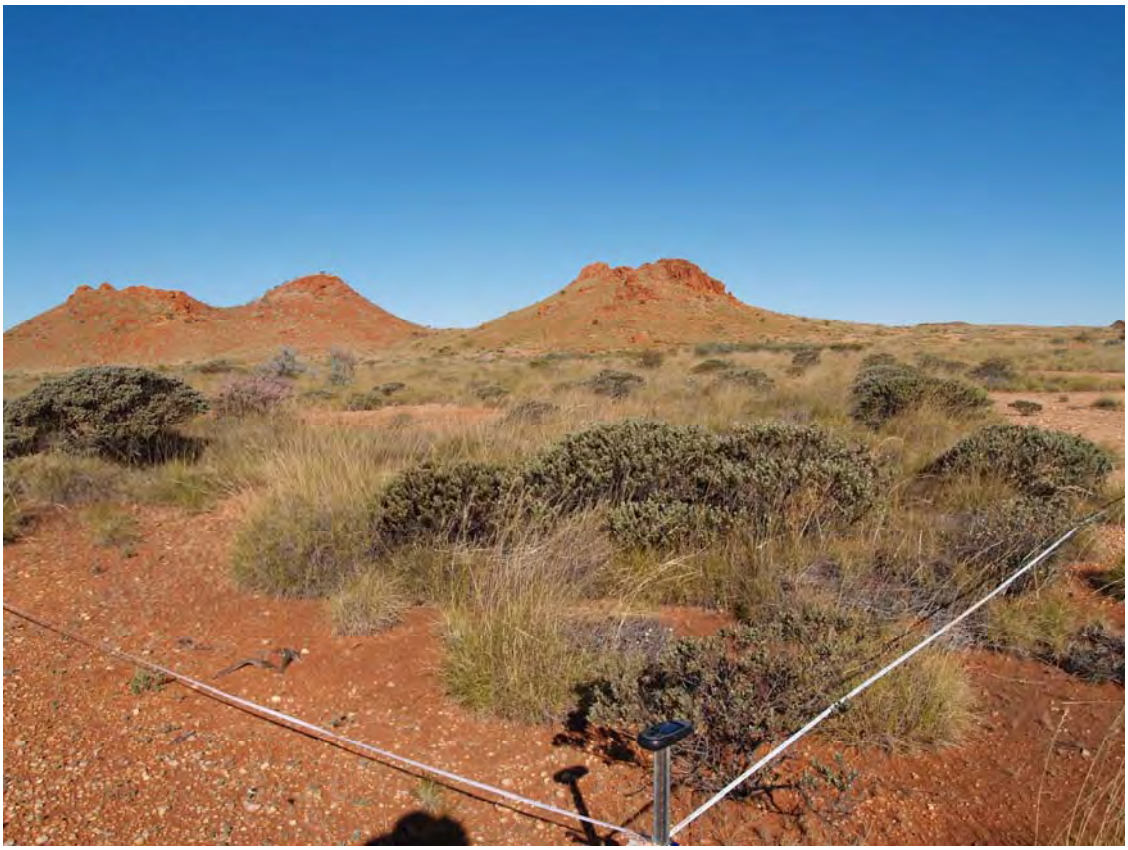


TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	250	10
Acacia inaequilatera	250	10
Aristida holathera	50	<1
Aristida inaequiglumis	170	6
Bonamia rosea	30	<1
Bulbostylis barbata	10	<1
Calotis plumulifera	20	10
**Cenchrus ciliaris*	80	5
Chrysopogon fallax	100	5
Cleome viscosa	25	<1

TAXON	HEIGHT (cm)	% COVER
Corymbia opaca	400	<1
Crotalaria crispata	70	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	<1
Eragrostis eriopoda	50	<1
Eragrostis tenellula	70	2
Eriachne aristidea	30	<1
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	5	<1
Indigofera brevidens	40	<1
Indigofera colutea	10	<1
Indigofera sp.	40	2
Melhania oblongifolia	30	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	35	<1
Perotis rara	10	<1
Polycarpaea corymbosa	15	<1
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	60	5
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	70	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna artemisioides subsp. *helmsii*	50	<1
Sida cardiophylla	30	<1
Sida platycalyx	40	<1
Trianthema pilosa	1	<1
Trichodesma zeylanicum	90	2
Triodia pungens	110	60
Triodia schinzii	150	10
Vigna lanceolata	10	<1
Wahlenbergia tumidifructa	15	<1
Whiteochloa airoides	90	<1
Acacia synchronicia	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	

QUADRAT 23

Approximate Location: Western end of runway on south side
Datum (WGS84): 403342E; 7532167N
23A 404215E; 7527705N
23B 403839E; 7527765N
23C 404560E; 7527043N
23D 404886N; 7527152N
Soil: Red silty mud
Rocks: Quartzite <10cm over surface
Topography: Flat
Field Vegetation Description: Low Open Shrubland of *Eremophila tienkensii* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Located in the scree at the base of hills



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	250	1
Acacia eriopoda	70	1
Acacia synchronicia	200	3
Acacia robeorum	80	1
Acacia victoriae	150	<1
Aristida contorta	20	5
Brachyachne prostrata	5	2
**Cenchrus ciliaris*	40	<1
Dactyloctenium radulans	10	2

TAXON	HEIGHT (cm)	% COVER
Enneapogon purpurascens	15	<1
Eragrostis eriopoda	50	<1
Eremophila tietkensii	90	20
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	15	5
Gomphrena canescens subsp. *canescens*	10	<1
Hibiscus sturtii var. *platychlamys*	60	<1
Iseilema eremaeum	5	<1
Lepidium pholidogynum	5	<1
Maireana georgei	50	<1
Maireana melanocoma	15	<1
Paspalidium rarum	15	<1
Polycarpaea corymbosa	20	2
Pterocaulon sphacelatum	15	<1
Schizachyrium fragile	25	1
Sclerolaena lanicuspis	5	2
Senna glutinosa subsp. *glutinosa*	120	<1
Senna glutinosa subsp. *pruinosa*	150	2
Solanum lasiophyllum	60	<1
Sporobolus actinocladus	10	<1
Sporobolus australasicus	10	<1
Synaptantha tillaeacea	2	<1
Tragus australianus	15	<1
Trianthema triquetra	2	<1
Triodia pungens	100	60
Tripogon loliiformis	15	5
Wahlenbergia tumidifructa	25	<1
Acacia acradenia	Opportunistic	
Acacia tumida	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Portulaca pilosa	Opportunistic	
Sclerolaena cornishiana	Opportunistic	

QUADRAT 24

Approximate Location: Western edge of runway
Datum (WGS84): 403027E; 7532453N
24A 404050E; 7532003N
24B 403100E; 7531496N
24C 402796E; 7532451N
24D 402315E; 7533366N
24E 403803E; 7531160N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia* species over Hummock Grassland of *Triodia schinzii*
Vegetation Condition: 2
Notes: Large number of dead shrubs on the ground
Acacias occur in groups with open grassed areas between



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	300	5
Acacia dictyophleba	300	1
Acacia inaequilatera	150	1
Acacia ligulata	250	5-20
Aristida inaequiglumis	100	5
Boerhavia coccinea	15	<1

TAXON	HEIGHT (cm)	% COVER
Bonamia rosea	60	<1
Bulbostylis barbata	15	5
Calotis plumulifera	40	<1
**Cenchrus ciliaris*	70	5
Corchorus sidoides subsp. *sidoides*	50	<1
Crotalaria crispata	50	<1
Cymbopogon procerus	70	<1
Dicrastylis georgei	45	<1
Eragrostis eriopoda	30	1
Eragrostis laniflora	50	<1
Eragrostis tenellula	70	30
Eriachne aristidea	35	<1
Eulalia aurea	90	<1
Euphorbia australis	5	<1
Euphorbia boophthona	20	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Fimbristylis dichotoma	60	<1
Gomphrena canescens subsp. *canescens*	15	<1
Goodenia vilmoriniae	15	<1
Gossypium australe	50	<1
Hakea lorea subsp. *lorea*	40	1
Haloragis gossei	15	<1
Indigofera monophylla	50	1
Mukia maderaspatana	Twiner	<1
Oldenlandia pterospora	10	<1
Polycarpaea corymbosa	10	1
Portulaca pilosa	10	<1
Pterocaulon sphacelatum	5	<1
Ptilotus astrolasius subsp. *astrolasius*	60	<1
Ptilotus obovatus	70	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Senna artemisioides subsp. *oligophylla*	60	1
Synaptantha tillaeacea	5	<1
Tephrosia rosea var. *clementii*	30	<1
Trianthema pilosa	2	<1
Triodia schinzii	150	50
Whiteochloa airoides	90	<1
Zornia albiflora	15	<1
Grevillea stenobotrya	Opportunistic	
Petalostylis cassioides	Opportunistic	
Schizachyrium fragile	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna notabilis	Opportunistic	
Vigna lanceolata	Opportunistic	

QUADRAT 25

Approximate Location: Flat area between hills
Datum (WGS84): 404115E; 7531301N
25A 403623E; 7531018N
Soil: Silty clay
Rocks: Quartzite, schist off the hill side
Topography: Flat
Field Vegetation Description: Closed Hummock Grassland of *Triodia wiseana*
Vegetation Condition: 1-2
Notes: Some area of the quadrat ripped. This is the dominant vegetation in the flat between the hills where enter the current camp site and new accommodation area



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	<1
Acacia ancistrocarpa	50	<1
Acacia eriopoda	70	<1
Acacia retivenea subsp. *clandestina*	125	<1
Acacia robeorum	50	<1
Amphipogon caricinus	40	<1
Aristida holathera	50	<1
Aristida inaequiglumis	90	<1
Bonamia rosea	50	<1
Brachyachne prostrata	10	<1
Bulbostylis barbata	15	3
Corchorus sidoides subsp. *sidoides*	50	<1

TAXON	HEIGHT (cm)	% COVER
Crotalaria crispata	50	<1
Enneapogon purpurascens	15	<1
Eragrostis laniflora	70	<1
Eragrostis tenellula	50	<1
Eriachne aristidea	15	2
Eriachne pulchella	15	<1
Grevillea wickhamii subsp. *aprica*	400	3
Haloragis gossei	15	<1
Hibiscus coatesii	25	<1
Lepidium pholidogynum	10	<1
Portulaca pilosa	5	<1
Pterocaulon sphacelatum	25	<1
Ptilotus exaltatus	10	<1
Ptilotus polystachyus var. *polystachyus*	10	<1
Schizachyrium fragile	10	<1
Sclerolaena lanicuspis	25	<1
Sida arenicola	120	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Trianthema turgidifolia	5	<1
Trichodesma zeylanicum	15	<1
Triodia epactia	90	10
Triodia pungens	90	2
Triodia wiseana	110	60
Bonamia media	Opportunistic	
Mukia maderaspatana	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Trianthema triquetra	Opportunistic	

QUADRAT 26

Approximate Location: Drainage line at base of hill
Datum (WGS84): 404038E; 7531240N
26A 403662E; 7530995N
Soil: Silty clay
Rocks: N/A
Topography: Drainage line
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* subsp.*leucophloia* over Open Scrub of *Acacia retivenea* subsp. *clandestina* and *Grevillea wickhamii* subsp. *aprica*
Vegetation Condition: 1-2
Notes: At the base of hills. Quadrat follows the drainage line varying in width from 4-10m



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	2
Acacia colei	250	<1
Acacia retivenea subsp. *clandestina*	150	35
Acacia robeorum	50	<1
Anthobolus leptomerioides	60	<1
Bulbostylis barbata	15	<1
Cymbopogon procerus	70	1
Dactyloctenium radulans	15	<1
Dodonaea coriacea	150	1
Enneapogon purpurascens	15	1
Eragrostis laniflora	50	<1
Eragrostis laniflora	30	<1

TAXON	HEIGHT (cm)	% COVER
Eriachne aristidea	20	<1
Eriachne mucronata	50	20
Eucalyptus leucophloia subsp.*leucophloia*	700	5
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	5	<1
Grevillea wickhamii subsp. *aprica*	200	35
Hibiscus coatesii	100	2
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	60	5
Ptilotus exaltatus	10	<1
Rulingia kempeana	180	5
Scaevola parvifolia subsp. *pilbarae*	30	2
Schizachyrium fragile	30	5
Senna glutinosa subsp. *glutinosa*	150	8
Solanum centrale	30	<1
Solanum lasiophyllum	50	<1
Triodia pungens	110	15
Abutilon otocarpum	Opportunistic	
Acacia victoriae	Opportunistic	
Blumea tenella	Opportunistic	
Corymbia opaca	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Goodenia vilmoriniae	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Keraudrenia velutina subsp. *elliptica*	Opportunistic	
Ptilotus macrocephalus	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Stenopetalum decipiens	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Vigna lanceolata	Opportunistic	

QUADRAT 27

Approximate Location: At north bore but away from the disturbance
Datum (WGS84): 400435E; 7535690N
Soil: Varying between brown silty loam and red sand
Rocks: N/A
Topography: Flat area near bore
Field Vegetation Description: Low Woodland of *Eucalyptus camaldulensis* and *Corymbia opaca* over Open Heath of *Indigofera georgei* and Annual Tussock Grassland of *Sorghum plumosum* and *Chrysopogon fallax*
Vegetation Condition: 1
Notes: Closer to the location of the bore is a lot of **Cenchrus ciliaris*. Area flooded at times. *Eucalyptus camaldulensis* in places has up to 40% cover



TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	70	<1
Acacia colei	700	20
Calotis plumulifera	10	<1
**Cenchrus ciliaris*	70	3
Centipeda minima subsp. *macrocephala*	10	5
Chrysopogon fallax	100	35
Cleome viscosa	25	<1
Corymbia opaca	1000	5
Cymbopogon procerus	70	<1
Eragrostis cumingii	25	3
Eragrostis tenellula	50	5

TAXON	HEIGHT (cm)	% COVER
Eucalyptus camaldulensis	900	10
Eulalia aurea	75	5
Evolvulus alsinoides var. *villosicalyx*	15	<1
Indigofera colutea	70	5
Indigofera georgei	150	35
Mukia maderaspatana	Twiner	<1
Phyllanthus lacunellus	20	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	35	<1
Rutidosis helichrysoides	45	10
Setaria surgens	45	5
Sorghum plumosum	200	35
Sporobolus australasicus	15	<1
Vigna lanceolata	Twiner	2
Ammannia multiflora	Opportunistic	
Aristida holathera	Opportunistic	
Chrysocephalum apiculatum	Opportunistic	
Macgregoria racemigera	Opportunistic	
Triodia longiceps	Opportunistic	

QUADRAT 28

Approximate Location: Along track to north bore
Datum (WGS84): 403194E; 7531383N
28A 405417E; 7528980N
Soil: Silty clay
Rocks: Rocky slopes of quartzitic rocks and schist
Topography: All slopes to ridge
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* subsp.*leucophloia* over Closed Hummock Grassland of *Triodia* species
Vegetation Condition: 1-2
Notes: Occurred on a few hillslopes. Possibly unburnt for several years

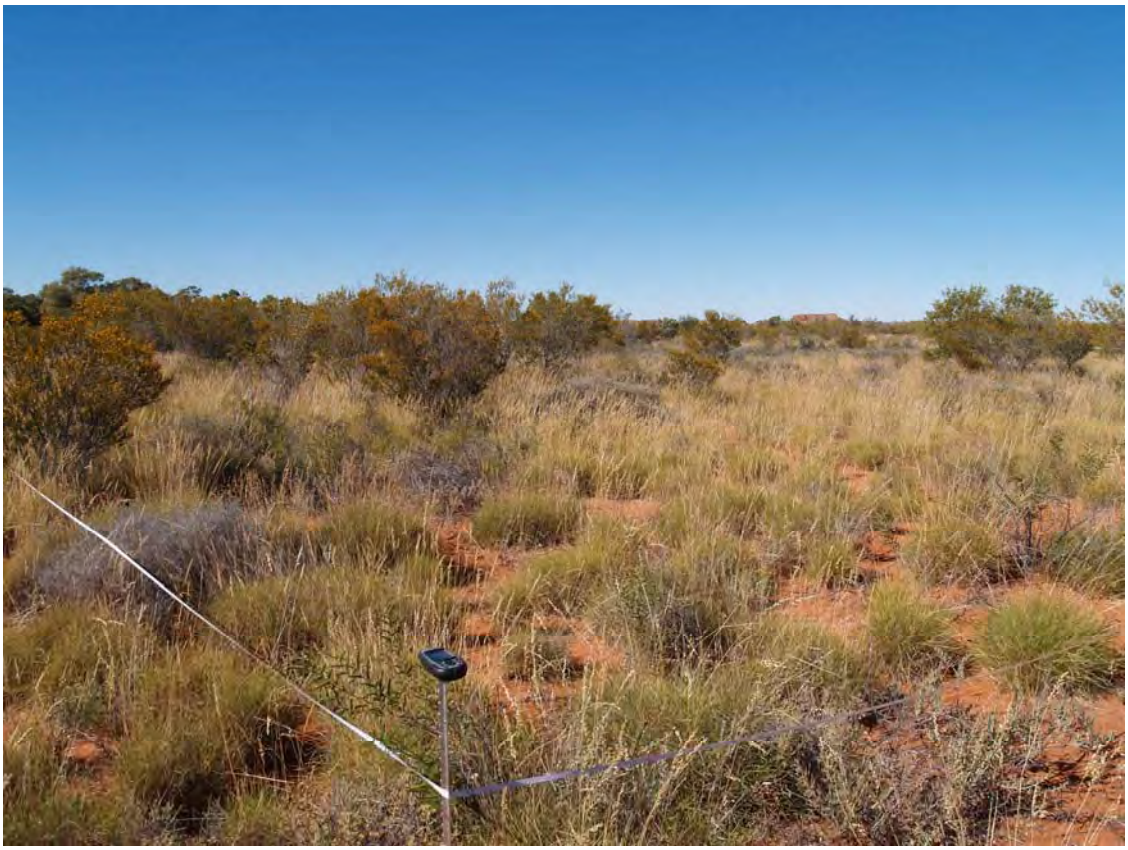


TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia	250	2
Acacia robeorum	175	1
Brachyachne prostrata	10	<1
Eriachne pulchella	10	<1
Eucalyptus leucophloia subsp. *leucophloia*	600	5
Fimbristylis dichotoma	15	<1
Grevillea wickhamii subsp. *aprica*	20	<1
Mukia maderaspatana	Twiner	<1
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	35	<1
Sclerolaena diacantha	20	<1
Sclerolaena lanicuspis	25	<1

TAXON	HEIGHT (cm)	% COVER
Senna glutinosa subsp. *glutinosa*	50	<1
Senna glutinosa subsp. *pruinosa*	30	<1
Senna notabilis	10	<1
Sida cardiophylla	20	<1
Sporobolus australasicus	10	<1
Trianthema turgidifolia	20	<1
Triodia pungens	110	45
Triodia wiseana	110	45
Xerochloa laniflora	10	<1
Dactyloctenium radulans	Opportunistic	
Dicrastylis costelloi var. *eriantha*	Opportunistic	

QUADRAT 29

Approximate Location: Track to north bore
Datum (WGS84): 400538E; 7535273N
29A 400877E; 7535011N
Soil: Red sand dune
Rocks: N/A
Topography: Slightly raised dune
Field Vegetation Description: Open Scrub of *Acacia dictyophleba* and *Acacia validinervia* over Low Shrubland of *Otion simplicifolium* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 1-2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	250	15
Acacia validinervia	300	10
Aristida holathera	50	<1
Bonamia rosea	70	5
Cassytha filiformis	Twiner	<1
Eragrostis eriopoda	30	<1
Grevillea eriostachya	200	1
Halgania solanacea	25	1
Indigofera boviperda subsp. *boviperda*	30	1
Newcastelia roseoazurea	50	5
Otion simplicifolium	60	25
Paraneurachne muelleri	70	1

TAXON	HEIGHT (cm)	% COVER
Petalostylis cassioides	100	5
Ptilotus schwartzii subsp. *schwartzii*	50	<1
Scaevola parvifolia subsp. *pilbarae*	20	3
Sida arenicola	120	<1
Sida cardiophylla	40	<1
Triodia basedowii	90	25
Acacia colei	Opportunistic	
Calytrix carinata	Opportunistic	
Dicrastylis georgei	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila longifolia	Opportunistic	
Eriachne ciliata	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Paspalidium rarum	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Sorghum plumosum	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 30

Approximate Location: Track to north bore
Datum (WGS84): 401632E; 7534122N
30A 4021035E; 7533670N
Soil: Red loamy sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia dictyophleba* over Open Grassland of *Aristida inaequiglumis* over Hummock Grassland of *Triodia basedowii, Triodia pungens* and *Triodia schinzii*
Vegetation Condition: 1-2
Notes: Gradually blends into the west end of the airstrip

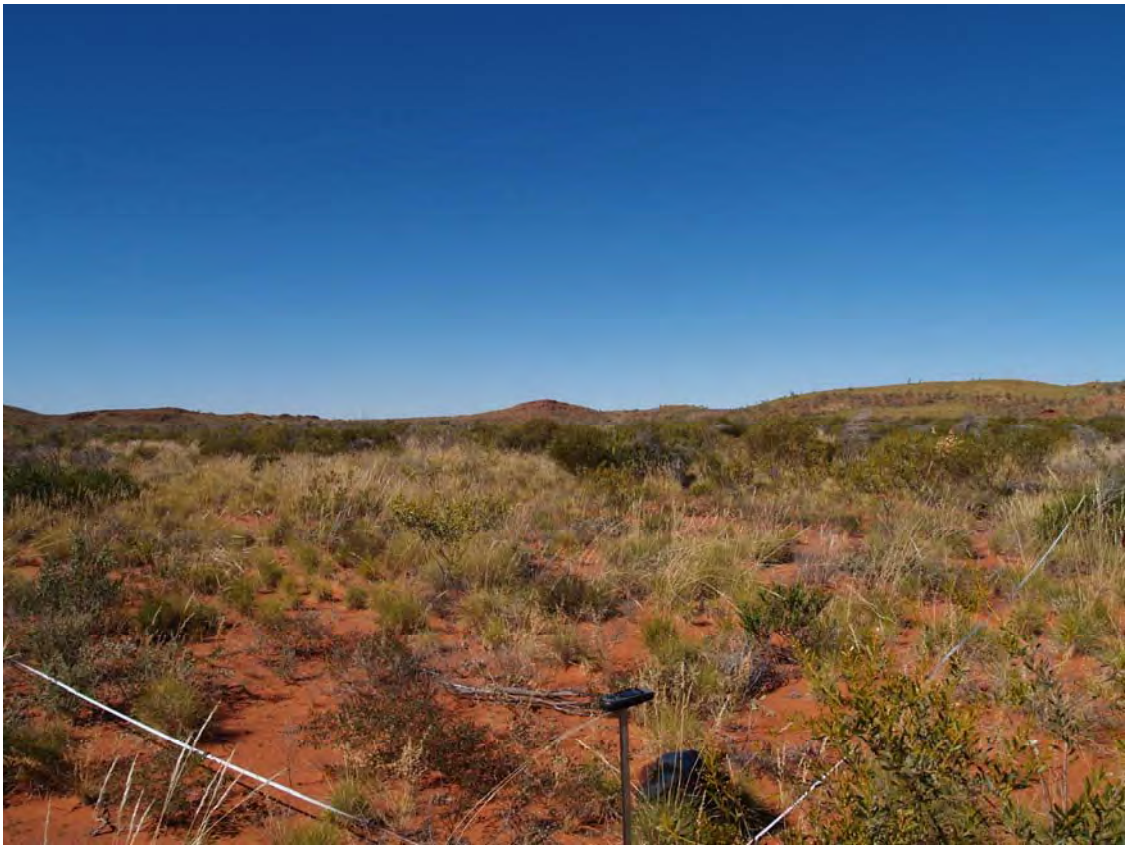


TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	30	<1
Acacia dictyophleba	300	40
Acacia validinervia	200	<1
Aristida holathera	50	<1
Aristida inaequiglumis	100	5
Bonamia rosea	30	1
Bulbostylis barbata	15	<1
Calotis plumulifera	30	<1
Chrysocephalum apiculatum	70	2
Corymbia opaca	400	<1
Eragrostis eriopoda	50	<1
Eragrostis tenellula	50	<1

TAXON	HEIGHT (cm)	% COVER
Eremophila forrestii subsp. *forrestii*	70	2
Euphorbia australis	2	<1
Euphorbia boophthona	70	<1
Evolvulus alsinoides var. *villosicalyx*	30	<1
Fimbristylis dichotoma	35	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia armitiana	50	<1
Newcastelia roseoazurea	80	2
Melhania oblongifolia	30	<1
Paraneurachne muelleri	70	5
Polycarpaea corymbosa	10	<1
Pterocaulon sphacelatum	105	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Sida excedentifolia	109	<1
Sida fibulifera	10	<1
Trichodesma zeylanicum	40	<1
Triodia basedowii	110	10
Triodia pungens	100	35
Triodia schinzii	120	5
Tripogon loliiformis	5	<1
Vigna lanceolata	Twiner	<1
Zornia albiflora	5	<1
Acacia ancistrocarpa	Opportunistic	
Acacia colei	Opportunistic	
**Cenchrus ciliaris*	Opportunistic	
Dicrastylis georgei	Opportunistic	
Eucalyptus odontocarpa	Opportunistic	
Grevillea ? *striata*	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	

QUADRAT 31

Approximate Location: Previous track (2007) into lease from Telfer track. At the lease boundary
Datum (WGS84): 407448E; 7531752N
31B 406473E; 7531808N
31D 407099E; 7531480N
31E 407066E; 7530793N
Soil: Red sand
Rocks: N/A
Topography: Sand
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa, Acacia ligulata* and *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Open areas with very fe3w to no shrubs. Possibly killed by fire



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	2-30
Acacia dictyophleba	300	15-20
Acacia ligulata	250	2-40
Bonamia rosea	50	2
Calytrix carinata	70	<1
Dicrastylis georgei	70	5
Dodonaea coriacea	50	<1
Grevillea eriostachya	200	1
Halgania solanacea	35	<1
Newcastelia roseoazurea	30	<1

TAXON	HEIGHT (cm)	% COVER
Petalostylis cassioides	70	3
Ptilotus obovatus	50	<1
Scaevola parvifolia subsp. *pilbarae*	25	<1
Stylobasium spathulatum	70	<1
Triodia basedowii	100	85
Acacia colei	Opportunistic	
Aristida holathera	Opportunistic	
Calotis plumulifera	Opportunistic	
Chrysocephalum eremaeum	Opportunistic	
Eragrostis eriopoda	Opportunistic	
Goodenia armitiana	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Rulingia loxophylla	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Solanum lasiophyllum	Opportunistic	

QUADRAT 32

Approximate Location: Track into camp
Datum (WGS84): 406002E; 7531530N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Sida echinocarpa* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Only on south side of track so must have been heavily disturbed previously. Angled diamond bore present near SE corner. Not a very large area approximately 200m x 200m

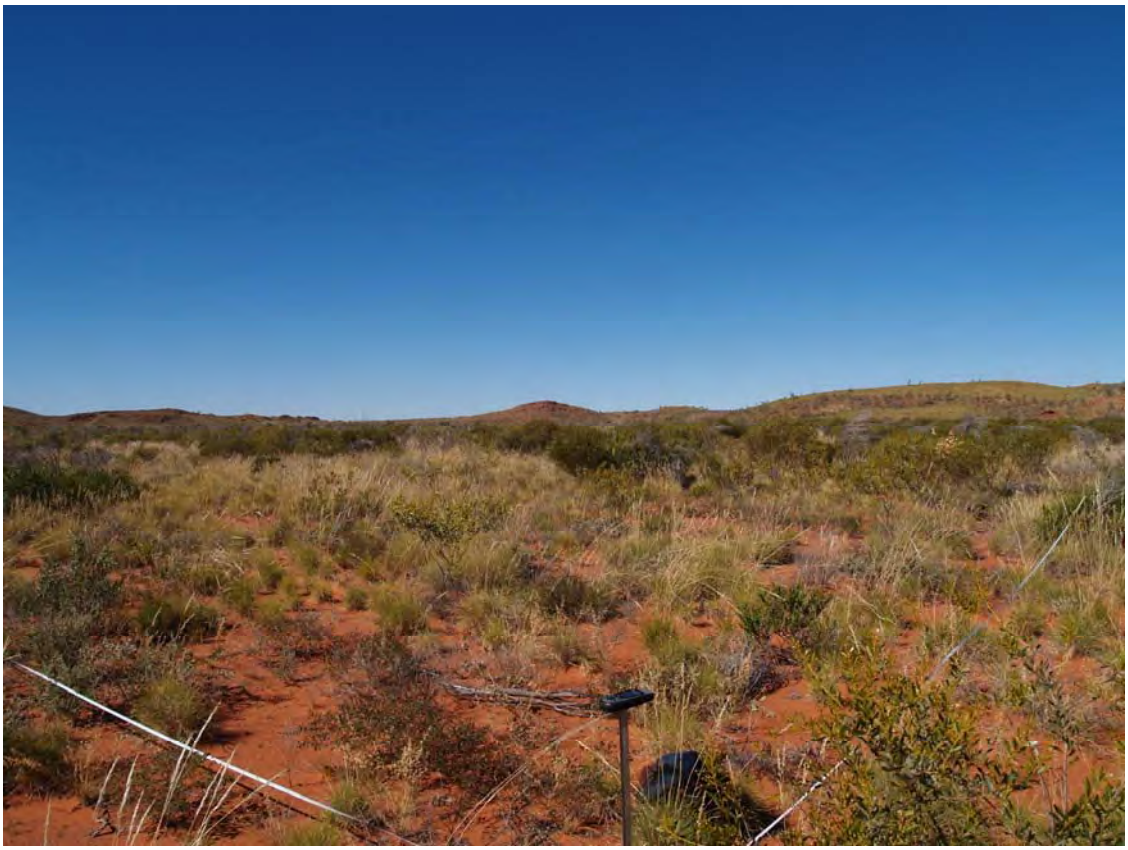


TAXON	HEIGHT (cm)	% COVER
Acacia melleodora	120	1
Aristida holathera	35	<1
Dodonaea coriacea	70	<1
Eragrostis eriopoda	35	<1
Eriachne aristidea	30	<1
Euphorbia australis	15	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	35	<1
Hakea lorea subsp. *lorea*	110	<1
Haloragis gossei	15	<1
Newcastelia roseoazurea	50	10
Oldenlandia pterospora	15	<1

TAXON	HEIGHT (cm)	% COVER
Paraneurachne muelleri	50	1
Senna seedlings	2	<1
Sida cardiophylla	25	10
Sida echinocarpa	175	15
Streptoglossa decurrens	90	<1
Trianthema pilosa	2	<1
Trichodesma zeylanicum	70	<1
Triodia basedowii	80	70
Acacia ancistrocarpa	Opportunistic	
Corchorus laniflorus	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 33

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404882E; 7528428N
33A 404451E; 7528845N
33B 404696E; 7528979N
33C 404832E; 7529036N
33D 405178E; 7528998N
33E 405410E; 7528524N
33F 405180E; 7528077N
33G 404940E; 7527874N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub dominated by *Acacia ancistrocarpa* over Low Shrubland dominated by *Bonamia rosea* and *Indigofera monophylla* over Closed Hummock Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia ligulata	175	2
Acacia melleodora	200	2
Aristida holathera	15	<1
Bonamia rosea	70	10

TAXON	HEIGHT (cm)	% COVER
Corchorus sidoides subsp. *sidoides*	50	1
Dicrastylis georgei	70	3
Dodonaea coriacea	50	<1
Eragrostis laniflora	80	<1
Gossypium australe	150	<1
Hibiscus coatesii	60	<1
Indigofera monophylla	50	3-Oct
Oldenlandia pterospora	15	<1
Ptilotus astrolasius subsp. *astrolasius*	60	1
Ptilotus obovatus	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Sida arenicola	120	<1
Sida cardiophylla	50	<1
Streptoglossa decurrens	90	1
Triodia basedowii	90	70
Triodia schinzii	110	15
Buchnera linearis	Opportunistic	
Bulbostylis barbata	Opportunistic	
Calotis plumulifera	Opportunistic	
Dactyloctenium radulans	Opportunistic	
Dampiera candicans	Opportunistic	
Dysphania rhadinostachya subsp. *rhadinostachya*	Opportunistic	
Eriachne aristidea	Opportunistic	
Euphorbia boophthona	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Goodenia vilmoriniae	Opportunistic	
Haloragis gossei	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Polycarpaea corymbosa	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Solanum centrale	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 34

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404384E; 7528335N
Soil: Claypan
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia inaequilatera* and *Acacia ancistrocarpa* over Herbs of mixed taxa dominated by *Calotis plumulifera*
Vegetation Condition: varied between 3 and 5
Notes: Large amount of **Cenchrus ciliaris* around the quadrats. Occasional small open areas of fine mud. Whole area surrounded by *Acacia inaequilatera* and *Acacia ancistrocarpa* over **Cenchrus ciliaris*



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	350	2
Acacia inaequilatera	350	<1
Aristida contorta	50	2
Aristida holathera	40	10
Aristida inaequiglumis	100	<1
Calocephalus knappii	10	20
Calotis plumulifera	30	50
**Cenchrus ciliaris*	90	20
Chrysocephalum apiculatum	50	<1
Cleome viscosa	70	2
Corchorus laniflorus	60	2
Crotalaria crispata	10	<1

TAXON	HEIGHT (cm)	% COVER
Dactyloctenium radulans	15	5
Dysphania rhadinostachya subsp. *rhadinostachya*	20	<1
Eragrostis tenellula	40	<1
Eremophila forrestii subsp. *forrestii*	80	1
Euphorbia australis	2	<1
Fimbristylis dichotoma	35	<1
Gomphrena canescens subsp. *canescens*	10	<1
Gossypium australe	100	2
Hakea lorea subsp. *lorea*	250	1
Heliotropium diversifolium	15	<1
Hibiscus sturtii	50	<1
Indigofera colutea	5	1
Mukia maderaspatana	twiner	<1
Perotis rara	15	25
Pluchea tetranthera	60	<1
Portulaca oleracea	10	<1
Portulaca pilosa	5	1
Pterocaulon sphacelatum	20	<1
Ptilotus macrocephalus	45	1
Ptilotus obovatus	80	1
Ptilotus polystachyus var. *polystachyus*	70	1
Rhagodia eremaea	60	<1
Salsola tragus	50	1
Sclerolaena cuneata	50	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna artemisioides subsp. *helmsii*	60	1
Senna glutinosa subsp. *glutinosa*	15	2
Sida cardiophylla	50	1
Sida echinocarpa	30	<1
Sida fibulifera	30	1
Sida platycalyx	50	10
Solanum lasiophyllum	30	<1
Sorghum plumosum	150	1
Streptoglossa liatroides	40	<1
Trianthema triquetra	1	<1
Tripogon loliiformis	70	3
Triraphis mollis	25	1
Vigna lanceolata	twiner	<1
Alternanthera nodiflora	Opportunistic	
Lepidium pholidogynum	Opportunistic	
Pluchea rubelliflora	Opportunistic	
Sclerolaena lanicuspis	Opportunistic	

QUADRAT 35

Approximate Location: This area walked only so no definite tracks etc to locate exactly. Drainage line
Datum (WGS84): 405111E; 7527939N
Soil: Red silty loam
Rocks: N/A
Topography: Drainage line
Field Vegetation Description: Open Scrub of *Acacia eriopoda* and *Acacia ancistrocarpa* over Grassland of *Sorghum plumosum* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 1-2
Notes:

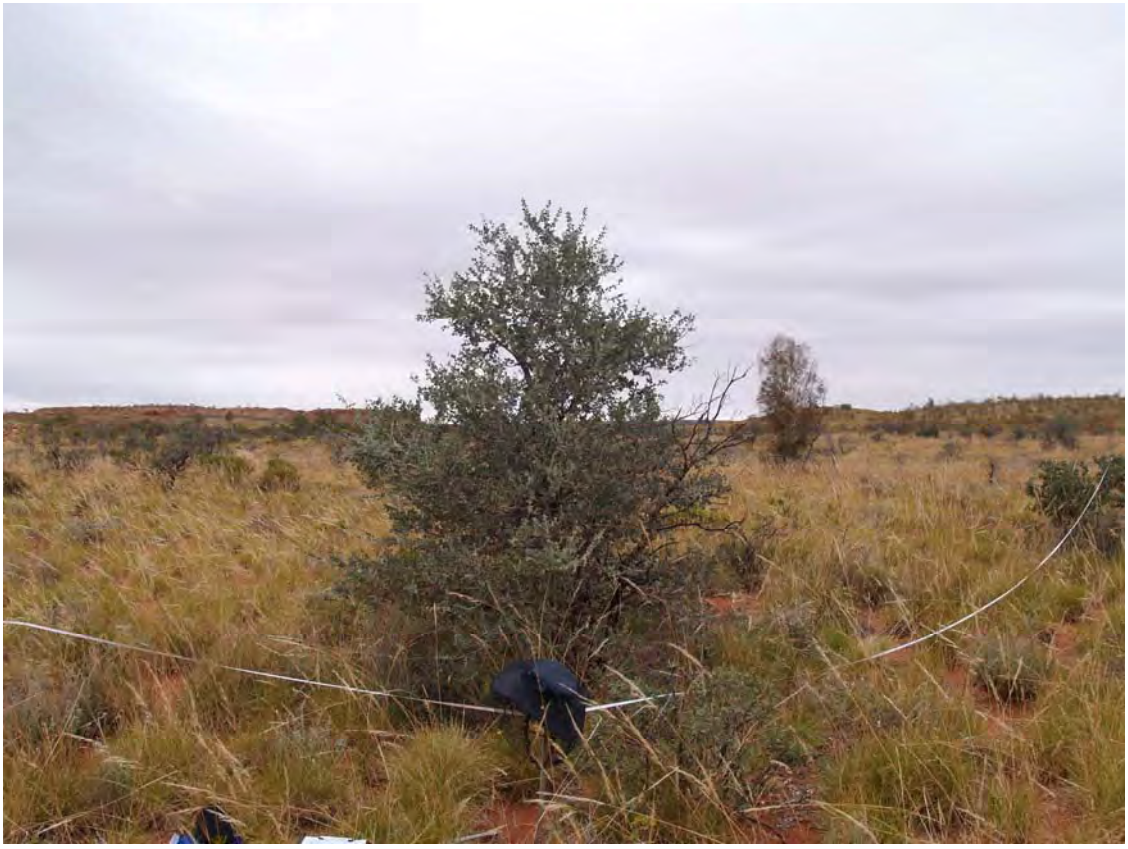


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia colei	250	<1
Acacia eriopoda	350	35
Aristida inaequiglumis	90	3
Bonamia rosea	50	<1
Bulbostylis barbata	10	<1
Calotis plumulifera	30	<1
**Cenchrus ciliaris*	75	15
Crotalaria crispata	10	<1
Dactyloctenium radulans	10	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Eragrostis eriopoda	50	1

TAXON	HEIGHT (cm)	% COVER
Eragrostis laniflora	15	<1
Euphorbia boophthona	50	<1
Gomphrena canescens subsp. *canescens*	25	<1
Gossypium australe	50	<1
Grevillea wickhamii subsp. *hispidula*	200	1
Heliotropium diversifolium	15	<1
Hibiscus sturtii	35	<1
Indigofera colutea	10	<1
Paraneurachne muelleri	70	2
Polycarpaea corymbosa	15	<1
Portulaca pilosa	15	<1
Pterocaulon sphacelatum	30	<1
Ptilotus macrocephalus	70	<1
Ptilotus polystachyus var. *polystachyus*	75	<1
Senna artemisioides subsp. *oligophylla*	70	1
Senna artemisioides subsp. *helmsii*	50	<1
Sorghum plumosum	110	25
Trichodesma zeylanicum	50	<1
Triodia pungens	150	50
Vigna lanceolata	twiner	<1
Whiteochloa airoides	90	2
Cymbopogon procerus	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	

QUADRAT 36

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404782E; 7527778N
36A 404468E; 7527714N
36B 403885E; 7527438N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia inaequilatera* over Open Shrubland of *Acacia* species over Closed Hummock Grassland dominated by *Triodia schinzii*
Vegetation Condition: Good
Notes: Occasional groups of *Acacia ancistrocarpa* but generally very open grassland



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	150	5
Acacia colei	100	<1
Acacia inaequilatera	400	5
Acacia ligulata	120	<1
Acacia melleodora	150	2
Aristida inaequiglumis	90	<1
Bonamia rosea	70	10
Cleome viscosa	15	<1
Crotalaria crispata	10	<1
Eragrostis eriopoda	50	<1
Eremophila forrestii subsp. *forrestii*	70	<1

TAXON	HEIGHT (cm)	% COVER
Eriachne aristidea	15	<1
Eucalyptus camaldulensis	450	<1
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia vilmoriniae	10	<1
Gossypium australe	70	<1
Haloragis gossei	10	<1
Indigofera monophylla	50	2
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	70	1
Ptilotus macrocephalus	35	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	90	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Senna artemisioides subsp. *oligophylla*	80	2
Senna artemisioides subsp. *helmsii*	60	1
Senna glutinosa subsp. *pruinosa*	30	<1
Senna notabilis	10	<1
Sida arenicola	130	<1
Sida cardiophylla	75	1
Solanum lasiophyllum	30	<1
Streptoglossa decurrens	30	1
Trianthema pilosa	5	<1
Tribulus hirsutus	5	<1
Trichodesma zeylanicum	15	<1
Triodia basedowii	90	10
Triodia schinzii	110	70
Vigna lanceolata	twiner	<1
Whiteochloa airoides	70	<1
Acacia retivenea subsp. *clandestina*	Opportunistic	
Acacia synchronicia	Opportunistic	
Calotis plumulifera	Opportunistic	
**Cenchrus ciliaris*	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Hibiscus sturtii	Opportunistic	
Mollugo molluginis	Opportunistic	
Paspalidium rarum	Opportunistic	
Perotis rara	Opportunistic	
Portulaca pilosa	Opportunistic	
Ptilotus clementii	Opportunistic	
Ptilotus exaltatus	Opportunistic	
Ptilotus helipteroides	Opportunistic	
Sida echinocarpa	Opportunistic	
Sorghum plumosum	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Waltheria indica	Opportunistic	

QUADRAT 37

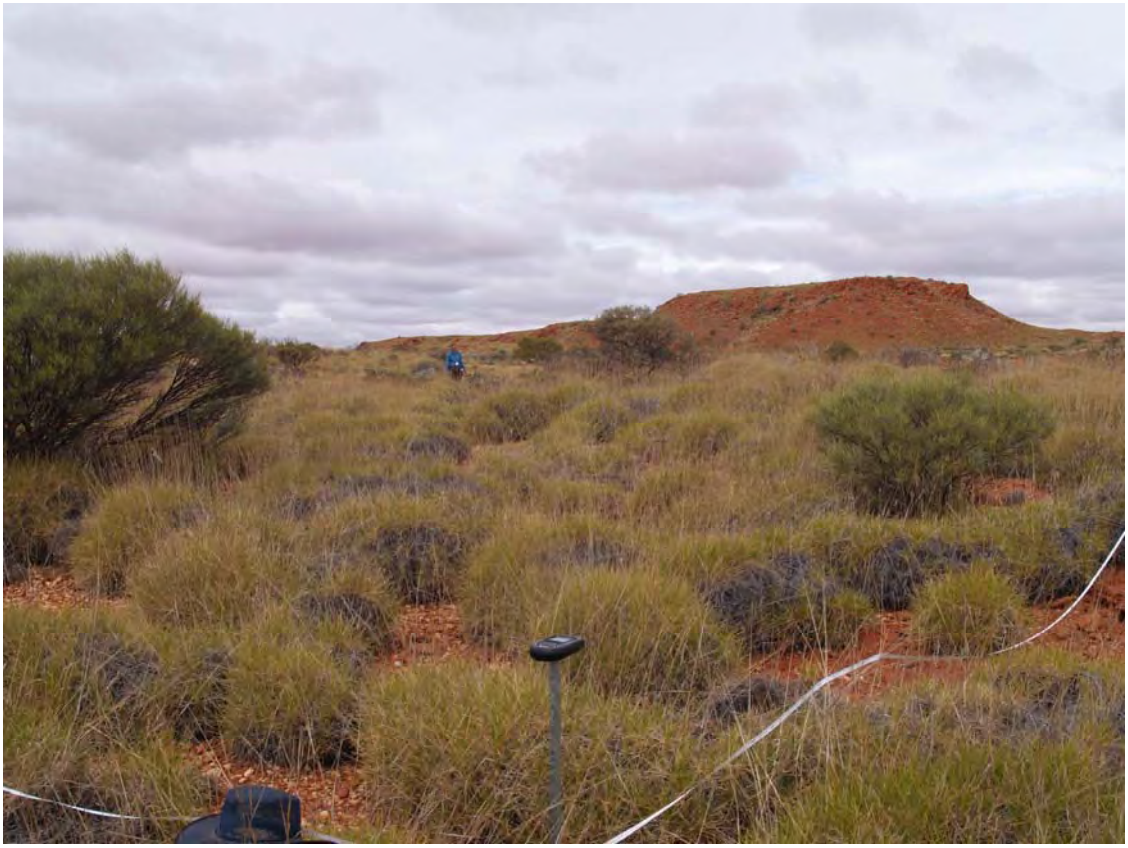
Approximate Location: Drainage line
Datum (WGS84): 403730E; 7527142N
37A 403635E; 7526923N
Soil: Silty clay
Rocks: Scattered quartz rocks on the surface
Topography: Drainage line
Field Vegetation Description: Open Scrub of *Acacia acradenia* and *Grevillea wickhamii* subsp. hispidula over Low Open Heath of *Keraudrenia velutina* subsp. *elliptica* and Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Quadrat was linear along the drainage line



TAXON	HEIGHT (cm)	% COVER
Acacia acradenia	175	35
Acacia eriopoda	60	1
Bulbostylis barbata	15	<1
Crotalaria crispata	70	<1
Eucalyptus aspera	400	1
Eucalyptus leucophloia subsp. *leucophloia*	400	2
Grevillea wickhamii subsp. *hispidula*	300	35
Hybanthus aurantiacus	30	<1
Keraudrenia velutina subsp. *elliptica*	50	40
Paraneurachne muelleri	70	5
Sporobolus australasicus	15	<1
Triodia pungens	70	60
Acacia retivenea subsp. *clandestina*	Opportunistic	
Pterocaulon sphacelatum	Opportunistic	
Streptoglossa decurrens	Opportunistic	

QUADRAT 38

Approximate Location: Middle of proposed accommodation village
Datum (WGS84): 403503E; 7526828N
Soil: Silty loam
Rocks: Numerous rocks on the surface
Topography: Lower slope
Field Vegetation Description: Open Shrubland of *Acacia wanyu* over Low Shrubland of *Eremophila tienksenii* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 1-2
Notes: Quartzite scree slope and outcropping schist. Area consists of a series of rounded hillocks



TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	25	<1
Acacia wanyu	200	3-10
Aristida contorta	20	10
Aristida holathera	20	<1
Boerhavia gardneri	4	<1
Bulbostylis barbata	15	2
**Cenchrus ciliaris*	50	<1
Cleome viscosa	35	3
Corchorus sidoides subsp. *sidoides*	40	11
Enneapogon purpurascens	14	<1
Eremophila tietkensii	90	20
Euphorbia boophthona	40	<1

TAXON	HEIGHT (cm)	% COVER
Evolvulus alsinoides var. *villosicalyx*	60	<1
Fimbristylis dichotoma	15	<1
Gomphrena canescens subsp. *canescens*	5	<1
Gomphrena cunninghamii	30	<1
Goodenia vilmoriniae	10	<1
Heliotropium tenuifolium	14	2
Indigofera monophylla	30	<1
Maireana melanocoma	30	<1
Paspalidium rarum	5	<1
Polycarpaea corymbosa	15	2
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	30	1
Ptilotus helipteroides	35	2
Ptilotus macrocephalus	25	<1
Salsola tragus	10	<1
Sclerolaena lanicuspis	10	<1
Senna artemisioides subsp. *helmsii*	90	1
Senna glutinosa subsp. x *luerssenii*	90	1
Senna notabilis	5	<1
Sida brownii	40	1
Sida platycalyx	30	<1
Solanum lasiophyllum	40	<1
Streptoglossa decurrens	10	1
Trachymene oleracea subsp. *oleracea*	40	3
Trianthema triquetra	2	<1
Tribulus suberosus	30	<1
Triodia pungens	110	50
Abutilon lepidum	Opportunistic	
Acacia acradenia	Opportunistic	

QUADRAT 39

Approximate Location: Track to village
Datum (WGS84): 404385E; 7527063N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Burnt over 5 years



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	2
Acacia coriacea subsp. *pendens*	200	<1
Acacia eriopoda	300	25
Acacia wanyu	150	10
Aristida holathera	60	<1
Bulbostylis barbata	15	<1
Calandrinia ptychosperma	10	<1
Cleome viscosa	70	<1
Corchorus sidoides subsp. *sidoides*	50	<1
Cymbopogon procerus	70	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Enneapogon purpurascens	50	<1

TAXON	HEIGHT (cm)	% COVER
Eragrostis eriopoda	70	<1
Eremophila forrestii subsp. *forrestii*	50	1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia vilmoriniae	70	<1
Haloragis gossei	15	<1
Keraudrenia velutina subsp. *elliptica*	50	<1
Paraneurachne muelleri	90	2
Polycarpaea corymbosa	30	<1
Ptilotus exaltatus	30	<1
Ptilotus helipteroides	90	<1
Schizachyrium fragile	70	<1
Senna artemisioides subsp. *oligophylla*	70	1
Senna glutinosa subsp. *pruinosa*	90	1
Trachymene oleracea subsp. *oleracea*	50	<1
Trichodesma zeylanicum	50	<1
Triodia basedowii	70	80
Triodia pungens	70	5
Euphorbia boophthona	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Ptilotus schwartzii subsp. *schwartzii*	Opportunistic	
Sida excedentifolia	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Tribulus macrocarpus	Opportunistic	

QUADRAT 40

Approximate Location: Along track to borrow pit on main track into site
Datum (WGS84): 407024E; 7530857N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Grevillea eriostachya*, *Acacia ligulata* and *Acacia dictyophleba* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Still in the same community as KIN41 but there are occasional dense areas of *Grevillea* species, *Hakea lorea* subsp. *lorea* scattered through



TAXON	HEIGHT (cm)	% COVER
Acacia ligulata	300	10
Acacia dictyophleba	350	15
Anthobolus leptomerioides	120	1
Aristida holathera	40	<1
Bonamia rosea	50	5
Calytrix carinata	70	<1
Eragrostis eriopoda	50	<1
Euphorbia boophthona	30	<1
Fimbristylis dichotoma	50	<1
Grevillea eriostachya	350	8
Hibiscus coatesii	50	<1
Lepidium phlebopetalum	2	<1

TAXON	HEIGHT (cm)	% COVER
Oldenlandia pterospora	10	<1
Paspalidium rarum	5	<1
Ptilotus polystachyus var. *polystachyus*	50	<1
Scaevola parvifolia subsp. *pilbarae*	40	1
Senna artemisioides subsp. *oligophylla*	120	<1
Sida cardiophylla	50	<1
Solanum centrale	50	<1
Stylobasium spathulatum	100	1
Trichodesma zeylanicum	30	<1
Triodia basedowii	100	60
Grevillea stenobotrya	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Triodia bitextura	Opportunistic	

QUADRAT 41

Approximate Location: To north of track out to Telfer Road
Datum (WGS84): 406687E; 7532020N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Animal survey area as peg 245 recorded and there were 3 closed pit traps, raised about 1 foot above the ground level. Burnt more than 10 years but several dead *Acacia* plants



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	300	25
Anthobolus leptomerioides	70	<1
Aristida holathera	25	<1
Dicrastylis georgei	50	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	5	<1
Eragrostis tenellula	70	<1
Eriachne aristidea	15	<1
Eriachne pulchella	10	<1
Fimbristylis ? oxystachya	20	<1
Haloragis gossei	10	<1
Heliotropium diversifolium	15	<1
Newcastelia roseoazurea	50	<1

TAXON	HEIGHT (cm)	% COVER
Oldenlandia pterospora	10	<1
Petalostylis cassioides	70	<1
Ptilotus schwartzii subsp. *schwartzii*	60	<1
Scaevola parvifolia subsp. *pilbarae*	20	2
Sida echinocarpa	25	<1
Solanum centrale	50	<1
Trichodesma zeylanicum	10	<1
Triodia basedowii	110	90
Acacia ancistrocarpa	Opportunistic	
Acacia coriacea subsp. *pendens*	Opportunistic	
Acacia ligulata	Opportunistic	
Aristida contorta	Opportunistic	
Bonamia rosea	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eragrostis eriopoda	Opportunistic	
Euphorbia boophthona	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Grevillea eriostachya	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Melhania oblongifolia	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Polygala isingii	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Sida cardiophylla	Opportunistic	

QUADRAT 42

Approximate Location: Near Borrow Pit at the base of the hills
Datum (WGS84): 407084E; 7530602N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia* species dominated by *Acacia dictyophleba* over Hummock Grassland dominated by *Triodia basedowii*
Vegetation Condition: 2
Notes: Recent burn. Community ends at KIN31E



TAXON	HEIGHT (cm)	% COVER
Acacia ligulata	200	10
Acacia dictyophleba	200	15-30
Aristida holathera	25	<1
Bonamia rosea	50	5
Calytrix carinata	70	<1
Eragrostis eriopoda	50	<1
Fimbristylis ? oxystachya	60	<1
Jacksonia aculeata	50	<1
Newcastelia roseoazurea	50	<1
Lepidium phlebopetalum	2	<1
Oldenlandia pterospora	2	<1
Paraneurachne muelleri	60	<1

TAXON	HEIGHT (cm)	% COVER
Petalostylis cassioides	70	1
Scaevola parvifolia subsp. *pilbarae*	30	2
Sida excedentifolia	20	<1
Sida cardiophylla	50	<1
Stylobasium spathulatum	200	10
Trichodesma zeylanicum	25	<1
Triodia basedowii	90	65
Triodia schinzii	130	5
Euphorbia australis	Opportunistic	
Grevillea eriostachya	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Schizachyrium fragile	Opportunistic	
Sida sp. Rabbit flat	Opportunistic	

QUADRAT 43

Approximate Location: Near south bore
Datum (WGS84): 406043E; 7528693N
Soil: Red sand
Rocks: N/A
Topography: Drainage line
Field Vegetation Description: High Open Shrubland of *Acacia eriopoda* and *Grevillea wickhamii* subsp. *aprica* over Open Grassland of *Triodia schinzii* and *Triodia pungens*
Vegetation Condition: 3
Notes: Area burnt. Litter leaves 15% and branches 30%



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	120	5
Acacia eriopoda	300	5-10
Acacia pyrifolia	200	<1
Acacia retivenea subsp. *clandestina*	200	5
Calytrix carinata	50	<1
Exocarpos aphyllus	70	<1
Grevillea wickhamii subsp. *aprica*	200	2
Keraudrenia velutina	50	<1
Trianthema pilosa	10	<1

TAXON	HEIGHT (cm)	% COVER
Trichodesma zeylanicum var. *grandiflorum*	70	<1
Triodia basedowii	80	1
Triodia pungens	50	20
Triodia schinzii	120	1-3
Hybanthus aurantiacus	opportunistic	

QUADRAT 44

Approximate Location:
Datum (WGS84): 405376E; 7530783N
Soil: Red silty sandy loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Open Woodland of *Corymbia opaca* over Grassland dominated by **Cenchrus ciliaris* and *Sorghum plumosum*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	2
Acacia dictyophleba	400	2
Aristida inaequiglumis	60	5
**Cenchrus ciliaris*	80	15
Chrysopogon fallax	100	5
Cleome viscosa	90	5
Corchorus sidoides subsp. *sidoides*	70	3
Corymbia opaca	800	5
Eragrostis eriopoda	60	3
Evolvulus alsinoides var. *villosicalyx*	20	<1
Gossypium australe	160	1
Hakea lorea subsp. *lorea*	170	<1
Indigofera colutea	20	<1
Indigofera monophylla	30	<1
Paspalidium rarum	15	<1
Portulaca pilosa	30	<1
Ptilotus obovatus	50	<1
Salsola tragus subsp. *tragus*	50	<1
Sclerolaena cornishiana	40	<1
Senna artemisioides subsp. *helmsii*	50	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *oligophylla*	50	<1
Sorghum plumosum	100	10
Trianthema pilosa	40	<1
Tribulus hirsutus	15	3
Triodia pungens	120	15
Triodia pungens	90	2
Eriachne aristidea	opportunistic	
Petalostylis cassioides	opportunistic	
Rhagodia eremaea	opportunistic	

QUADRAT 45

Approximate Location:
Datum (WGS84): 403649E; 7529406N
45B: 403689E; 7529982N
45C: 403161E; 7531447N
45D: 403161E; 7531447N
Soil: Red silty clay
Rocks: Chunky rocks outcropping
Topography: Middle to upper slope
Field Vegetation Description: Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* over Scattered Herbs of *Ptilotus calostachyus* and Scattered Grasses of *Eriachne mucronata*
Vegetation Condition: 2
Notes: Recent fire



TAXON	HEIGHT (cm)	% COVER
Eriachne mucronata	40	5
Acacia pyrifolia	70	<1
Cleome viscosa	70	<1
Dodonaea coriacea	20	<1
Eriachne mucronata	50	<1
Eucalyptus leucophloia subsp. *leucophloia*	1000	10-15
Goodenia armitiana	60	<1
Hibiscus coatesii	20	1
Newcastelia cephalantha	60	<1
Paraneurachne muelleri	50	<1
Ptilotus calostachyus	50	5
Ptilotus exaltatus	60	1
Ptilotus obovatus	80	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna glutinosa subsp. *glutinosa*	150	1
Sida arenicola	70	<1
Abutilon otocarpum	20	<1

TAXON	HEIGHT (cm)	% COVER
Sporobolus australasicus	10	<1
Tephrosia densa	10	<1
Tribulus suberosus	20	<1
Triodia pungens	50	5

QUADRAT 46

Approximate Location: Along road to north bore
Datum (WGS84): 403560E; 7529185N
46B: 403755E; 7529829N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* and *Acacia ligulata* over Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes: Quadrat covers recent and older burn



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	5
Acacia ligulata	200	10
Aristida inaequiglumis	70	<1
Cleome viscosa	90	<1
Eragrostis eriopoda	70	1
Euphorbia australis	20	<1
Indigofera monophylla	30	<1
Newcastelia roseoazurea	40	<1
Paraneurachne muelleri	60	<1
Paspalidium rarum	10	<1
Petalostylis cassioides	70	3
Ptilotus astrolasius var. *astrolasius*	30	<1
Ptilotus exaltatus	50	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *oligophylla*	60	<1
Senna glutinosa subsp. *glutinosa*	200	<1
Solanum lasiophyllum	70	<1
Stylobasium spathulatum	175	2
Tribulus hirsutus	40	3
Triodia basedowii	90	40
Triodia schinzii	100	2-30

QUADRAT 47

Approximate Location:
Datum (WGS84): 403173E; 7529128N
Soil: Red silty loam
Rocks: Chunky rocks
Topography: Crest of low hill
Field Vegetation Description: Low Open Shrubland of *Acacia retivenea* subsp. *clandestina* and *Grevillea wickhamii* over Grassland of *Eriachne aristidea*
Vegetation Condition: 2
Notes: Low hill. Area burnt about 2 years



TAXON	HEIGHT (cm)	% COVER
Acacia retivenea subsp. *clandestina*	50	5
Eriachne aristidea	30	25
Eriachne mucronata	50	5
Grevillea wickhamii subsp. *aprica*	40	2
Hibiscus coatesii	40	<1
Iseilema eremaeum	20	<1
Newcastelia cephalantha	40	2
Senna glutinosa subsp. *glutinosa*	30	<1
Tephrosia densa	50	<1
Triodia pungens	20	5
Paraneurachne muelleri	opportunistic	
Solanum lasiophyllum	opportunistic	
Trianthema pilosa	opportunistic	

QUADRAT 48

Approximate Location:
Datum (WGS84): 403332E; 7528876N
Soil: Red silty loam clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia ancistrocarpa* and *Acacia ligulata* over Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Grassland of *Triodia epactia*
Vegetation Condition: 3
Notes: Numerous *Sida* seedlings with <1% survival. Surrounded by burnt area



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	5
Acacia ligulata	200	1
Aristida contorta	25	1
Aristida inaequiglumis	60	2
Boerhavia gardneri	40	1
**Cenchrus ciliaris*	70	1
Cleome viscosa	90	1
Eragrostis cumingii	70	<1
Eremophila forrestii subsp. *forrestii*	80	5
Eremophila latrobei subsp. *latrobei*	100	<1
Gossypium australe	70	<1
Heliotropium diversifolium	15	<1
Indigofera colutea	30	<1
Portulaca pilosa	30	<1
Ptilotus obovatus	70	3
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	70	<1
Sclerolaena crenata	15	<1
Senna artemisioides subsp. *helmsii*	90	5

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *oligophylla*	60	3
Sida platycalyx	5	Many seedlings
Solanum lasiophyllum	60	5
Tribulus macrocarpus	15	2
Triodia epactia	120	30
Indigofera monophylla	opportunistic	
Ipomoea muelleri	opportunistic	
Senna notabilis	opportunistic	
Tephrosia sp. Bungaroo Creek	opportunistic	
Trianthema pilosa	opportunistic	

QUADRAT 49

Approximate Location:
Datum (WGS84): 402970E; 7528716N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia* ? *inaequilatera* over Low Shrubland of *Abutilon otocarpum, Corchorus sidoides* subsp. *sidoides, Senna artemisioides* subsp. *oligophylla and Senna artemisioides* subsp. *helmsii* over Grassland dominated by *Triodia pungens*
Vegetation Condition: 3
Notes: Burnt 1-2 years



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	50	5
Acacia ? *inaequilatera*	150	3
Aristida contorta	30	2
Aristida inaequiglumis	50	5
Bonamia rosea	30	1
Cleome viscosa	70	1
Corchorus sidoides subsp. *sidoides*	50	5
Eragrostis eriopoda	75	2
Eriachne aristidea	10	<1
Goodenia vilmoriniae	60	<1
Gossypium australe	50	5
Heliotropium ovalifolium	30	<1
Indigofera monophylla	30	2
Paraneurachne muelleri	70	<1
Paspalidium rarum	15	<1
Ptilotus exaltatus	20	<1
Senna artemisioides subsp. *helmsii*	50	<1
Senna artemisioides subsp. *oligophylla*	50	4
Solanum lasiophyllum	70	<1

TAXON	HEIGHT (cm)	% COVER
Tribulus hirsutus	20	5
Tribulus macrocarpus	20	2
Triodia pungens	80	25
Tephrosia densa	opportunistic	

QUADRAT 50

Approximate Location:
Datum (WGS84): 403678E; 7532584N
50B: 403757E; 7532872N
Soil: Red sand
Rocks: N/A
Topography: Flat below hills
Field Vegetation Description: High Open Shrubland of *Grevillea wickhamii* subsp. *aprica* and *Acacia inaequilatera* over Low Shrubland of *Bonamia rosea* over Open Grassland dominated by *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes: Area burnt about 2 years



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	400	5 (10)
Aristida inaequiglumis	60	25
Aristida latifolia	60	5
Boerhavia gardneri	20	<1
Bonamia rosea	40	15
Cleome viscosa	70	1
Corchorus laniflorus	60	1
Dicrastylis georgei var. *georgei*	15	<1
Eragrostis laniflora	40	5
Eriachne aristidea	30	10
Euphorbia australis	20	1
Goodenia vilmoriniae	40	1
Gossypium australe	70	2
Grevillea wickhamii subsp. *aprica*	140	<1
Heliotropium tenuifolium	20	<1
Indigofera monophylla	40	2
Paraneurachne muelleri	15	5
Phyllanthus erwinii	30	<1

TAXON	HEIGHT (cm)	% COVER
Ptilotus obovatus	60	1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	70	1
Senna glutinosa subsp. *glutinosa*	70	1
Sida sp. ? spiciform panicles	60	1
Tephrosia rosea	50	<1
Trianthema pilosa	30	10
Tribulus hirsutus	20	10
Triodia pungens	50	5
Triodia schinzii	60	3
Acacia ancistrocarpa	opportunistic	
Eucalyptus brevifolia	opportunistic	
Hakea lorea subsp. *lorea*	opportunistic	
Solanum lasiophyllum	opportunistic	

QUADRAT 51

Approximate Location: Above creek
Datum (WGS84): 403674E; 7533034N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia ancistrocarpa*, *Grevillea wickhamii* subsp. apricaand *Hakea lorea* subsp. *lorea* over Low Open Heath of mixed shrubs over Grassland dominated by *Triodia schinzii*
Vegetation Condition: 2-3
Notes: bracket in data indicates percentage of taxon dead



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	40	<1
Acacia inaequilatera	70	1
Aristida holathera var. *holathera*	60	5
Aristida inaequiglumis	60	10
Aristida latifolia	70	1
Bonamia media	10	1
Bonamia rosea	50	10
Cleome viscosa	70	<1
Corchorus laniflorus	70	1
Eragrostis laniflora	70	<1
Eriachne aristidea	40	15
Euphorbia australis	20	1
Evolvulus alsinoides var. *villosicalyx*	30	1
Goodenia vilmoriniae	60	<1
Grevillea wickhamii subsp. *aprica*	500	1(5)
Hakea lorea subsp. *lorea*	100	1 (5)
Heliotropium tenuifolium	30	<1
Hibiscus coatesii	70	1
Indigofera monophylla	40	1

TAXON	HEIGHT (cm)	% COVER
Ipomoea muelleri	Twiner	<1
Newcastelia roseoazurea	50	5
Paraneurachne muelleri	50	2
Ptilotus polystachyus forma *polystachyus*	60	1
Scaevola parvifolia subsp. *pilbarae*	40	<1
Senna artemisioides subsp. *helmsii*	60	5
Senna artemisioides subsp. *oligophylla*	50	1
Sida cardiophylla	50	<1
Tephrosia rosea	50	4
Trianthema pilosa	20	3
Tribulopis angustifolia	50	2
Tribulus hirsutus	10	5
Trifolium angustifolium	60	1
Triodia basedowii	40	2
Triodia schinzii	100	30
Senna notabilis	opportunistic	
Stylobasium spathulatum	opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	opportunistic	

QUADRAT 52

Approximate Location:
Datum (WGS84): 403725E; 7433369N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia dictyophleba*, *Acacia inaequilatera* and *Acacia ancistrocarpa* over Closed Grassland dominated by *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	200	1
Acacia ancistrocarpa	300	1
Acacia dictyophleba	150	5
Acacia eriopoda	150	<1
Acacia inaequilatera	120	1
Acacia melleodora	175	<1
Aristida inaequiglumis	70	5
Aristida latifolia	80	5
**Cenchrus ciliaris*	70	1
Corchorus parviflorus	50	<1
Eragrostis eriopoda	70	5
Eriachne aristidea	50	2
Eriachne obtusa	70	2
Fimbristylis dichotoma	70	3
Heliotropium tenuifolium	15	<1
Newcastelia roseoazurea	60	5
Paraneurachne muelleri	70	1
Paspalidium rarum	20	1
Pterocaulon serrulatum	50	1
Ptilotus polystachyus var. *polystachyus*	50	3

TAXON	HEIGHT (cm)	% COVER
Rulingia loxophylla	50	1
Scaevola parvifolia subsp. *pilbarae*	25	5
Senna ferraria	150	5
Tephrosia rosea	50	2
Trianthema pilosa	20	5
Tribulopis angustifolia	10	1
Triodia basedowii	80	30
Triodia schinzii	110	50
Chrysocephalum eremaeum	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Ptilotus obovatus	opportunistic	
Solanum lasiophyllum	opportunistic	

QUADRAT 53

Approximate Location: Beside creek
Datum (WGS84): 403988E; 7533060N
53B: 402151E; 7531879N
53C: 404547E; 7533843N
53D: 405391E; 7533382N
53E: 405152E; 7533468N
Soil: Red sand
Rocks: N/A
Topography: Above creek
Field Vegetation Description: Low Woodland of *Corymbia opaca* over Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 4
Notes: At 53B large number of *Acacia* deaths due to fire



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	70	5
Acacia eriopoda	120	1
Aristida inaequiglumis	50	5
Boerhavia gardneri	20	<1
Bonamia media	15	<1
**Cenchrus ciliaris*	50	60
Cleome viscosa	70	10
Corymbia opaca	900	15
Eragrostis eriopoda	50	1
Gossypium australe	70	5
Hakea lorea subsp. *lorea*	250	1 (5)
Heliotropium diversifolium	15	<1
Indigofera colutea	50	1
Portulaca pilosa	40	10
Ptilotus obovatus	50	<1
Salsola tragus subsp. *tragus*	50	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *helmsii*	60	5
Solanum lasiophyllum	30	<1
Trianthema pilosa	20	20
Tribulopis angustifolia	20	2
Triodia basedowii	40	5
Triodia pungens	70	5
Triodia sp. Shovelanna Hill	70	3
Abutilon leucopetalum	opportunistic	
Bonamia pannosa	opportunistic	
Bonamia rosea	opportunistic	
**Cucumis melo* subsp. *agrestis*	opportunistic	
Euphorbia australis	opportunistic	
Euphorbia boophthona	opportunistic	
Evolvulus alsinoides var. *villosicalyx*	opportunistic	
Ipomoea muelleri	opportunistic	
Petalostylis cassioides	opportunistic	
Ptilotus polystachyus var. *polystachyus*	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Sida arenicola	opportunistic	
Sida echinocarpa	opportunistic	
Sorghum plumosum	opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	opportunistic	

QUADRAT 54

Approximate Location:
Datum (WGS84): 404525E; 7532617N
54B: 404709E; 7532162N
54C: 402054E; 7531890N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia inaequilatera* and *Acacia eriopoda* over Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	200	7 (5)
Acacia eriopoda	250	5 (3)
Acacia inaequilatera	200	2
Acacia validinervia	70	<1
Aristida inaequiglumis	50	25
Boerhavia gardneri	50	1
Bonamia rosea	50	1
**Cenchrus ciliaris*	50	50
Chrysocephalum apiculatum	10	2
Cleome viscosa	70	10
Corchorus laniflorus	50	3
Corchorus lasiocarpus	50	2
Eragrostis cumingii	70	5
Eragrostis eriopoda	40	5
Eragrostis laniflora	50	<1
Eriachne aristidea	30	5

QUADRAT 55

Approximate Location:
Datum (WGS84): 400532E; 7530557N
53B: 400977E; 7530557N
Soil: Red sand
Rocks: N/A
Topography: Flat bottom between hills
Field Vegetation Description: Open Shrubland of *Acacia dictyophleba* and *Hakea lorea* subsp. *lorea* over Herbs of *Trianthema pilosa* over Grassland of *Aristida inaequiglumis* and *Triodia basedowii*
Vegetation Condition: 3
Notes: Area burnt 1-2 years



TAXON	HEIGHT (cm)	% COVER
Eriachne obtusa	50	5
Euphorbia boophthona	50	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	70	1
Hakea lorea subsp. *lorea*	150	5
Heliotropium diversifolium	30	<1
Newcastelia roseoazurea	50	3
Paraneurachne muelleri	50	1
Paspalidium rarum	30	10
Portulaca pilosa	10	<1
Ptilotus obovatus	60	2
Ptilotus polystachyus var. *polystachyus*	50	<1
Rhagodia eremaea	70	1
Scaevola parvifolia subsp. *pilbarae*	50	2
Senna artemisioides subsp. *helmsii*	60	<1
Senna ferraria	60	5
Sida ? *arenicola*	60	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	70	<1

TAXON	HEIGHT (cm)	% COVER
Synaptantha tillaeacea	35	<1
Trianthema pilosa	50	50
Tribulopis angustifolia	5	<1
Tribulus hirsutus	20	1
Trichodesma zeylanicum var. *grandiflorum*	60	<1
Triodia basedowii	70	35
Triodia epactia	60	2
Triodia pungens	60	5
Triodia schinzii	100	15
Zornia albiflora	10	<1
Acacia retivenea subsp. *clandestina*	opportunistic	
Corymbia opaca	opportunistic	
Gossypium australe	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 56

Approximate Location:
Datum (WGS84): 401210E; 7531393N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Hakea lorea* subsp. *lorea* and *Eremophila longifolia* over Grassland dominate by *Aristida inaequiglumis* and *Triodia basedowii*
Vegetation Condition: 3
Notes: Area burnt 2-3 years



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	50	<1
Acacia ligulata	250	1
Ammannia baccifera	20	<1
Aristida inaequiglumis	50	20
Bonamia rosea	30	1
Corchorus laniflorus	60	5
Corymbia opaca	200	<1
Eragrostis laniflora	70	1
Eremophila longifolia	250	3(5)
Eriachne aristidea	20	5
Eulalia aurea	70	<1
Euphorbia australis	30	2
Euphorbia boophthona	50	<1
Evolvulus alsinoides var. *villosicalyx*	30	<1
Fimbristylis dichotoma	70	<1
Goodenia armitiana	20	<1
Gossypium australe	60	<1
Hakea lorea subsp. *lorea*	400	10
Heliotropium diversifolium	15	<1
Newcastelia roseoazurea	35	1

TAXON	HEIGHT (cm)	% COVER
Paraneurachne muelleri	50	1
Paspalidium rarum	20	5
Polymeria ambigua	30	<1
Portulaca pilosa	20	<1
Ptilotus polystachyus var. *polystachyus*	70	1
Scaevola parvifolia subsp. *pilbarae*	25	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Senna notabilis	20	1
Solanum lasiophyllum	50	<1
Streptoglossa decurrens	10	<1
Stylobasium spathulatum	250	3
Synaptantha tillaeacea	30	<1
Trianthema pilosa	40	2
Tribulopis angustifolia	5	1
Trichodesma zeylanicum var. *grandiflorum*	10	<1
Triodia basedowii	80	30
Whiteochloa cymbiformis	50	<1
Acacia inaequilatera	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Indigofera georgei	opportunistic	
Petalostylis cassioides	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	

QUADRAT 57

Approximate Location:
Datum (WGS84): 402067E; 7532048N
57B: 402220E; 7532673N
57C: 403120E; 7533569N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Hakea lorea* subsp. *lorea, Acacia ancistrocarpa, Acacia adsurgens* and *Acacia dictyophleba* over Closed Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Not burnt recently



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	500	5
Acacia ancistrocarpa	300	5-25
Acacia dictyophleba	400	20(10)
Aristida inaequiglumis	40	3
Aristida latifolia	60	<1
Bonamia rosea	30	<1
Calytrix carinata	50	1
Cassytha filiformis	twiner	<1
Eriachne aristidea	30	<1
Eriachne ciliata	70	<1
Hakea lorea subsp. *lorea*	300	2
Indigofera brevidens	50	<1
Senna artemisioides subsp. *oligophylla*	120	5
Senna glutinosa subsp. x *luerssenii*	200	1
Triodia basedowii	80	70
Acacia ligulata	opportunistic	
Corchorus laniflorus	opportunistic	
Eremophila latrobei subsp. *latrobei*	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Eucalyptus ? *kingsmillii*	opportunistic	
Gossypium australe	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Stylobasium spathulatum	opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	opportunistic	
Triodia schinzii	opportunistic	

QUADRAT 58

Approximate Location:
Datum (WGS84): 402067E; 7532048N
58B: 405780E; 7533404N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia dictyophleba* and *Acacia ligulata* over Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna glutinosa* subsp. x *luerssenii* over Closed Grassland of **Cenchrus ciliaris*
Vegetation Condition: 4
Notes: Very open. Grazed by donkeys?



TAXON	HEIGHT (cm)	% COVER
Acacia colei	175	<1
Acacia dictyophleba	350	2
Acacia ligulata	400	2
Aristida inaequiglumis	30	5
**Cenchrus ciliaris*	50	30
Cleome viscosa	50	<1
Corchorus laniflorus	50	<1
Eragrostis laniflora	60	1
Eremophila latrobei subsp. *latrobei*	50	<1
Eriachne ciliata	10	<1
Gossypium australe	60	<1
Hakea lorea subsp. *lorea*	200	5
Ptilotus polystachyus var. *polystachyus*	10	<1
Sclerolaena cornishiana	15	3
Senna artemisioides subsp. *helmsii*	120	10
Senna artemisioides subsp. *oligophylla*	70	10
Trianthema pilosa	10	<1
Tribulopis angustifolia	10	1

TAXON	HEIGHT (cm)	% COVER
Tribulus hirsutus	15	<1
Triodia schinzii	70	1
Acacia ancistrocarpa	opportunistic	
Corymbia opaca	opportunistic	

QUADRAT 59

Approximate Location: North eastern end of lease
Datum (WGS84): 404341E; 7534143N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Woodland dominated by *Acacia dictyophleba* over Grassland dominated by *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: 3
Notes: This community continued to the end of the lease. All burnt about 3 years



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	50	2
Acacia dictyophleba	60	35
Acacia ligulata	300	2
Aristida inaequiglumis	60	5
Aristida latifolia	80	2
Boerhavia gardneri	20	<1
**Cenchrus ciliaris*	70	8
Cleome viscosa	70	2
Corchorus laniflorus	60	2
Corymbia opaca	500	1
Eragrostis eriopoda	60	1
Gossypium australe	80	1
Hakea lorea subsp. *lorea*	200	3
Heliotropium diversifolium	30	<1
Portulaca pilosa	30	3
Ptilotus obovatus	50	1
Ptilotus polystachyus var. *polystachyus*	70	1
Senna artemisioides subsp. *oligophylla*	80	5
Trianthema pilosa	10	3
Tribulopis angustifolia	10	1

TAXON	HEIGHT (cm)	% COVER
Triodia basedowii	80	10
Triodia schinzii	120	15-50
Eremophila latrobei subsp. *latrobei*	opportunistic	
Indigofera georgei	opportunistic	
Senna artemisioides subsp. *helmsii*	opportunistic	
Solanum lasiophyllum	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 60

Approximate Location:
Datum (WGS84): 406099E; 7532426N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Closed Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Not burnt for some time but the shrubs were dead



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	<1
Acacia dictyophleba	120	<1
Aristida inaequiglumis	30	2
Corymbia ? *opaca*	125	<1
Dead shrub	50	2
Sida ? *arsiniata*	30	<1
Triodia basedowii	100	75
Grevillea wickhamii subsp. *aprica*	opportunistic	
Hakea lorea subsp. *lorea*	opportunistic	
Ptilotus calostachyus	opportunistic	
Ptilotus polystachyus var. *polystachyus*	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	

QUADRAT 61

Approximate Location:
Datum (WGS84): 406126E; 7533013N
Soil: Red sand
Rocks: N/A
Topography: Sand dune crest
Field Vegetation Description: Shrubland of *Stylobasium spathulatum* and *Sida* sp. sand dune over Low Shrubland of *Scaevola parvifolia* subsp. *pilbarae*
Vegetation Condition: 3
Notes: Did linear transect along sand dune. Very open. Burnt about 3 years



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	50	<1
Acacia ligulata	175	<1
Aristida inaequiglumis	30	<1
Cleome viscosa	20	<1
Crotalaria cunninghamii	50	2
Eragrostis laniflora	70	<1
Eriachne aristidea	15	<1
Eriachne sulcata	20	<1
Euphorbia australis	20	<1
Euphorbia boophthona	70	<1
Heliotropium diversifolium	25	<1
Newcastelia roseoazurea	50	1
Petalostylis cassioides	70	<1
Ptilotus aervoides	30	<1
Ptilotus astrolasius var. *astrolasius*	30	5
Ptilotus polystachyus var. *polystachyus*	20	<1
Scaevola parvifolia subsp. *pilbarae*	40	10
Sida ? *arenicola*	30	<1
Sida sp. *sand dune*	160	10
Stylobasium spathulatum	175	15

TAXON	HEIGHT (cm)	% COVER
Synaptantha tillaeacea	20	<1
Trianthema pilosa	15	<1
Trichodesma zeylanicum var. *grandiflorum*	30	<1
Triodia schinzii	70	15
Triraphis mollis	70	2

QUADRAT 62

Approximate Location: Near eastern side of lease
Datum (WGS84):
Soil: Red silty loam
Rocks: Quartzite and quartz rocks with 100% cover
Topography: Middle to upper slope
Field Vegetation Description: Low Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* over Open Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Linear quadrat



TAXON	HEIGHT (cm)	% COVER
Aristida inaequiglumis	50	5
Cleome viscosa	50	1
Eucalyptus leucophloia subsp.*leucophloia*	700	10
Euphorbia australis	25	<1
Paspalidium rarum	10	<1
Ptilotus exaltatus	50	2
Senna glutinosa subsp. *glutinosa*	50	<1
Senna sericea	40	<1
Trianthema pilosa	10	1
Tribulopis angustifolia	10	<1
Triodia pungens	90	10-20

QUADRAT 63

Approximate Location: Edge of lease
Datum (WGS84): 405956E; 7533379N
63B: 405432E; 7532122
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia inaequilatera* and *Acacia dictyophleba* over Grassland of *Triodia schinzii*
Vegetation Condition: 2-3
Notes: Very open. Burnt about 3 years. Very dry



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	50	10
Acacia inaequilatera	30	5
Acacia ligulata	60	<1
Aristida inaequiglumis	30	5
Boerhavia gardneri	10	<1
**Cenchrus ciliaris*	60	2
Cleome viscosa	30	<1
Eragrostis eriopoda	20	<1
Eriachne ciliata	15	<1
Euphorbia boophthona	70	<1
Fimbristylis dichotoma	50	<1
Heliotropium diversifolium	10	<1
Newcastelia roseoazurea	30	<1
Paspalidium rarum	20	<1
Portulaca pilosa	15	<1
Ptilotus obovatus	40	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	1
Senna artemisioides subsp. *helmsii*	50	<1

TAXON	HEIGHT (cm)	% COVER
Trianthema pilosa	10	2
Tribulopis angustifolia	5	2
Triodia schinzii	120	60

QUADRAT 64

Approximate Location:
Datum (WGS84): 405152E; 7533468N
Soil: Pink-red silty clay loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia ligulata* and *Acacia eriopoda* over Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 4
Notes: Fire about 1-2 years which has killed shrubs with only a few regrowing. *Corymbia opaca* all regrowing



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	50	<1
Acacia eriopoda	250	3
Acacia ligulata	200	3
Aristida inaequiglumis	40	2
**Cenchrus ciliaris*	60	50
Cleome viscosa	70	2
Corymbia opaca	150	<1
Hakea lorea subsp. *lorea*	150	<1
Polymeria ambigua	20	<1
Senna artemisioides subsp. *helmsii*	40	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Trianthema pilosa	10	2

QUADRAT 65

Approximate Location:
Datum (WGS84): 406976E; 7530474N
65B: 407067E; 7529675N
Soil: Red sand
Rocks: N/A
Topography: Sand dune crest
Field Vegetation Description: Scattered Tall Shrubs over Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes: Long linear sand dune did quadrat along dune. Vegetation very open. Burnt?



TAXON	HEIGHT (cm)	% COVER
Acacia ligulata	175	1
Acacia melleodora	200	3
Acacia robiniae	70	<1
Aristida inaequiglumis	50	1
Bonamia rosea	30	5
Calytrix carinata	50	<1
Cassytha filiformis	twiner	<1
Corchorus laniflorus	50	<1
Dodonaea coriacea	70	<1
Eragrostis eriopoda	70	<1
Goodenia armitiana	30	<1
Grevillea wickhamii subsp. *aprica*	600	1
Hibiscus coatesii	60	<1
Hybanthus aurantiacus	50	<1
Jacksonia aculeata	50	<1
Paspalidium rarum	10	<1
Petalostylis cassioides	60	1
Scaevola parvifolia subsp. *pilbarae*	20	2
Senna sericea	70	<1

TAXON	HEIGHT (cm)	% COVER
Sida arenicola	70	<1
Sida fibulifera	30	<1
Stylobasium spathulatum	70	<1
Triodia basedowii	50	20
Triodia schinzii	70	10-30
Velleia connata	30	<1
Anthobolus leptomerioides	opportunistic	
Grevillea stenobotrya	opportunistic	
Trianthema pilosa	opportunistic	

QUADRAT 66

Approximate Location:
Datum (WGS84): 406294E; 7528357N
66B: 406112E; 7528285N
66C: 406218E; 7527229N
66D: 406596E; 7527329N
Soil: Red silty sand
Rocks: N/A
Topography: Flat between hills
Field Vegetation Description: Open Scrub of *Acacia melleodora, Hakea lorea* subsp. *lorea* and *Grevillea eriostachya* over Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes: Area burnt. *Acacia* regrowing. In some areas *Triodia schinzii* was dominant and others it was *Triodia basedowii*



TAXON	HEIGHT (cm)	% COVER
Acacia melleodora	150	15
Dicrastylis doranii	50	<1
Grevillea eriostachya	120	5
Petalostylis cassioides	70	2
Scaevola parvifolia subsp. *pilbarae*	40	1
Stylobasium spathulatum	100	5
Triodia basedowii	90	20
Triodia schinzii	120	25
Triumfetta chaetocarpa	250	5
Hakea lorea subsp. lorea	Opportunistic	

QUADRAT 67

Approximate Location: Adjacent to KIN68 to show marked contrast in vegetation
Datum (WGS84): 406760E; 7529533N
67B: 406445E; 7529119N
67C: 406303E; 7528515N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Heath of *Acacia ancistrocarpa* over Hummock Grassland of *Triodia basedowii, Triodia schinzii* and *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes: Vegetation unit continues to river to the north and Rudall River Road to the east



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	150	30-50
Acacia synchronicia	50	<1
Aristida inaequiglumis	60	10
Bonamia rosea	50	1
Eragrostis eriopoda	60	<1
Grevillea wickhamii subsp. *aprica*	70	<1
Petalostylis cassioides	60	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Sida cardiophylla	40	<1
Tribulus hirsutus	10	<1
Triodia basedowii	100	40
Triodia schinzii	120	20
Corymbia opaca	opportunistic	
Eremophila latrobei subsp. *latrobei*	opportunistic	
Hybanthus aurantiacus	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 68

Approximate Location:
Datum (WGS84): 406820E; 7529645N
Soil: Sandy mud
Rocks: N/A
Topography: Flat
Field Vegetation Description: Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa* over bare ground
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Aristida contorta	40	<1
Eragrostis cumingii	40	<1
Rhagodia eremaea	60	<1
Salsola tragus subsp. *tragus*	40	<1
Sclerolaena lanicuspis	5	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Senna glutinosa subsp. *glutinosa*	150	1
Solanum lasiophyllum	30	<1
Streptoglossa decurrens	15	<1
Trianthema triquetra	5	<1
Triodia pungens	50	<1
Acacia synchronicia	opportunistic	
Cleome viscosa	opportunistic	
Paspalidium rarum	opportunistic	
Sclerolaena cornishiana	opportunistic	

QUADRAT 69

Approximate Location:
Datum (WGS84): 405944E; 7528248N
Soil: Red loam
Rocks: Quartzite and schist small rocks dense on surface
Topography: Middle to upper slope
Field Vegetation Description: Scattered shrubs over Hummock Grassland of *Triodia epactia*
Vegetation Condition: 2-3
Notes: Hillslope



TAXON	HEIGHT (cm)	% COVER
Acacia pyrifolia	120	
Acacia retivenea subsp. *clandestina*	150	
Acacia robeorum	60	
Eremophila tietkensii	50	
Eucalyptus leucophloia subsp.*leucophloia*	450	
Maireana georgei	40	
Senna sericea	70	
Triodia epactia	40	
Acacia synchronicia	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Pluchea tetranthera	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	

QUADRAT 70

Approximate Location:
Datum (WGS84): 405895E; 7528340N
70B: 405581E; 7528340N
Soil: Red silty loam
Rocks: Numerous quartz and schist rocks ca, 10cm
Topography: Lower slope
Field Vegetation Description: Open Heath of *Grevillea wickhamii* subsp. *aprica* and *Acacia retivenea* subsp. *clandestina* over Hummock Grassland of Triodia epactia
Vegetation Condition: 2-3
Notes: Mapped correctly with KIN67 between



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	<1
Acacia retivenea subsp. *clandestina*	150	30
Grevillea wickhamii subsp. *aprica*	200	15
Keraudrenia velutina subsp. *velutina*	60	<1
Senna artemisioides subsp. *helmsii*	50	<1
Senna glutinosa subsp. *glutinosa*	80	<1
Tribulus suberosus	30	<1
Triodia epactia	100	75

QUADRAT 71

Approximate Location:
Datum (WGS84): 405395E; 7527311N
Soil: Red sandy loam with a small amount of clay
Rocks: Few scattered rocks on surface
Topography: Flat
Field Vegetation Description: Open Shrubland dominated by *Acacia eriopoda* over Hummock Grassland of *Triodia epactia* and *Triodia basedowii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	120	2
Acacia eriopoda	170	5
Acacia ligulata	200	2
Grevillea wickhamii subsp. *aprica*	300	1
Hakea lorea subsp. *lorea*	50	<1
Ptilotus astrolasius var. *astrolasius*	15	3
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	70	2
Senna glutinosa subsp. *glutinosa*	200	5
Triodia basedowii	90	40
Triodia epactia	70	10
Portulaca pilosa	opportunistic	
Solanum lasiophyllum	opportunistic	
Streptoglossa decurrens	opportunistic	

QUADRAT 72

Approximate Location:
Datum (WGS84): 405288E; 7527320N
72B: 405659E; 7526782N
Soil: Red sand
Rocks: N/A
Topography: Flat along creek
Field Vegetation Description: Open Scrub of *Acacia adsurgens* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 3
Notes: Drainage line



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	300	30-60
Acacia ancistrocarpa	100	5
Acacia ligulata	70	<1
Aristida inaequiglumis	50	10
Bonamia pannosa	30	2
Bonamia rosea	50	<1
**Cenchrus ciliaris*	60	10
Cleome viscosa	60	<1
Corchorus laniflorus	60	<1
Corchorus walcottii	50	<1
Eragrostis eriopoda	70	1
Eremophila longifolia	150	5
Eucalyptus camaldulensis	800	2
Gossypium australe	70	3
Hybanthus aurantiacus	40	3
Ptilotus obovatus	70	<1
Ptilotus polystachyus var. *polystachyus*	60	<1
Scaevola parvifolia subsp. *pilbarae*	30	1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *oligophylla*	70	<1
Senna notabilis	20	<1
Sorghum plumosum	70	5
Tribulopis angustifolia	twiner	<1
Trichodesma zeylanicum var. *grandiflorum*	50	1
Triodia pungens	120	20-40
Whiteochloa cymbiformis	80	<1
Acacia eriopoda	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	

QUADRAT 73

Approximate Location:
Datum (WGS84): 405650E; 7526517N
Soil: Red sand
Rocks: N/A
Topography: Lower slope above creek
Field Vegetation Description: Low Open Forest of *Acacia aneura* var . ? *macrocarpa* over Hummock Grassland of *Triodia basedowii* and *Aristida inaequiglumis*
Vegetation Condition: 3
Notes: In cut away from area . Playa running into creek



TAXON	HEIGHT (cm)	% COVER
Acacia aneura var. ? *macrocarpa*	500	25
Acacia affin. *eriopoda*	120	<1
Acacia ancistrocarpa	150	3
Acacia eriopoda	150	5
Acacia melleodora	120	2
Anthobolus leptomerioides	90	<1
Aristida inaequiglumis	50	20
**Cenchrus ciliaris*	50	5
Corchorus laniflorus	70	<1
Dactyloctenium radulans	15	<1
Eragrostis laniflora	70	2
Eriachne aristidea	15	<1
Euphorbia australis	20	2
Grevillea wickhamii subsp. *aprica*	150	<1
Heliotropium diversifolium	30	<1
Ipomoea muelleri	twiner	2
Polymeria ambigua	twiner	5
Rhagodia eremaea	70	<1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	80	3

TAXON	HEIGHT (cm)	% COVER
Senna glutinosa subsp. *glutinosa*	60	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	70	5
Stenopetalum decipiens	20	<1
Tephrosia rosea	50	1
Trianthema pilosa	20	<1
Tribulopis angustifolia	twiner	2
Tribulus hirsutus	10	1
Trichodesma zeylanicum var. *grandiflorum*	70	<1
Triodia basedowii	80	20
Triodia pungens	120	5
Whiteochloa cymbiformis	80	3
Aristida inaequiglumis	opportunistic	
Cleome viscosa	opportunistic	
Ptilotus obovatus	opportunistic	

QUADRAT 74

Approximate Location:
Datum (WGS84): 405568E; 7526337N
Soil: Red silty sand
Rocks: N/A
Topography: Lower slope facing west
Field Vegetation Description: Low Open Woodland of *Eucalyptus odontocarpa* over Low Open Shrubland of *Senna glutinosa* subsp. *glutinosa* over Hummock Grassland of *Triodia basedowii* and *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes: Eucalyptus odontocarpa occurs as small clumps through this area



TAXON	HEIGHT (cm)	% COVER
Acacia affin. *eriopoda*	60	<1
Acacia ancistrocarpa	120	<1
Aristida inaequiglumis	60	15
Eragrostis eriopoda	60	1
Eucalyptus odontocarpa	400	10
Heliotropium ovalifolium	25	<1
Indigofera boviperda subsp. *boviperda*	30	<1
Senna artemisioides subsp. *helmsii*	60	5
Senna artemisioides subsp. *oligophylla*	100	10
Senna glutinosa subsp. *glutinosa*	70	10
Solanum lasiophyllum	50	<1
Trianthema turgidifolia	5	<1
Triodia basedowii	90	40
Triodia schinzii	90	<1
Gossypium australe	opportunistic	
Trianthema pilosa	opportunistic	

QUADRAT 75

Approximate Location:
Datum (WGS84): 406678E; 7527497N
75B: 407312E; 7528587N
75C: 407611E; 7529349N
75D: 408657E;7530011N
75E: 407707E; 7529795N
75F: 407575E; 7530014N
75G: 408937E; 7536101N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia ancistrocarpa* over Grassland of *Triodia schinzii*
Vegetation Condition: 3
Notes: At 75C dominated by *Triodia basedowii*; 75E dominated by *Triodia schinzii*; 75F dominated by *Acacia melleodora*



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	350	10
Acacia melleodora	100	1
Aristida inaequiglumis	40	1
Bonamia rosea	60	5
Corchorus walcottii	70	<1
Heliotropium ovalifolium	50	<1
Petalostylis cassioides	70	<1
Tribulus hirsutus	30	<1
Trichodesma zeylanicum var. *grandiflorum*	50	<1
Triodia basedowii	120	2
Triodia schinzii	140	60
Grevillea wickhamii subsp. *aprica*	opportunistic	
Grevillea eriostachya	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Hakea lorea subsp. *lorea*	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 76

Approximate Location:
Datum (WGS84): 402875E; 7531400N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Shrubland dominated by *Tephrosia brevidens* over Very Open Herbs dominated by *Heliotropium tenuifolium* over Tussock Grassland dominated by *Chrysopogon fallax*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia colei	30	<1
Acacia inaequilatera	200	<1
Acacia ligulata	175	1
Aristida contorta	40	2
Chrysopogon fallax	90	40
Cleome viscosa	70	5-15
Corchorus lasiocarpus	30	<1
Corymbia opaca	150	1
Dactyloctenium radulans	20	<1
Eremophila latrobei subsp. *latrobei*	50	<1
Eulalia aurea	70	<1
Gossypium australe	70	1
Heliotropium tenuifolium	20	10
Indigofera brevidens	50	15
Maireana georgei	30	<1
Phyllanthus erwinii	50	<1
Polymeria ambigua	5	2
Ptilotus obovatus	50	2
Ptilotus polystachyus var. *polystachyus*	70	1
Senna artemisioides subsp. *oligophylla*	50	2-20

TAXON	HEIGHT (cm)	% COVER
Senna glutinosa subsp. *glutinosa*	60	<1
Solanum lasiophyllum	50	<1
Trianthema turgidifolia	5	<1
Tribulus macrocarpus	10	3
Triodia pungens	70	2
Xerochloa laniflora	25	1
Acacia eriopoda	opportunistic	
Bonamia rosea	opportunistic	
Enneapogon polyphyllus	opportunistic	
Senna artemisioides subsp. *helmsii*	opportunistic	
Tephrosia brevidens		

QUADRAT 77

Approximate Location:
Datum (WGS84): 402774E; 7530813N
Soil: Clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Grassland of *Xerochloa laniflora* and *Dactyloctenium radulans*
Vegetation Condition: 2-3
Notes: Visible salt in areas. Large area of bare ground



TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia	30	<1
Aristida contorta	30	5
Atriplex semilunaris	40	<1
Chrysopogon fallax	120	<1
Dactyloctenium radulans	10	10
Digitaria ctenantha	50	<1
Eragrostis eriopoda	50	3
Eremophila latrobei subsp. *latrobei*	50	12
Maireana georgei	15	<1
Salsola tragus subsp. *tragus*	50	1
Sclerolaena crenata	20	5
Sclerolaena cuneata	10	1
Sclerolaena lanicuspis	20	1
Senna artemisioides subsp. *helmsii*	60	1
Senna artemisioides subsp. *oligophylla*	60	2
Sida fibulifera	30	<1
Solanum lasiophyllum	50	<1
Trianthema triquetra	15	<1
Tribulus hirsutus	15	5
Xerochloa laniflora	40	15

QUADRAT 78

Approximate Location:
Datum (WGS84): 402603E; 7530486N
78B: 400372E; 7529604N
Soil: Pink clay
Rocks: N/A
Topography: Clay pan
Field Vegetation Description: Scattered herbs and grasses
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Abutilon oxycarpum	30	<1
Aristida contorta	30	1
Chrysopogon fallax	50	<1
Dactyloctenium radulans	20	1
Maireana georgei	10	<1
Portulaca oleracea	10	<1
Portulaca pilosa	10	<1
Salsola tragus subsp. *tragus*	20	<1
Sclerolaena cuneata	30	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Solanum lasiophyllum	50	<1
Xerochloa laniflora	30	1

QUADRAT 79

Approximate Location:
Datum (WGS84): 402364E; 7530259N
Soil: Clay
Rocks: N/A
Topography: Flat clay pan
Field Vegetation Description: Shrubland of *Eremophila forrestii* subsp. *forrestii* over Low Open Shrubland dominated by *Sclerolaena* species over Annual Tussock Grassland of *Aristida contorta*
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Aristida contorta	30	10
Acacia synchronicia	200	3
**Cenchrus ciliaris*	60	<1
Chrysopogon fallax	70	<1
Cleome viscosa	70	2
Dactyloctenium radulans	20	3
Enneapogon purpurascens	30	<1
Eremophila forrestii subsp. *forrestii*	100	5
Eremophila latrobei subsp. *latrobei*	50	1
Hakea lorea subsp. *lorea*	100	<1
Portulaca pilosa	15	<1
Sclerolaena crenata	30	2
Sclerolaena diacantha	60	3
Senna artemisioides subsp. *helmsii*	30	<1
Senna artemisioides subsp. *oligophylla*	50	1
Senna glutinosa subsp. *glutinosa*	120	<1
Solanum lasiophyllum	50	2
Trianthema triquetra	10	<1
Tribulus macrocarpus	15	2
Triodia pungens	70	2

QUADRAT 80

Approximate Location:
Datum (WGS84): 402091E; 7530205N
80B: 401415E; 7530285N
80C: 400658E; 7530041N
Soil: Clay
Rocks: N/A
Topography: Flat claypan
Field Vegetation Description: Open Shrubland of *Acacia inaequilatera* over Low Open Shrubland of *Eremophila forrestii* subsp. *forrestii* Tussock Grassland of **Cenchrus ciliaris* and Hummock Grassland of mixed taxa
Vegetation Condition: 3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia bivenosa	120	1
Acacia inaequilatera	200	10
Aristida contorta	30	10
Aristida inaequiglumis	50	10
Blumea tenella	30	<1
Boerhavia gardneri	10	<1
**Cenchrus ciliaris*	50	15
Cleome viscosa	70	5
Dactyloctenium radulans	30	2
Eragrostis eriopoda	70	<1
Eremophila forrestii subsp. *forrestii*	70	5
Indigofera colutea	30	<1
Ptilotus obovatus	70	1
Rhagodia eremaea	90	<1
Sclerolaena cuneata	20	<1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	70	1
Sida sp.	50	<1

TAXON	HEIGHT (cm)	% COVER
Solanum lasiophyllum	70	3
Trianthema triquetra	10	<1
Tribulus macrocarpus	20	5
Triodia pungens	90	10
Triodia schinzii	150	8

QUADRAT 81

Approximate Location:
Datum (WGS84): 400384E; 7529417N
Soil: Clay
Rocks: N/A
Topography: Flat claypan
Field Vegetation Description: Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Tussock Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	30	<1
Aristida contorta	30	5
Aristida inaequiglumis	70	5
Boerhavia gardneri	10	<1
**Cenchrus ciliaris*	60	10
Cleome viscosa	90	2
Dactyloctenium radulans	10	<1
Eragrostis eriopoda	70	5
Hakea lorea subsp. *lorea*	70	1
Portulaca oleracea	10	<1
Sclerolaena cuneata	10	<1
Senna artemisioides subsp. *helmsii*	60	3
Senna artemisioides subsp. *oligophylla*	80	5
Solanum lasiophyllum	70	<1
Tephrosia rosea var. *rosea*	50	1
Trianthema pilosa	10	<1
Tribulus macrocarpus	10	<1
Xerochloa laniflora	15	5
Acacia inaequilatera	opportunistic	

QUADRAT 82

Approximate Location:
Datum (WGS84): 401017E; 7530319N
82B: 400235E; 7529820N
Soil: Red silty sand
Rocks: Few quartz and schist pebbles
Topography: Flat
Field Vegetation Description: Low Shrubland of *Acacia* and *Senna* species over Hummock Grassland dominated by *Triodia basedowii*
Vegetation Condition: 2
Notes: Burnt about 2 years. Continues to creek. Very severe burn killed many *Acacia* shrubs

No photograph taken

TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia ancistrocarpa	60	<1 (5)
Acacia colei	150	(2)
Acacia inaequilatera	400	1
Acacia ligulata	40	<1(10)
Aristida inaequiglumis	50	10
Cleome viscosa	70	1
Eragrostis eriopoda	80	1
Eragrostis laniflora	70	<1
Eriachne aristidea	10	<1
Eulalia aurea	80	<1
Euphorbia australis	25	5
Evolvulus alsinoides var. *villosicalyx*	20	2
Fimbristylis dichotoma	60	<1
Goodenia armitiana	25	<1
Hakea lorea subsp. *lorea*	90	1
Heliotropium diversifolium	400	<1
Hybanthus aurantiacus	40	<1
Indigofera colutea	20	<1
Newcastelia roseoazurea	50	<1
Paraneurachne muelleri	70	2
Paspalidium rarum	10	<1
Polymeria ambigua	5	2
Ptilotus obovatus	70	1
Ptilotus polystachyus var. *polystachyus*	70	<1
Sarcostemma viminale subsp. *australe*	60	<1
Scaevola parvifolia subsp. *pilbarae*	20	<1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	70	2
Senna notabilis	30	<1
Sida arenicola	80	<1
Streptoglossa decurrens	50	<1
Stylobasium spathulatum	60	2 (5)
Trianthema pilosa	20	<1
Tribulus macrocarpus	10	<1
Triodia basedowii	90	5
Triodia pungens	70	10
Solanum lasiophyllum	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Gossypium australe	opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	opportunistic	

QUADRAT 83

Approximate Location:
Datum (WGS84): 400664E; 7529203N
Soil: Red clay loam
Rocks: Many quartz and schist rocks about 10cm
Topography: Lower slope facing SE
Field Vegetation Description: Open Grassland dominated by *Triodia pungens*
Vegetation Condition: 2-3
Notes: Bare ground. Scree slope



TAXON	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	50	5
Portulaca oleracea	10	<1
Sarcostemma viminale subsp. *australe*	30	<1
Sclerolaena crenata	10	<1
Solanum lasiophyllum	50	<1
Sporobolus actinocladus	20	<1
Trianthema turgidifolia	30	<1
Triodia pungens	50	15
Xerochloa laniflora	10	2

QUADRAT 84

Approximate Location:
Datum (WGS84): 400828E; 7529075N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Tussock Grassland of **Cenchrus ciliaris*, *Aristida inaequiglumis*, *Xerochloa laniflora* and *Eragrostis eriopoda*
Vegetation Condition: 4
Notes: Very degraded site. Surrounded by hills



TAXON	HEIGHT (cm)	% COVER
Aristida inaequiglumis	60	15
**Cenchrus ciliaris*	60	30
Cleome viscosa	70	<1
Eragrostis dielsii	10	<1
Eragrostis eriopoda	70	10
Eriachne obtusa	20	1
Fimbristylis dichotoma	70	<1
Indigofera colutea	30	5
Pluchea rubelliflora	20	<1
Trianthema turgidifolia	10	1
Tribulus hirsutus	30	<1
Triodia pungens	80	<1
Xerochloa laniflora	30	15
Acacia inaequilatera	opportunistic	

QUADRAT 85

Approximate Location:
Datum (WGS84): 400495E; 7528894N
85B: 401516E; 7528412N
85C: 403567E; 7532837N
85D: 403370E; 7535726N
85E: 400639E; 7530771N
Soil: Red sandy loam
Rocks: Rock face with few soil patches
Topography: Middle to upper slope
Field Vegetation Description: Low Open Shrubland of *Indigofera monophylla* and *Senna glutinosa* subsp. *glutinosa* over Open Herbs dominated by *Cleome viscosa* and *Boerhavia gardneri* over Grassland dominated by *Triodia pungens*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia pyrifolia	120	<1
Aristida contorta	40	5
Boerhavia gardneri	15	5
**Cenchrus ciliaris*	30	<1
Cleome viscosa	70	5
Enneapogon purpurascens	20	2
Euphorbia australis	20	1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	10	2
Heliotropium tenuifolium	20	<1
Indigofera monophylla	30	5
Ptilotus macrocephalus	60	2
Salsola tragus subsp. *tragus*	30	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *helmsii*	40	1
Senna artemisioides subsp. *oligophylla*	60	1
Senna glutinosa subsp. *glutinosa*	70	3
Sida platycalyx	40	3
Tephrosia densa	70	1
Tephrosia rosea var. *glabrior*	20	<1
Tribulus suberosus	50	<1
Triodia pungens	20	15
Acacia inaequilatera	opportunistic	
Eucalyptus brevifolia	opportunistic	
Euphorbia coghlanii	opportunistic	
Ficus brachypoda	opportunistic	
Fimbristylis dichotoma	opportunistic	
Hakea lorea subsp. *lorea*	opportunistic	
Hibiscus coatesii	opportunistic	
Senna glutinosa subsp. *pruinosa*	opportunistic	
Sida cardiophylla	opportunistic	
Solanum lasiophyllum	opportunistic	
Stenopetalum decipiens	opportunistic	

QUADRAT 86

Approximate Location: Near southern end of lease
Datum (WGS84): 400790E; 7529319
Soil: Clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Open Woodland of *Acacia inaequilatera* over Tussock Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	400	5
**Cenchrus ciliaris*	70	50
Cleome viscosa	80	3
Crotalaria crispata	40	2
Cullen pogonocarpum	70	1
Eragrostis eriopoda	80	10
Eriachne aristidea	50	<1
Euphorbia australis	20	<1
Fimbristylis dichotoma	70	<1
Hakea lorea subsp. *lorea*	300	<1
Indigofera linifolia	40	<1
Phyllanthus erwinii	50	<1
Polymeria ambigua	10	<1
Ptilotus obovatus	50	1
Senna artemisioides subsp. *helmsii*	175	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Solanum lasiophyllum	60	<1
Tephrosia rosea var. *rosea*	30	<1
Tribulus hirsutus	20	<1

TAXON	HEIGHT (cm)	% COVER
Triodia pungens	100	5
Acacia ancistrocarpa	opportunistic	

QUADRAT 87

Approximate Location:
Datum (WGS84): 401064E; 7529482N
87B: 400923E; 7529288N
87C: 401953E; 7528972N
87D: 402162E; 7527840N
Soil: Red sandy clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Senna artemisioides* subsp. *helmsii* over Grassland of **Cenchrus ciliaris* and *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	400	3
Acacia inaequilatera	200	1
Aristida inaequiglumis	40	15
Boerhavia gardneri	25	<1
**Cenchrus ciliaris*	50	25
Cleome viscosa	70	5
Crotalaria crispata	15	<1
Eragrostis eriopoda	40	<1
Eriachne aristidea	30	<1
Evolvulus alsinoides var. *villosicalyx*	30	<1
Fimbristylis dichotoma	50	<1
Hibiscus leptocladus	60	<1
Indigofera boviperda subsp. *boviperda*	40	1
Indigofera colutea	30	<1
Phyllanthus erwinii	30	<1
Sclerolaena cornishiana	30	<1
Senna artemisioides subsp. *helmsii*	150	15-20

TAXON	HEIGHT (cm)	% COVER
Solanum lasiophyllum	50	<1
Tephrosia rosea subsp. *rosea*	50	1
Tribulopis angustifolia	twiner	<1
Tribulus hirsutus	10	<1
Tribulus macrocarpus	10	<1
Triodia pungens	120	1

QUADRAT 88

Approximate Location:
Datum (WGS84): 401623E; 7529370N
88B: 401801E; 7529398N
88C: 402428E; 7529354N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia* species over Hummock Grassland dominated by *Triodia pungens*
Vegetation Condition: 3
Notes:

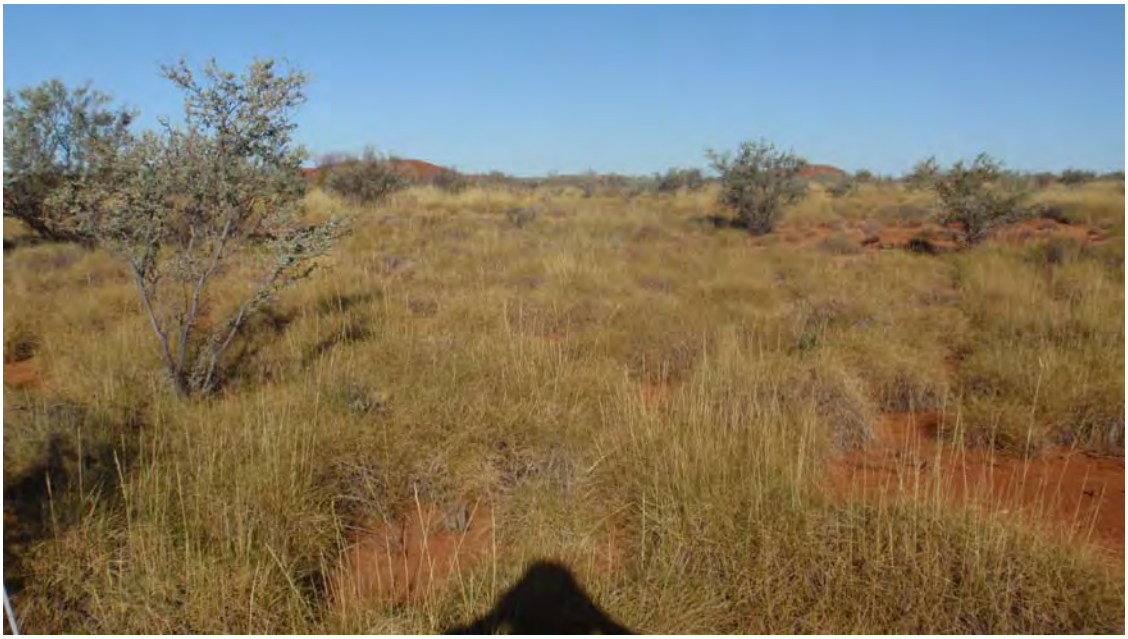


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	5
Acacia inaequilatera	300	3
Acacia ligulata	200	1
Aristida inaequiglumis	70	15
**Cenchrus ciliaris*	60	5
Cleome viscosa	70	2
Corchorus sidoides subsp. *sidoides*	60	2
Crotalaria medicaginea	40	<1
Dactyloctenium radulans	20	1
Eragrostis eriopoda	70	2
Eriachne aristidea	30	1
Eriachne mucronata	50	<1
Indigofera colutea	30	<1
Indigofera linifolia	40	<1
Ptilotus calostachyus	60	<1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
TAXON	**HEIGHT (cm)**	**% COVER**

Rhagodia eremaea	50	1
Sclerolaena cornishiana	20	2
Senna artemisioides subsp. *helmsii*	70	3
Senna artemisioides subsp. *oligophylla*	50	<1
Senna notabilis	30	<1
Solanum lasiophyllum	50	1
Tephrosia rosea var. *rosea*	50	<1
Trianthema pilosa	30	<1
Tribulus macrocarpus	10	2
Triodia pungens	150	10-50
Triodia schinzii	120	5
Bonamia rosea	opportunistic	
Sida arenicola	opportunistic	

QUADRAT 89

Approximate Location: Drill area 2
Datum (WGS84): 402590E; 7529294N
89B: 402786E; 7529488N
89C: 400919E; 7529671N
89D: 401825E; 7528756N
89E: 402412E; 7528899N
89F: 402302E; 7528105N
Soil: Red silty sandy loam
Rocks: Quartz rocks up to 15cm on ground
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia inaequilatera* over Hummock Grassland dominated by *Triodia pungens*
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	400	5
Cleome viscosa	90	<1
Dactyloctenium radulans	10	<1
Gomphrena canescens subsp. *canescens*	20	<1
Portulaca oleracea	10	<1
Rhagodia eremaea	70	<1
Sclerolaena cornishiana	20	<1
Sclerolaena cuneata	20	<1
Senna artemisioides subsp. *helmsii*	50	<1
Senna artemisioides subsp. *oligophylla*	100	<1
Senna glutinosa subsp. *glutinosa*	100	<1
Triodia pungens	100	75
Acacia ancistrocarpa	opportunistic	
Aristida inaequiglumis	opportunistic	

QUADRAT 90

Approximate Location:
Datum (WGS84): 400321E; 7528886N
90B: 400182E; 7528703N
90C: 401105E; 7528920N
Soil: Red silty sand clay
Rocks: Occasional quartz rocks on surface
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia inaequilatera* over Tussock Grassland dominated by *Aristida inaequiglumis* and *Triodia pungens*
Vegetation Condition: 3
Notes:



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia inaequilatera	250	2
Aristida inaequiglumis	60	20
Boerhavia gardneri	15	5
**Cenchrus ciliaris*	50	10
Cleome viscosa	70	1
Eragrostis eriopoda	80	5
Eriachne aristidea	15	<1
Euphorbia australis	25	<1
Gomphrena canescens subsp. *canescens*	30	<1
Hakea lorea subsp. *lorea*	160	<1
Heliotropium tenuifolium	10	<1
Indigofera brevidens	15	3
Indigofera colutea	20	2
Indigofera linifolia	50	2
Indigofera monophylla	50	<1
Paspalidium rarum	15	<1
Polymeria ambigua	10	<1

TAXON	HEIGHT (cm)	% COVER
Portulaca oleracea	10	<1
Ptilotus polystachyus var. *polystachyus*	50	<1
Rhagodia eremaea	60	<1
Senna artemisioides subsp. *oligophylla*	40	<1
Solanum lasiophyllum	60	1
Tephrosia rosea var. *rosea*	50	<1
Triodia pungens	120	15
Ptilotus exaltatus	opportunistic	
Gossypium australe	opportunistic	
Senna artemisioides subsp. *helmsii*	opportunistic	

QUADRAT 91

Approximate Location:
Datum (WGS84): 400695E; 7528263N
91B: 401460E; 7528667N
91C: 401257E; 7528440N
Soil: Red silty sandy loam
Rocks: Few quartz ca. 5cm
Topography: Drainage line
Field Vegetation Description: Open Woodland of *Corymbia opaca* over Tussock Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia colei	50	<1
Aristida contorta	40	5
Boerhavia gardneri	50	2
**Cenchrus ciliaris*	60	40
Chrysopogon fallax	70	<1
Cleome viscosa	90	2
Corymbia opaca	1000	3
Enneapogon polyphyllus	20	<1
Hakea lorea subsp. *lorea*	90	<1
Senna artemisioides subsp. *helmsii*	70	<1
Solanum lasiophyllum	50	<1
Tephrosia rosea var. *rosea*	40	<1
Tribulus hirsutus	10	<1
Triodia pungens	70	<1

QUADRAT 92

Approximate Location:
Datum (WGS84): 401705E; 7528487N
92B: 402121E; 7528991N
Soil: Coarse red sand
Rocks: Quartz up to 30cm
Topography: Drainage line
Field Vegetation Description: Open Shrubland dominated by *Acacia retivenea* subsp. *clandestina* over Low Open Heath of *Tephrosea rosea* var. *rosea* over Open Grassland of mixed taxa
Vegetation Condition: 2-3
Notes: Relevee walked along drainage line. 92B no *Acacia retivenea* subsp. *clandestina* but *Acacia eriopoda*



TAXON	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	50	3
Acacia adoxa var. *adoxa*	40	<1
Acacia ancistrocarpa	60	<1
Acacia retivenea subsp. *clandestina*	120	5
Bonamia pannosa	10	<1
Cleome viscosa	8-	<1
Corchorus sidoides subsp. *sidoides*	60	5
Enneapogon polyphyllus	25	<1
Eriachne mucronata	50	<1
Gossypium australe	60	<1
Heliotropium tenuifolium	25	<1
Indigofera monophylla	30	<1

TAXON	HEIGHT (cm)	% COVER
Paraneurachne muelleri	40	<1
Paspalidium rarum	10	<1
Ptilotus auriculifolius	50	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Senna notabilis	40	<1
Senna venusta	100	<1
Solanum lasiophyllum	60	<1
Sorghum plumosum	90	5
Tephrosia rosea var. *rosea*	60	70
Themeda triandra	70	3
Tribulus hirsutus	10	<1
Triodia epactia	120	3
Acacia eriopoda	opportunistic	

QUADRAT 93

Approximate Location:
Datum (WGS84): 402460E; 7528556N
Soil: Red silty sand
Rocks: Scattered quartz pebbles <5cm
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia ancistrocarpa* and *Acacia inaequilatera* over Open Shrubland of *Senna artemisioides* subsp. *helmsii* over Hummock Grassland of *Triodia pungens* and **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	350	10
Acacia inaequilatera	250	5
Aristida inaequiglumis	50	1
Boerhavia gardneri	10	<1
**Cenchrus ciliaris*	60	15
Chrysopogon fallax	80	5
Cleome viscosa	70	5
Gossypium australe	15	<1
Heliotropium tenuifolium	120	<1
Hibiscus coatesii	70	<1
Indigofera colutea	30	<1
Indigofera linifolia	30	<1
Indigofera monophylla	40	<1
Paspalidium rarum	10	<1
Ptilotus obovatus	70	<1
Senna artemisioides subsp. *helmsii*	150	5
Tephrosia rosea var. *rosea*	70	<1
Tribulus macrocarpus	10	<1
Triodia pungens	100	30
Triodia wiseana	20	<1

QUADRAT 94

Approximate Location:
Datum (WGS84): 402376E; 7528343N
94B: 403416E; 7528346N
Soil: Red silty sand
Rocks: Occasional quartz pebbles
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia ancistrocarpa* over Low Open Shrubland of *Eremophila forrestii* subsp. *forrestii* over Hummock Grassland of *Triodia schinzii* and *Triodia epactia*
Vegetation Condition: 2
Notes: 94B has been severely burnt *but Acacia ancistrocarpa* still alive



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	<1
Acacia ancistrocarpa	250	20
Acacia inaequilatera	300	1
Aristida inaequiglumis	50	10
Boerhavia gardneri	30	<1
Bonamia rosea	30	5
Cleome viscosa	70	<1
Corchorus sidoides subsp. *sidoides*	70	<1
Corymbia opaca	150	<1
Eremophila forrestii subsp. *forrestii*	70	5
Eriachne sulcata	40	<1
Euphorbia australis	30	<1
Goodenia vilmoriniae	30	<1
Grevillea wickhamii subsp. *aprica*	250	<1
Heliotropium diversifolium	30	<1
Indigofera monophylla	70	<1
Ptilotus obovatus	50	1
Sarcostemma viminale subsp. *australe*	60	<1
Senna artemisioides subsp. *oligophylla*	70	<1

TAXON	HEIGHT (cm)	% COVER
Sida arenicola	90	<1
Tribulus hirsutus	10	2
Triodia epactia	90	10
Triodia schinzii	150	25

QUADRAT 95

Approximate Location:
Datum (WGS84): 402625E; 7527592N
95B: 403022E; 7527610N
95C: 403332E; 7528168N
95D: 404002E; 7528012N
Soil: Red silty loam
Rocks: Scattered quartz to 10cm on surface
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia inaequilatera* over Low Open Shrubland of *Senna artemisioides* subsp. *helmsii* and *Boerhavia gardneri* over Tussock Grassland dominated by *Aristida inaequiglumis*
Vegetation Condition: 3
Notes: Very dry, young Triodia dead



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	250	<1-5
Aristida contorta	20	2
Aristida inaequiglumis	50	10
Boerhavia gardneri	10	10
**Cenchrus ciliaris*	50	3
Cleome viscosa	70	<1
Eragrostis eriopoda	60	1
Eremophila forrestii subsp. *forrestii*	100	<1
Eriachne aristidea	20	<1
Gossypium australe	50	<1
Heliotropium tenuifolium	25	1
Indigofera linifolia	15	3
Ptilotus exaltatus	20	<1
Ptilotus obovatus	30	<1
Senna artemisioides subsp. *helmsii*	90	5-10
Solanum lasiophyllum	60	1

TAXON	HEIGHT (cm)	% COVER
Tephrosia rosea	60	1
Tribulus macrocarpus	10	<1
Triodia pungens	70	1
Acacia ancistrocarpa	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	

QUADRAT 96

Approximate Location:
Datum (WGS84): 403149E; 7527502N
96B: 403186E; 7528080N
96C: 403332E; 7528168N
Soil: Brownish red silty loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Woodland of *Corymbia opaca* over Annual Tussock Grassland of *Sorghum plumosum* and *Themeda triandra*
Vegetation Condition: 3
Notes: Area burnt and dry



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia affin. *eriopoda*	70	<1
Acacia ancistrocarpa	20	<1
Acacia colei	70	<1
Acacia inaequilatera	130	<1
Boerhavia gardneri	30	10
Bonamia rosea	50	1
**Cenchrus ciliaris*	70	5
Chrysocephalum eremaeum	50	<1
Cleome viscosa	70	2
Corchorus sidoides subsp. *sidoides*	60	5
Corymbia opaca	1400	5-30
Eragrostis eriopoda	60	5
Euphorbia australis	30	<1
Euphorbia boophthona	50	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Indigofera brevidens	60	3
Phyllanthus erwinii	50	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *helmsii*	50	<1
Senna artemisioides subsp. *oligophylla*	50	1
Sida sp.	60	<1
Solanum diversiflorum	50	<1
Sorghum plumosum	170	20
Stylobasium spathulatum	15	<1
Tephrosia rosea	50	1
Themeda triandra	90	5
Tribulus macrocarpus	20	2
Triodia pungens	100	10

QUADRAT 97

Approximate Location:
Datum (WGS84): 403010E; 7526985N
Soil: Red silty loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* over Closed Hummock Grassland of *Triodia epactia*
Vegetation Condition: 2-3
Notes: Only a small area unburnt bush in this southern section. All was a hot burn with Acacia dead and unrecognizable. Applies to the whole of this area



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	30
Acacia ligulata	175	1
Aristida contorta	50	5
Aristida inaequiglumis	60	<1
Bonamia rosea	50	5
Cleome viscosa	80	5
Corchorus sidoides subsp. *sidoides*	40	<1
Eriachne sulcata	15	<1
Euphorbia australis	20	<1
Goodenia vilmoriniae	30	<1
Indigofera brevidens	50	<1
Indigofera monophylla	50	<1
Newcastelia roseoazurea	30	<1
Paspalidium rarum	10	<1
Ptilotus obovatus	60	5
Senna artemisioides subsp. *helmsii*	60	<1
Senna artemisioides subsp. *oligophylla*	40	<1
Senna notabilis	10	<1
Tribulus hirsutus	5	5

TAXON	HEIGHT (cm)	% COVER
Tribulus macrocarpus	10	2
Triodia epactia	100	70
Triodia pungens	90	2

QUADRAT 98

Approximate Location:
Datum (WGS84): 403083E; 7526884N
Soil: Red sandy clay
Rocks: N/A
Topography: 3-4
Field Vegetation Description: Low Open Shrubland of *Acacia* species over Open Annual Tussock Grassland of *Aristida inaequiglumis*
Vegetation Condition: 4
Notes: Area burnt. *Acacia* species unrecognizable



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	30	<1
Acacia sp dead	dead	10
Aristida inaequiglumis	50	25
Bonamia rosea	60	2
Cleome viscosa	70	2
Eragrostis eriopoda	80	5
Eriachne aristidea	30	1
Hibiscus sturtii var. *platychlamys*	80	5
Indigofera linifolia	30	<1
Indigofera monophylla	30	<1
Paspalidium rarum	10	2
Senna artemisioides subsp. *helmsii*	40	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Tephrosia rosea	50	<1
Tribulus hirsutus	30	3
Tribulus macrocarpus	30	1
Triodia epactia	30	1

QUADRAT 99

Approximate Location:
Datum (WGS84): 403340E; 7526475N
Soil: Red sandy loam
Rocks: Numerous quartz rocks on surface
Topography: Lower slope facing NW
Field Vegetation Description: High Shrubland of *Acacia wanyu* over Shrubland dominated by *Eremophila tietkensii*
Vegetation Condition: 2
Notes: Restricted to the lower slopes in this area



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	150	<1
Acacia pyrifolia	300	<1
Acacia wanyu	250	15 (10)
Anthobolus leptomerioides	80	<1
Corchorus sidoides subsp. *sidoides*	70	<1
Eremophila forrestii subsp. *forrestii*	70	<1
Eremophila tietkensii	70	25
Maireana georgei	10	<1
Maireana melanocoma	30	<1
Senna glutinosa subsp. *glutinosa*	120	1
Sida arenicola	50	<1
Solanum lasiophyllum	50	<1
Tribulus suberosus	100	<1
Triodia epactia	100	15
Triodia wiseana	50	3
Acacia ancistrocarpa	opportunistic	
Aristida contorta	opportunistic	
Gossypium australe	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Senna artemisioides subsp. *helmsii*	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	

QUADRAT 100

Approximate Location:
Datum (WGS84): 403274E; 7529686N
Soil: Yellow red silty sand
Rocks: Numerous rocks of various sorts dense on surface
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia synchonychia* over Low Open Shrubland dominated by *Eremophila tietkensii* over Grassland of *Triodia wiseana*
Vegetation Condition: 2
Notes: Below slope. Not burnt recently. Slight rise above sandy soils in landscape



TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia	200	10
Acacia synchronicia (green)	200	1
Eremophila tietkensii	70	1-10
Heliotropium ovalifolium	50	<1
Ptilotus obovatus	70	1
Rhagodia eremaea	100	1
Senna artemisioides subsp. *oligophylla*	60	<1
Solanum lasiophyllum	50	<1
Tribulus suberosus	90	<1
Triodia wiseana	100	65
Acacia ancistrocarpa	opportunistic	
Corchorus sidoides subsp. *sidoides*	opportunistic	
Enneapogon purpurascens	opportunistic	
Eragrostis eriopoda	opportunistic	
Heliotropium tenuifolium	opportunistic	
Salsola tragus subsp. *tragus*	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	

QUADRAT 101

Approximate Location: Near mud flats
Datum (WGS84): 402758E; 7530086N
101B: 402430E; 7529749N
Soil: Red sandy clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* and *Acacia inaequilatera* over Low Shrubland of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Tussock Grassland dominated by **Cenchrus ciliaris* and *Aristida contorta*
Vegetation Condition: 3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	30
Acacia inaequilatera	300	5
Aristida contorta	30	10
Aristida inaequiglumis	70	5
Boerhavia gardneri	40	<1
**Cenchrus ciliaris*	60	25
Chrysopogon pallidus	90	5
Cleome viscosa	70	10
Eremophila forrestii subsp. *forrestii*	120	5
Eremophila latrobei subsp. *latrobei*	120	<1
Heliotropium diversifolium	30	<1
Hybanthus aurantiacus	50	<1
Ptilotus obovatus	50	5
Ptilotus polystachyus var. *polystachyus*	70	2
Senna artemisioides subsp. *helmsii*	60	1
Senna artemisioides subsp. *oligophylla*	90	10
Sida platycalyx	10	2 (10)
Solanum lasiophyllum	60	1

TAXON	HEIGHT (cm)	% COVER
Tribulus hirsutus	30	5
Tribulus macrocarpus	30	10
Triodia epactia	110	5
Abutilon otocarpum	opportunistic	
Bonamia media	opportunistic	
Corchorus sidoides subsp. *sidoides*	opportunistic	
Eragrostis eriopoda	opportunistic	
Euphorbia australis	opportunistic	
Heliotropium ovalifolium	opportunistic	
Indigofera monophylla	opportunistic	
Paspalidium rarum	opportunistic	
Salsola tragus subsp. *tragus*	opportunistic	

QUADRAT 102

Approximate Location:
Datum (WGS84): 401301E; 7529654N
Soil: Coarse sand
Rocks: Pebbles to ca. 5cm
Topography: Minor creek
Field Vegetation Description: Open Shrubland of *Acacia* species over Low Shrubland of *Tephrosia rosea* subsp. *rosea* over Grassland of **Cenchrus ciliaris*
Vegetation Condition: 4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia sp all dead	180	5
**Cenchrus ciliaris*	70	50
Cleome viscosa	60	10
Corchorus sidoides subsp. *sidoides*	70	<1
Cullen stipulaceum	70	1
Euphorbia australis	5	<1
Euphorbia coghlanii	30	<1
Evolvulus alsinoides var. *villosicalyx*	80	<1
Indigofera brevidens	20	<1
Ipomoea muelleri	twiner	3
Pterocaulon serrulatum	30	<1
Tephrosia rosea var. *rosea*	70	20
Trianthema pilosa	10	<1
Trichodesma zeylanicum var. *grandiflorum*	80	<1

QUADRAT 103

Approximate Location: Off road to north bore
Datum (WGS84): 402665E; 7532304N
103B: 403011E; 7532128N
Soil: Red loam
Rocks: Numerous quartz rocks and stones on surface
Topography: Lower slope
Field Vegetation Description: Open Shrubland of *Acacia robeorum* over Very Open Tussock Grassland of *Triodia angusta*
Vegetation Condition: 2
Notes: Scree slope at the bottom of a hill



TAXON	HEIGHT (cm)	% COVER
Acacia robeorum	175	5
Eulalia fulva	70	<1
Sarcostemma viminale subsp. *australe*	100	1
Senna glutinosa subsp. *glutinosa*	120	<1
Triodia angusta	100	45
Triodia pungens	80	5
Acacia synchronicia	opportunistic	

QUADRAT 104

Approximate Location: On road to north bore
Datum (WGS84): 402588E; 752730N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia ancistrocarpa, Acacia dictyophleba, Acacia ligulata* and *Acacia eriopoda* over Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* over Hummock Grassland of *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Not burnt recently



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	5
Acacia dictyophleba	200	<1
Acacia eriopoda	200	3
Acacia ligulata	250	3
Aristida inaequiglumis	60	3
Aristida latifolia	70	1
Boerhavia gardneri	30	<1
Bonamia pannosa	15	<1
Bonamia rosea	50	1
Cassytha filiformis	twiner	1
**Cenchrus ciliaris*	50	1
Chrysopogon pallidus	70	<1
Cleome viscosa	70	<1
Eragrostis eriopoda	70	1
Eremophila latrobei subsp. *latrobei*	200	2
Eriachne aristidea	20	<1
Eulalia fulva	70	<1
Evolvulus alsinoides var. *villosicalyx*	20	<1

TAXON	HEIGHT (cm)	% COVER
Fimbristylis dichotoma	50	<1
Gomphrena canescens subsp. *canescens*	10	<1
Gossypium australe	100	<1
Hakea lorea subsp. *lorea*	300	1
Heliotropium cunninghamii	30	<1
Heliotropium diversifolium	30	<1
Hibiscus burtonii	60	<1
Hybanthus aurantiacus	50	2
Indigofera monophylla	25	<1
Paraneurachne muelleri	50	<1
Paspalidium rarum	10	<1
Ptilotus polystachyus var. *polystachyus*	30	<1
Rhagodia eremaea	100	<1
Scaevola parvifolia subsp. *pilbarae*	50	3
Senna artemisioides subsp. *helmsii*	60	<1
Senna artemisioides subsp. *oligophylla*	80	5-10
Senna glutinosa subsp. *glutinosa*	80	<1
Sida arenicola	70	<1
Solanum lasiophyllum	50	<1
Streptoglossa decurrens	40	<1
Stylobasium spathulatum	60	<1
Tribulopis angustifolia	twiner	<1
Tribulus macrocarpus	30	<1
Trichodesma zeylanicum var. *grandiflorum*	30	<1
Triodia basedowii	90	40
Triodia epactia	120	1
Triodia schinzii	120	<1-20
Zornia albiflora	15	<1
Corchorus sidoides subsp. *sidoides*	opportunistic	
Trianthema pilosa	opportunistic	
Salsola tragus subsp. *tragus*	opportunistic	

QUADRAT 105

Approximate Location:
Datum (WGS84): 402857E; 7532283N
Soil: Pale yellow mud
Rocks: N/A
Topography: Drainage flat
Field Vegetation Description: Open Heath of *Acacia colei* over Annual Tussock Grassland
Vegetation Condition: 2-3
Notes: Regrowth after burn



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	70	<1
Acacia colei	175	60
Acacia ligulata	60	1
Acacia synchronicia	20	1
Bergia perennis subsp. *exigua*	10	<1
Chloris pectinata	30	1

TAXON	HEIGHT (cm)	% COVER
Chrysopogon fallax	80	<1
Cleome viscosa	80	1
Corchorus sidoides subsp. *sidoides*	70	3
Dactyloctenium radulans	10	1
Eragrostis tenellula	30	<1
Eriachne benthamii	25	5
Eriachne obtusa	60	5
Eulalia aurea	90	30
Euphorbia coghlanii	60	<1
Gossypium australe	70	<1
Mukia maderaspatana	twiner	<1
Paspalidium basicladum	30	5
Pterocaulon serrulatum	30	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	50	2
Solanum lasiophyllum	50	<1
Sporobolus australasicus	30	<1
Tephrosia rosea var. *rosea*	80	3
Triodia pungens	120	<1
Xerochloa laniflora	60	<1
Acacia inaequilatera	opportunistic	
Eucalyptus kingsmillii subsp. *kingsmillii*	opportunistic	
Salsola tragus subsp. *tragus*	opportunistic	

QUADRAT 106

Approximate Location: Along road to north bore
Datum (WGS84): 4030144E; 7532335N
Soil: Red sandy loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland dominated by *Acacia ancistrocarpa* over Hummock Grassland of *Triodia schinzii* and *Triodia epactia*
Vegetation Condition: 3
Notes: Several *Acacia* species in area, now dead due to fire



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia ancistrocarpa	250	10
Acacia colei	70	<1
Acacia inaequilatera	250	<1
Acacia ligulata	120	1
Aristida inaequiglumis	50	3
Bonamia rosea	40	3
**Cenchrus ciliaris*	50	<1
Corchorus sidoides subsp. *sidoides*	50	1
Eragrostis eriopoda	60	5
Eriachne obtusa	50	10
Gossypium australe	50	<1
Grevillea stenobotrya	120	<1
Hakea lorea subsp. *lorea*	70	<1
Hybanthus aurantiacus	60	<1
Indigofera monophylla	40	1
Newcastelia roseoazurea	50	<1
Paraneurachne muelleri	50	<1
Petalostylis cassioides	60	3
Ptilotus obovatus	50	<1

TAXON	HEIGHT (cm)	% COVER
Rhagodia eremaea	70	<1
Scaevola parvifolia subsp. *pilbarae*	50	1
Senna artemisioides subsp. *helmsii*	120	<1
Senna artemisioides subsp. *oligophylla*	50	2
Sida ? arsiniata	20	<1
Sida arenicola	70	<1
Solanum lasiophyllum	50	<1
Stylobasium spathulatum	150	1
Trianthema pilosa	10	1
Tribulopis angustifolia	twiner	2
Tribulus hirsutus	20	15
Triodia basedowii	50	3
Triodia epactia	70	5
Triodia schinzii	130	25-40
Corymbia opaca	opportunistic	
Evolvulus alsinoides var. *villosicalyx*	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Paspalidium rarum	opportunistic	

QUADRAT 107

Approximate Location:
Datum (WGS84): 403526E; 7531528N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia ancistrocarpa*, *Acacia ligulata* and *Hakea lorea* over Hummock Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	5
Acacia dictyophleba	250	<1
Acacia ligulata	200	3
Aristida inaequiglumis	50	5
Bonamia rosea	30	3
Eragrostis eriopoda	70	3
Eriachne aristidea	30	<1
Hakea lorea subsp. *lorea*	400	1
Heliotropium tenuifolium	15	<1
Paspalidium rarum	10	<1
Petalostylis cassioides	70	3
Salsola tragus subsp. *tragus*	40	<1
Scaevola parvifolia subsp. *pilbarae*	20	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Senna notabilis	40	<1
Solanum lasiophyllum	50	<1
Trianthema pilosa	30	3
Tribulus hirsutus	20	5
Triodia basedowii	100	40
Triodia schinzii	120	20

TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	opportunistic	
Calytrix carinata	opportunistic	
Corymbia opaca	opportunistic	
Newcastelia roseoazurea	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Tephrosia flammea	opportunistic	

QUADRAT 108

Approximate Location:
Datum (WGS84): 405523E; 7531802N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia dictyophleba* and *Acacia ligulata* over Open Grassland dominated by *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: 3
Notes: Area burnt regenerating



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	100	10
Acacia ligulata	120	1
Aristida inaequiglumis	50	10
Aristida latifolia	50	<1
Bonamia media	20	<1
Bonamia rosea	30	<1
Cleome viscosa	70	<1
Corymbia opaca	300	<1
Eriachne ciliata	30	<1
Euphorbia boophthona	20	<1
Evolvulus alsinoides var. *villosicalyx*	20	3
Fimbristylis dichotoma	70	<1
Gossypium australe	50	<1
Heliotropium diversifolium	30	5
Newcastelia roseoazurea	20	<1
Paraneurachne muelleri	40	<1
Paspalidium rarum	10	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *helmsii*	30	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *oligophylla*	50	<1
Trianthema pilosa	50	5
Tribulopis angustifolia	10	2
Triodia basedowii	40	10
Triodia schinzii	60	20
Boerhavia gardneri	opportunistic	
Euphorbia australis	opportunistic	
Pterocaulon serrulatum	opportunistic	
Ptilotus obovatus	opportunistic	
Sida echinocarpa	opportunistic	
Solanum lasiophyllum	opportunistic	

QUADRAT 109

Approximate Location: Creek crossing
Datum (WGS84): 405393E; 7531214N
Soil: Coarse sand
Rocks: Small stones
Topography: River
Field Vegetation Description: High Open Woodland of *Eucalyptus camaldulensis* over Annual Tussock Grassland of several taxa
Vegetation Condition: 4
Notes: Wide section along the river. Occasional small trees in river bed as well as on sides



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	150	<1
Blumea tenella	30	<1
Bonamia media	10	<1
**Cenchrus ciliaris*	40	dense on bank
Cleome viscosa	90	<1
Corchorus laniflorus	70	<1
Eucalyptus camaldulensis	1200	5-20
Eulalia aurea	100	<1
Gossypium australe	50	<1
Portulaca pilosa	10	<1
Sorghum plumosum	120	<1
Tephrosia rosea var. *rosea*	50	<1
Themeda triandra	70	<1
Tribulopis angustifolia	10	<1
Trichodesma zeylanicum var. *grandiflorum*	90	<1
Alternanthera nodiflora	opportunistic	
Eragrostis tenellula	opportunistic	
Ipomoea muelleri	opportunistic	

QUADRAT 110

Approximate Location:
Datum (WGS84): 406112E; 7531260N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* over Grassland of *Triodia basedowii*
Vegetation Condition: 3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	40
Acacia dictyophleba	70	1
Aristida inaequiglumis	50	3
Eriachne aristidea	30	2
Hakea lorea subsp. *lorea*	200	1
Heliotropium ovalifolium	10	<1
Ptilotus polystachyus var. *polystachyus*	30	<1
Sarcostemma viminale subsp. *australe*	50	<1
Senna artemisioides subsp. *helmsii*	100	2
Senna glutinosa subsp. x *luerssenii*	120	3
Senna sericea	50	<1
Triodia angusta	80	<1
Triodia basedowii	100	65

QUADRAT 111

Approximate Location: South bore area
Datum (WGS84): 406029E; 7528580N
Soil: Sand dune
Rocks: N/A
Topography: Crest of sand dune
Field Vegetation Description: Shrubland of *Acacia melliodora* and *Acacia eriopoda* over Low Shrubland dominated by *Dicrastylis doranii* over Grassland of *Triodia schinzii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	120	1
Acacia eriopoda	200	5
Acacia melleodora	110	10
Calytrix carinata	80	<1
Dicrastylis doranii	40	10
Grevillea stenobotrya	200	<1
Gyrostemon tepperi	80	<1
Otion simplicifolium	50	<1
Petalostylis cassioides	80	1
Scaevola parvifolia subsp. *pilbarae*	30	3
Stylobasium spathulatum	175	5

TAXON	HEIGHT (cm)	% COVER
Trianthema pilosa	10	<1
Triodia schinzii	120	50
Triraphis mollis	60	<1

QUADRAT 112

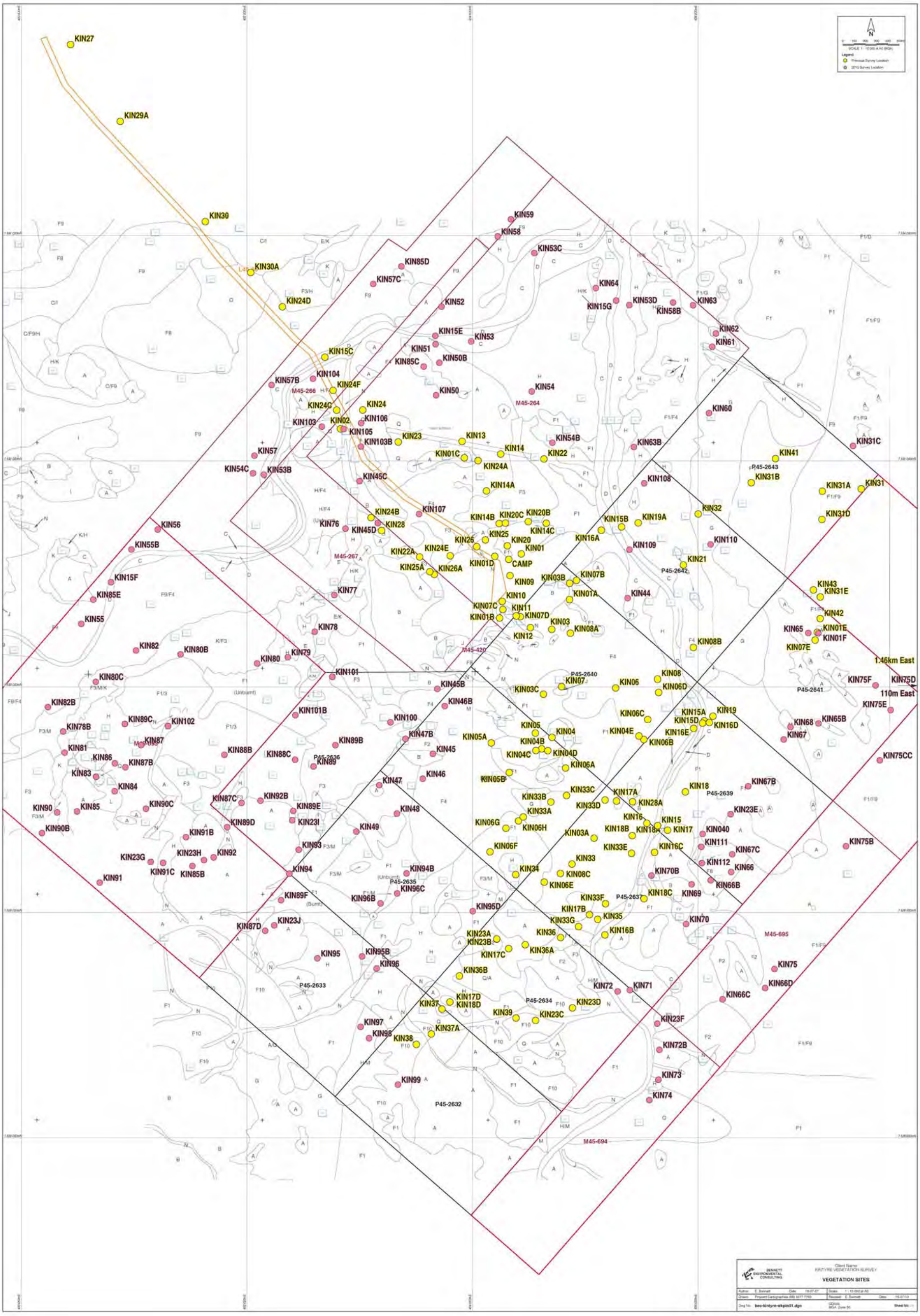
Approximate Location: South bore area
Datum (WGS84): 406035E; 7528437N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia melleodora* over Low Open Heath of *Dicrastylis doranii* and *Scaevola parvifolia* subsp. *pilbarae* over Hummock Grassland of *Triodia schinzii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia melleodora	200	25
Calytrix carinata	70	<1
Dicrastylis doranii	40	10(5)
Grevillea stenobotrya	100	1
Gyrostemon tepperi	60	<1
Petalostylis cassioides	80	<1
Scaevola parvifolia subsp. *pilbarae*	30	5(5)
Stylobasium spathulatum	175	3
Triodia schinzii	120	40
Dampiera cinerea	opportunistic	
Triodia basedowii	opportunistic	

APPENDIX C

Location of Quadrats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KIN85C
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KIN07B
KIN85E
KIN77
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KIN01A
KIN44
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KIN31E
KIN07C
KIN11
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KIN42
KIN55
KIN01B
KIN03
KIN08A
KIN65
KIN01E
KIN01F
KIN78
KIN12
KIN08B
KIN07E
KIN82
KIN80B
KIN80
KIN79
1.46km East
KIN80C
KIN101
KIN45B
KIN03C
KIN07
KIN06
KIN08
KIN06D
KIN75F
KIN75D
110m East
KIN82B
KIN46B
KIN101B
KIN100
KIN06C
KIN15A
KIN19
KIN15D
KIN16D
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BENNETT ENVIRONMENTAL CONSULTING
VEGETATION SITES

FLORA AND VEGETATION
Kintyre Lease


Triodia schinzii

Prepared for:
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Prepared by:
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Billardiera heterophylla

PO Box 341
KALAMUNDA 6926

July 2011

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Scope of Services

This report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Eleanor Bennett ("the Author"). In some circumstances a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services.

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A Taxa listed under vascular plant families
B Quadrat Data
C Bennett Environmental Consulting Pty Ltd Quadrats overlain on Hart Simpson and Associates Pty Ltd mapping

SUMMARY

Bennett Environmental Consulting Pty Ltd undertook surveys between 25th June and 4th July 2007; 27th April and 4th May 2010 and 16th and 19th May 2011 of the Kintyre Lease. Exploration drilling had occurred in the area in the 1990's and had recommenced in late 2009. Hart Simpson and Associates Pty Ltd (1994 and 1997) had undertaken intensive vegetation surveys including the preparation of a vegetation map. The 2007 vegetation survey was limited to the proposed drill area as identified then and the areas proposed for the village and associated infrastructure, whereas the 2010 survey was to complete the whole lease. It was agreed by the Department of Environment and Conservation that as the mapping of Hart had been so intense that permanent quadrats were only required to be established in each of the different vegetation units that Hart mapped. Prior to the 2007survey there had been good rainfall but in 2009 a fire had burnt through a large extent of the area and 2010 had been a very dry season. In 2011 above average rainfall had been received between March and early May so selected quadrats established in 2007 and 2010 were resurveyed to record any changes that had occurred.

The method to be used was to meet the requirements of the Environmental Protection Authority Guidance No 51 (2004). Dr van Leeuwen, a research officer at the Department of Environment and Conservation confirmed that 50m x 50m quadrats were to be used. A permanent dropper was left at the north west corner of each quadrat at the completion of the assessment.

A total of 40 vascular plant families, 155 genera and 348 taxa (species, subspecies and varieties) have beern recorded during the 2007, 2010 and 2011 surveys. Poaceae (grass family), Fabaceae (previously Papilionaceae, Caesalpiniaceae and Mimosaceae) and Malvaceae (previously Sterculiaceae and Malvaceae) were the dominant families. One priority flora was recorded in 2007 but none were seen in 2010 or 2011. It was the Priority 3 Flora, *Comesperma pallidum* and was recorded from within the area where it is intended to undertake exploration drilling.

The variation in the vegetation within the site varied with the rocks and associated soils. The hillslopes in the northern section of the lease had scattered shrubs of *Acacia robeorum, Grevillea wickhamii* and *Senna glutinosa* as the dominant shrubs. The hillslopes where *Acacia retivenea* occurred were only recorded from the southern area of the lease where the rocks were more schistose than in the northern area. *Eucalyptus leucophloia* was only recorded on a few hillslopes and was not a common taxon.

The sandy soils typically included *Triodia basedowii* and *Triodia schinzii* associated with *Acacia ligulata* and *Stylobasium spathulatum*. The latter taxon was more common on the raised dunes rather than on the flatter sandy soils. *Dicrastylis georgei* and *Lachnostachys roseoazurea* were typically associated with the sandy soils across the lease.

The drainage lines varied with the taxa located on the hill slopes or flat areas. As an example *Acacia retivenia* was common in the drainage lines in the south of the lease but less common in the north of the lease. *Grevillea wickhamii* occurred across all vegetation units and did not appear to be restricted to a specific soil.

A total of 34 vegetation associations were recorded during the 2007 and 2010 surveys. These are listed below according to habitat.

Hillsides

- The northern hillsides, around the proposed exploration camp site were basically covered in *Triodia epactia* and *Triodia wiseana.*
- Open Heath dominated by *Acacia retivenea* over Hummock Grassland of *Triodia* species with quartzite and schistose rocks.
- Woodland of *Eucalyptus leucophloia* over Scattered Herbs of *Ptilotus calostachyus* and Scattered Grasses of *Eriachne mucronata* or Hummock Grassland of *Triodia pungens*.

- Low Open Shrubland of *Indigofera monophylla* and *Senna glutinosa* subsp. *glutinosa* over Open Herbs dominated by *Cleome viscosa* and *Boerhavia gardneri* over Grassland dominated by *Triodia pungens*.

At the base of hills

- Low Shrubland of *Eremophila tietkensii.* This vegetation was open with the main cover consisting of small rocks.
- Open Shrubland of *Acacia wanyu* over Low Shrubland of *Eremophila tietkensii* over Hummock Grassland of *Triodia pungens.*
- High Open Shrubland of *Acacia synchronicia* over Low Open Shrubland dominated by *Eremophila tietkensii* over Grassland of *Triodia wiseana.*
- Open Shrubland of *Acacia robeana* over Very Open Tussock Grassland of *Triodia angusta*.

Sand dunes

The sand dunes were all low, only rising slightly above the level of the plain. Typically they included a greater number of taxa than the rocky soils with *Triodia schinzii* typically the dominant grass usually in association with *Triodia basedowii*.

Red sandy soils - Flat

- *Acacia inaequilatera* dominant.
- *Acacia dictyophleba* dominant.
- *Acacia ancistrocarpa* dominant typically associated with *Acacia ligulata, Acacia dictyophleba* and *Acacia inaequilatera.*
- *Acacia ligulata* dominant.
- *Acacia melleodora* dominant.
- *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii*.
- *Senna* taxa dominant.
- *Grevillea* taxa dominant.
- *Hakea lorea* over *Triodia basedowii*.
- Grassland of *Triodia basedowii*.

Lower Slope Above Creek

- Low Open Forest of *Acacia aneura* subsp. *macrocarpa*.
- Low Open Woodland of *Eucalyptus odontocarpa*.

Drainage lines

The vegetation present varied with the following locations:

- Hill sides.
- Scree at base of hills.
- Drainage lines at the base of hills.
- Red sandy soils – flat ground.

Creek lines

- Within the creeks themselves the vegetation was a High Open Woodland of *Eucalyptus camaldulensis* over Annual Tussock Grassland of several taxa including *Sorghum plumosum*.
- On the floodplain above the banks the vegetation was Low Open Woodland of *Corymbia opaca* over Grassland dominated by **Cenchrus ciliaris* and *Sorghum plumosum*.

Claypans

- Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa* over bare ground.
- Low Shrubland dominated by *Tephrosia brevidens* over Very Open Herbs dominated by *Heliotropium corymbosum* over Tussock Grassland dominated by *Chrysopogon fallax.*
- Open Grassland of *Xerochloa laniflora* and *Dactyloctenium radulans*.
- Tussock Grassland of **Cenchrus ciliaris, Aristida inaequilatera, Xerochloa laniflora* and *Eragrostis eriopoda.*
- Areas of nearly bare ground.
- Shrubland of *Eremophila forrestii* subsp. *forrestii* over Low Open Shrubland dominated by *Sclerolaena* species over Annual Tussock Grassland of *Aristida contorta*.

- Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Tussock Grassland dominated by **Cenchrus ciliaris.*
- Low Open Shrubland of *Sclerolaena* species.

None of the vegetation units recorded for the survey area are listed by the Department of Environment and Conservation as Threatened or Priority Ecological Communities. Three communities listed by Kendrick (2001) as of conservation significance for the Rudall River area were recorded from the site. These are:

- Shrubland, mulga scrub which has the Beard Vegetation Code 39;
- *Triodia wiseana* Grass Steppe on stony hills which has the Beard Vegetation Code 157; and
- Mixed Shrub Steppe between sandhills with *Triodia schinzii* which has the Beard Vegetation Code of 136.

A comparison was made between the vegetation associations recorded and those of Hart *et al*. (1994, 1997). Fire and time has changed the make up of the units between the surveys although when the quadrats and opportunistic sites were overlain on the original vegetation map there was a reasonable correlation between them. In 2007 and 2010 quadrats were placed in each of the units mapped by Hart.

Seven introduced taxa were recorded during the three surveys, none of which are Declared Weeds (Department of Agriculture and Food, 2010). These were **Cenchrus ciliaris*, **Chloris virgata*, **Cucumis melo* subsp. *agrestis*, **Citrullus lanatus*, **Aerva javanica* and **Bidens bipinnata*. **Cenchrus ciliaris* (Buffel grass) was introduced into the pastoral areas originally as fodder for stock but has become a common weed throughout the Pilbara and Kimberley Regions of Western Australia. This weed was common in several areas of the lease, in particular where the soil had been ripped at the completion of the original exploration survey. Care will need to be exercised by the company to ensure this weed is not spread further, particularly into areas where it currently is not recorded.

**Chloris virgata* a grass, was recorded from one claypan quadrat in 2011. Only a few plants were recorded.

**Cucumis melo* subsp. *agrestis* (an introduced melon) occurred typically as individual plants through the area. This had an elongated fruit, which is not edible.

**Citrullus lanatus* was recorded in damp soil close to creeks. Where it occurred it formed dense areas over the ground with several green and cream mottled, round fruits up to 150mm wide. Several of the fruits had been opened, presumably by donkeys and camels and the seed scattered on the ground.

**Aerva javanica* (Kapok bush) was recorded from Kintyre Hill which had been ripped after the original exploration phase. In May 2010 this area had had some exploration drilling which was intended to become more intensive later that year. In May 2011 two additional areas of a few plants only were located. As the areas where this taxon occurs are small it is recommended that it be removed prior to any further disturbance. It is important that this taxon is not distributed further and any additional plants should be removed immediately before it flowers and fruits. It is readily recognised in the bushland due to the distinctly white colouration of the plant..

**Bidens bipinnata* (Beggar's ticks) was only recorded along the creek banks. It was reasonably common but would be difficult to control as it appears to be spread by water.

**Malvastrum americanum* (Spiked malvastrum) was only recorded opportunistically from one quadrat associated with *Corymbia opaca*.

When exploration of the area occurs it is essential that only the area required for the development of infrastructure and drilling is disturbed. Vehicles moving from a heavily infested weed area into one with limited or no weeds, should be checked to ensure that no

weeds are being transported on the vehicles. Radiators, body undersurface and tyres in particular must be checked. No vehicle should be driven across the vegetation but should remain on prepared tracks.

The lease is an area of 'outback' Western Australia and should be respected for its uniqueness. There have been no pastoral leases through the area (pers. comm.. Shorty, the Indigenous assistant in 2007) but there are many feral animals including donkeys and camels. The disturbance by European man has been limited mainly due to its inaccessibility and although there are several other exploration teams from other mining companies about to undertake drilling it is essential that the environment is not degraded with these developments.

1. INTRODUCTION

1.1 Background

In 2007 Bennett Environmental Consulting Pty Ltd (Bennett Environmental Consulting Pty Ltd, 2007) undertook a flora and vegetation survey of areas nominated by the client for the proposed disturbance within the lease to the north of Rudall River National Park. The tenements were P45/2632 – P45/2637; P45/2639 – P45/2643; M45/420, M45/264, M45/266, M45/267 and L45/66.



Diagram 1. Location of Kintyre project (extracted from the Cameco website http://www.cameco.com/exploration/major_projects/australia/kintyre/)

Martinick and Associates (1986) undertook a flora and vegetation and fauna survey. This survey recorded the vegetation of the area provisionally related to their topography, when recorded six formations, seventeen associations and three complexes were recorded. One hundred and forty plant taxa were recorded but this was much lower than expected due to the dry season prior to the survey. The vegetation was mapped at a scale of 1: 10 000 and the vegetation descriptions followed that of Beard (1975). This survey and report established the mapping symbols which have continued to be used by later surveyors. Martinick and Associates (1987d) in April 1986 collected baseline samples of soil and additional plants so they could act as reference points for the comparison of future contaminates. In September 1986, Dr Hart who was employed by Martinick and Associates (Martinick and Associates 1987b) undertook an additional flora survey following good rainfall when a detailed flora collection was made. Additional flora collections were made in 1986 (Martinick and Associates 1987a,c).

Hart, Simpson and Associates Pty Ltd (1990 and 1993) undertook additional flora and fauna surveys in the same area as Martinick and Associates (1986 and 1987a,b,c,d). In 1990 Hart collected plant specimens which he submitted to the Western Australian and Pilbara Herbaria. The total number of taxa recorded was 398 in 183 genera. During these surveys Dr Hart listed the flora recorded and the vegetation associations at the site and he mapped the area using the map symbols established by Martinick and Associated (1986). The work undertaken by Hart is very detailed and is the one which is accepted as the detailed vegetation mapping for the lease.

Cameco Australia contracted Bennett Environmental Consulting Pty to complete the survey of the Kintyre lease. A meeting was held with the Department of Environment and Conservation and Cameco Australia on 17th March 2010 where it was agreed that additional permanent

quadrats needed to placed in the remainder of the lease to ensure that all vegetation units identified by Dr Hart were surveyed.

1.2 Scope of Works

The requirements for the 2010 project as agreed to by officers at the Department of Environment and Conservation (van Leeuwen, 2010) were:

i. Conduct a targeted survey of the lease for:
   - Threatened Flora listed under the Commonwealth Environment Protection and Biodiversity Conservation Act (EPBC Act);
   - Declared Rare and Threatened Flora listed under the WA Wildlife Conservation (Rare Flora) Notice 2010;
   - Priority Flora recognised by Department of Environment and Conservation (DEC);
   - TECs listed under the Commonwealth EPBC Act;
   - TECs endorsed by the Minister of the Environment;
   - PECs recognised by DEC; and
   - Declared weeds listed under the Agriculture and Related Resources Protection Act, 1976 and other environmental weed species. Co-ordinate locations and photographs of the above are to be provided.

ii. Review the existing vegetation mapping to ensure the entire lease is surveyed;
iii. Describe condition of the vegetation communities or areas using a published rating scale;
iv. Field check to confirm previous vegetation mapping;
v. Place permanent quadrats in each of the different vegetation com munities identified by Hart (1994 and 1997);
vi. Provide a list of flora including weed taxa and significant flora; and
vii. Describe the representation in a regional context of each vegetation community.

In 2011 selected quadrats were resurveyed to determine additional taxa that had germinated as well as to search for Declared Rare and Priority Flora.

2. LIMITATIONS

The only limitation to the 2011 survey was the time allocated but there was sufficient time to resurvey all except 3 of the vegetation complexes described by Hart Simpson Associates Pty Ltd. An additional day would have been required to survey the three additional quadrats as they were in the southern area of the lease where there were no tracks.

In 2010 the limitations on the project were:

1. The area had experienced a very hot burn within the previous 12 months; and
2. Rainfall had been below average.

In 2007 access was a problem although a smaller area was nominated for surveying than the 2010 area. In 2010 this was no longer a problem as there was an exploration camp and several tracks have been reopened or established to allow monitoring of drill areas and piezometers. Exploratory drilling had also commenced.

3. REGIONAL METHODOLOGY

3.1 Climate

The climate of the area is arid tropical with summer rain. The annual average rainfall is 200-250mm. The Bureau of Meteorology (2007) provides the following information for Telfer, which is approximately 90km north of the Kintyre site.

Table 1. Average temperatures and rainfall for Telfer aero

Statistics	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual	Years	
Temperature															
Mean maximum temperature (°C)	40.5	38.4	37.4	34.4	29.0	25.4	25.2	28.2	32.7	37.0	39.4	40.1	34.0	32	1974 2007
Mean minimum temperature (°C)	26.0	25.2	23.8	20.5	15.3	11.9	10.5	12.5	16.4	20.7	23.3	25.3	19.3	31	1974 2007
Rainfall															
Mean rainfall (mm)	48.2	104.0	81.7	19.1	19.7	13.9	12.8	6.1	2.3	2.4	15.5	49.4	379.5	33	1974 2007
Decile 5 (median) rainfall (mm)	34.2	55.3	57.9	4.9	3.2	4.4	0.2	0.0	0.0	0.0	7.6	31.3	346.7	32	1974 2007
Mean number of days of rain ≥ 1 mm	5.0	6.6	4.3	1.8	2.0	1.6	1.1	0.7	0.5	0.4	1.7	3.9	29.6	33	1974 2007

3.2 Geology and Landform

Beard (1975) described the geology of the area as consisting of quaternary sandplain with longitudinal (seif) dunes developed over Middle Proterozoic sedimentary rocks which are exposed in numerous, low rocky hills.

The area varies considerably from:

- steep ranges and stony hills, comprising fine-grained sedimentary rocks along with basic dykes. Shallow stony earthy loams dominate in this area;
- Partially dissected pediments with some low stony hills. Red alkaline soils are dominant, with shallow stony soils on the steeper slopes; and
- Plains with variable proportion of linear sand dunes. The chief soils are red sand on the dunes.

A detailed account of the Kintyre deposit is provided by Porter GeoConsultancy Pty Ltd (1994). The Kintyre uranium deposit lies within the Rudall Complex which comprises two suites, older, possibly Archaean, granite gneisses with inliers of quartzo-feldspathic gneisses, schists, iron formations and mafic/ultramafic gneisses, and a younger suite dominated by quartzite, quartz-muscovite schist and lesser BIF, metachert, graphitic schist, marble, chlorite-carbonate schists and metabasalt. The latest deformation in the complex is dated at between 1530 and 1330 Ma.

The Rudall Complex is overlain above a marked angular unconformity by the Coolbro Sandstone of the Yeeneena Group which comprises quartz sandstone with rare thin carbonaceous mudstone and shale interbeds and conglomerate bands. This Group was deformed at around 1130 Ma.

The Kintyre ore zone occurs within chlorite-quartz schists, chlorite-carbonate-quartz schists and variably chloritic and garnetiferous quartzite (metachert) associated with carbonates in the axial zone of a recumbent, gently ENE plunging antiform. The dominant style of mineralisation comprises F1 cleavage controlled pitchblende veining which forms discrete ore zones within the upper limb of the F1 antiform. Chlorite, dolomite, ankerite and calcite are dominant vein gangue, with either or both carbonate and chlorite predominating. Weaker disseminated pitchblende is also recognised. Accessory and trace bismuth, bismuthinite, chalcopyrite, bornite, galena and gold are associated with the pitchblende.

3.3 Vegetation

The Interim Biogeographical Regionalisation for Australia (IBRA) (Thackway and Cresswell, 1995) recognises 85 bioregions. The IBRA is used as the common unit to compare biological and biophysical attributes. Bioregions represent a landscape-based approach to classifying the land surface and each region is defined by a set of major environmental influences, which shape the occurrence of flora and fauna and their interaction with the physical environment.

The study area is in the Little Sandy Desert (LSD1 – Rudall Subregion), which consists of sparse shrub-steppe over *Triodia basedowii* on stony hills, with River Gum communities, and bunch grasslands on alluvial deposits in and associated with ranges. The climate is arid with summer rainfall (Kendrick, 2001).

Prior to the above classification Beard (1980) classified the vegetation of Western Australia. Western Australia was divided into three main Botanical Provinces, Southwest, Eremaean and Northern. The Kintyre project is within the Keartland Botanical District of the Eremaean Botanical Province (Beard, 1990). The Keartland Botanical District is described as shrub steppe of *Acacia*, *Grevillea* and *Triodia* species on and between dunes with patches of Desert oak (*Allocasuarina decaisneana*) and Mulga (*Acacia aneura*). He mapped the vegetation of the study site as:

- *Triodia wiseana* Grass Steppe on stony hills (abbreviated t_3Hi) and
- Mixed shrub steppe between sandhills with *Triodia schinzii* (abbreviated $a_n Sr^t_p$Hi).

Dr Hart was employed by Martinick and Associates (1986 and 1987) when the vegetation was mapped and the map units determined. Dr. R. Hart, of Hart Simpson and Associates (1990 and 1992) later undertook additional surveys. In this report the vegetation units recorded from the lease are listed and mapped using the map units of Martinick and Associates (1987) which were also used in mapping by Hart Simpson and Associates. . For the area surveyed a total of 25 vegetation associations were recorded (see Table 2 (one of which L, was not recorded in the lease)) which were representative of 7 vegetation/landform units. The 7 vegetation/landform units are:

1. Shrubs and spinifex on flat plains with silty sands;
2. Stony hills and scree slopes;
3. Sand dunes and sandy soils;
4. River channels;
5. Shrublands and woodlands in drainage channels;
6. Clayey or silty soils; and
7. Claypans.

Table 2. Map symbol, vegetation unit and landform (Hart Simpson and Associates 1987).

Symbol	Vegetation Association	Landform
WOODLANDS		
C	Drainage line Woodland of *Corymbia opaca*	Minor drainage lines
D	Woodland of *Eucalyptus camaldulensis*	Larger river channels
SHRUBLANDS[1]		
I	*Acacia dictyophleba* Shrubland over *Triodia basedowii* and *Triodia pungens*	Drainage lines on flat ground where there is outwash from hills
R	Mulga Shrubland	Wash away on edge of river
STEPPES		
A	Hummock Grass Steppe[2] dominated by *Triodia wiseana*	Stony hills
F1	*Acacia ancistrocarpa* and *Acacia ligulata* over *Triodia basedowii*	Flat plains
F2	*Acacia retivenia* Shrub Steppe[1] over *Triodia wiseana*	Stony hills
F3	*Acacia inaequilatera* Shrub Steppe over *Triodia basedowii* and *Triodia pungens*	Low lying areas with slightly clayey soil
F4	Mixed Low Shrub Steppe over *Triodia basedowii*	Flat plains
F8	*Grevillea/Acacia* Shrub Steppe over mixed *Triodia* species on sand	Flat areas of sandy soils
F9	*Acacia dictyophleba* Shrub Steppe over *Triodia basedowii*	Flat plains

[1] Shrubland – Shrubs 1.5-4m tall with a cover of 20-40%
[2] Grass steppe – Varies from almost pure *Triodia* species to Shrub steppe

Symbol	Vegetation Unit	Landform
F10	*Acacia wanyu* Shrub Steppe over *Triodia wiseana*	Scree slopes, lower slopes of stony hills
G	Open Shrub Steppe over *Triodia basedowii*	Flat plains
MALLEE STEPPE		
O	Mallees of *Eucalyptus odontocarpa* over *Triodia basedowii*	Flat area of sandy soil
TREE STEPPE		
B	Trees of *Eucalyptus brevifolia* over *Triodia wiseana*	Stony hills
GRASSLAND		
L	Grassland[3]	Small areas below scree slopes
SHRUB SAVANNA[4]		
H	Sennas over grass	Low lying areas
SCRUBS		
E	Chenopod Dwarf Scrub	Low lying areas adjacent to claypans
COMPLEXES		
J	Sand dunes	Sand dunes
K	Claypans with little or no vegetation	Claypans with impeded or internal drainage
M	Sparse shrubs on clay soils	Low lying areas of impeded drainage
N	Drainage lines of *Acacia* and other scrubs over *Triodia pungens*	Drainage lines in stony hills or as outwash channels
P	Bare Stony Slope	Scree slope below stony hill
Q	White quartzite scree slopes	Apron around stony hills

Often in mapping Dr Hart would indicate that more than one complex occurred together eg. F1/F4. One of the vegetation units mapped by Martinick and Associates (1987) , *Acacia dictyophleba* Shrubland, Symbol I, was not recorded within the lease area. It is recorded close to but east of the lease. *Acacia dictyophleba* was a common shrub within the survey area

3.4 Conservation Significance

The conservation significance of flora and ecological communities is classified at a Commonwealth, State and Local level on the basis of various Acts and Agreements (EPA *Guidance Statement No. 51,* EPA 2004).

Commonwealth Level:

- *EPBC Act 1999*: The Department of the Environment, Water, Heritage and the Arts (DEWHA) lists Threatened Flora and Ecological Communities, which are determined by the Threatened Species Scientific Committee according to criteria set out in the Act (DEWHA 2010). The Act lists flora that are considered to be of conservation significance under one of six categories.

State Level:

- *Wildlife Conservation Act 1950*: At a State level, native flora species are protected under the *Wildlife Conservation Act 1950 - Wildlife Conservation (Rare Flora) Notice.* A number of plant species are assigned an additional level of conservation significance based on a limited number of known populations and the perceived threats to these locations. Species of the highest conservation significance are gazetted Declared Rare Flora (DRF) under subsection 2 of section 23F of the *Wildlife Conservation Act 1950.* It is an offence to take or damage DRF without Ministerial approval. Section 23F of the *Wildlife Conservation Act* (1950) defines 'to take' as "to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means" (Department of Environment and Conservation, 2010a).

[3] Grassland – Dominated by non-*Triodia* species
[4] Shrub savannah – Shrubs and grasses present but dominated by non- *Triodia* species

- DEC Priority list: DEC produces a list of Priority species and ecological communities (PEC's) that have not been assigned statutory protection under the *Wildlife Conservation Act 1950*. Priority Flora are under consideration for declaration as 'Rare Flora', classified as in urgent need of further survey (Priority One to Three) or require monitoring every 5-10 years (Priority Four). The list of Priority Ecological Communities identifies those that need further investigation before nomination for Threatened Ecological Community status (Table 3).

Local Level:

- Species may be considered of local conservation significance because of their patterns of distribution and abundance. Although not formally protected by legislation, such species are acknowledged to be in decline as a result of threatening processes, primarily habitat loss through land clearing.

3.4.1 Significant Flora

Prior to the field work being undertaken a search of the Department of Environment and Conservation Rare Flora Database was undertaken within the area, 22^0 00' - 23^0 00' S and 121^0 00' - 123^0 00' E (GDA94). This resulted in five Priority 1 Flora, seven Priority 2 Flora, fourteen Priority 3 Flora and three Priority 4 Flora, which are listed in Table 5.

Table 3 presents the definitions of Declared Rare and the four Priority Flora ratings under the Wildlife Conservation Act (1950) as extracted from Department of Environment and Conservation (2010a). Table 4 presents the definitions of the threatened species under the Environmental Protection and Biodiversity Conservation Act, 1999 (Department of the Environment, Water, Heritage and the Arts, 2010).

Table 3. State Level - Code and description of Rare and Priority Flora

Code	Code Declared Rare and Priority Flora Categories
R	DRF (Declared Rare Flora) -Extant Taxa. Taxa, which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection.
X	DRF (Declared Rare Flora) -Presumed Extinct Taxa. Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently.
1	Priority One -Poorly Known Taxa. Taxa, which are known from one or a few (generally <5) populations, which are under threat.
2	Priority Two -Poorly Known Taxa. Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat.
3	Priority Three -Poorly Known Taxa. Taxa, which are known from several populations, at least some of which are not believed to be under immediate threat.
4	Priority Four -Rare Taxa. Taxa which are considered to have been adequately surveyed and which whilst being rare, are not currently threatened by any identifiable factors.

Table 4. Commonwealth Level - Categories of Threatened Flora Species (Environmental Protection and Biodiversity Conservation Act, 1999)

Ex	Extinct Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of this species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.

Code	Code Declared Rare and Priority Flora Categories
CE	Critically Endangered Taxa which at any particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
E	Endangered Taxa, which is not critically endangered, and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.
V	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
CD	Conservation Dependent Taxa which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.

Table 5. Priority Flora listed for the area, 22^0 00' - 23^0 00' S and 121^0 00' - 123^0 00' E (GDA94) with a description extracted from Western Australian Herbarium (2010a)

STATUS	TAXON	DESCRIPTION
1	*Halosarcia* sp. Yanneri Lake (S.van Leeuwen 3002)	Erect shrub, 1 m high, bulbous swollen succulent stems, red, blue, purple. Fl. Oct. White brown gritty loam over calcrete. Low-lying, calcareous salt flat with open scrub.
1	*Lepidium amelum*	Erect, spreading shrub, 0.3–1 m high, plants glabrous; leaves sessile, stem-clasping. Fl. white, May–Aug. Sandy loams & stony, calcareous, alkaline soils. Hummock grassland, low open woodland, disturbed sites.
1	*Philotheca eremicola*	Shrub, ca 0.4 m high, leaves congested, narrowly fusiform, ca 2.5 mm long, glabrous, glossy; sepals with brown glands. Red skeletal laterite. Rocky slopes in shrubland.
1	*Ptilotus tetrandrus*	Annual, herb, 0.15–0.3 m high. Fl. Oct. Loamy sand.
1	*Stackhousia clementii*	Dense broom-like perennial, herb, to 0.45 m high. Fl. green, yellow, brown. Skeletal soils. Sandstone hills.
2	*Acacia auripila*	Tree, to 3 m high, bark grey & fissured. Fl. yellow, Aug. Rocky quartz soils. Hillsides, gullies.
2	*Dampiera atriplicina*	Spreading, robust shrub, to 0.5(–1.2) m high. Fl. pink, May–Jul. Red sand. Sand ridges.
2	*Eremophila revoluta* ms	Shrub, 0.25–0.8 m high. Fl. blue, purple, Jul–Aug. Rocky clay, red sand. Rocky hills & plains, sandplains.
2	*Gonocarpus ephemerus*	Procumbent annual or perennial, herb, 0.07–0.5 m high. Fl. yellow, red, Aug. Sand. Along drainage lines.
2	*Goodenia hartiana*	Erect to spreading, multistemmed perennial, herb or shrub (sub-shrub). Fl. blue, purple, Aug – Sep. Sand. Sand dune swales, sandhills.
2	*Goodenia virgata*	Ascending to erect, virgate perennial, herb, to 0.4 m high. Fl. yellow, Jul. Red sandy loam. Near salt pans.
2	*Thysanotus* sp. Desert East of Newman (RP Hart 964)	Self supporting perennial, herb (with tuberous roots), distinguished by the long, equal anthers and pseudo-cymose branching. Fl. Aug–Oct. Red-brown loamy sand or red sand, sometimes silty. Sand plain, pisolitic buckshot plain.
3	*Acacia bromilowiana* ms	No information provided.
3	*Bulbine pendula* ms	Upright annual, herb, to 0.1 m high, with succulent foliage. Cracking clay pan. Margins of tracks, tussock grassland.
3	*Calandrinia porifera*	Prostrate herb. Fl. pink, Sep. Granite rocks.
3	*Comesperma pallidum*	Erect shrub, 0.7–2 m high. Fl. yellow, cream, purple, May–Aug. Red sand. Sandplains & dunes.
3	*Daviesia arthropoda*	Spiny, bushy shrub, to 1 m high. Fl. yellow, brown. Dunes.

STATUS	TAXON	DESCRIPTION
3	*Fimbristylis sieberiana*	Shortly rhizomatous, tufted perennial, grass-like or herb (sedge), 0.25–0.6 m high. Fl. brown, May–Jun. Mud, skeletal soil pockets. Pool edges, sandstone cliffs.
3	*Frankenia glomerata*	Prostrate shrub. Fl. pink, white, Nov. White sand.
3	*Fuirena incrassata*	Annual, grass-like or herb (sedge), 0.1–0.3 m high, perianth of 3 bristles and 3 clawed scales; scales 3-veined in basal part and thickened distally. Fl. May–Aug. Sand, sandy clay. Swamps, creek beds, claypans, semi-saline lakes.
3	*Gonocarpus pycnostachyus*	Erect annual, herb, 0.1–0.15 m high. Fl. green, red. Sand or clay soils. Wet depressions, granite rocks.
3	*Goodenia modesta*	Herb, to 0.5 m high. Fl. yellow, Jan–Dec. Red loam, sand.
3	*Goodenia pascua*	Ascending to erect herb, to 0.5 m high. Fl. yellow, May–Aug. Red sandy soils. Basaltic plains.
3	*Goodenia purpurascens*	Erect perennial or annual, herb, 0.1–0.3 m high. Fl. blue, purple, white, yellow, Jan/Apr–Jun/Sep/Dec. Clay, mud. Swamps & seasonally wet depressions.
3	*Mimulus repens*	Prostrate annual or perennial, herb. Fl. blue, purple, Aug–Nov. Sand, clay. Margins of lakes & watercourses.
3	*Sauropus arenosus*	Spreading shrub, 0.5–1 m high. Fl. yellow, green, red, pink, May. Red sand dunes.
4	*Acacia balsamea*	Rounded or infundibular shrub, 1–2.5 m high. Red earth & gravel. Rocky hills, granite breakaways.
4	*Comesperma viscidulum*	Shrub, to ca 0.7 m high.
4	*Ptilotus mollis*	Compact, perennial shrub, to 0.5 m high, soft grey foliage. Fl. white, pink, May/Sep. Stony hills and screes.

3.4.2 Significant Ecological Communities

The potential threatened ecological communities that occur in the Pilbara were checked on the website of the Department of Environment and Conservation (2010c). Two Threatened Ecological Communities are listed for the Pilbara Region but neither occur in the vicinity of Kintyre. Twenty nine Priority Ecological Communities are listed for the Pilbara of which one: 'Riparian vegetation including phreatophytic species associated with creek lines and watercourses of Rudall River. It occurs in the semi permanent pools along courses of Rudall River. Threats: weed invasion, altered hydrological flows, inappropriate fire regimes.' This is listed as Priority 3 PEC.

Priority 3 communities are known ecological communities

(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or;
(ii) communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;
(iii) communities made up of large, and/or widespread occurrences, that may or may not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing by domestic and/or feral stock, and inappropriate fire regimes.

Although not listed as Threatened or Priority Ecological Communities, Kendrick (2001) listed three wetland vegetation units for the Little Sandy Desert Bioregion. These are:

(i) Upper Rudall River draining into Lake Dora;
(ii) Small permanent rockhole wetlands associated with hills and ranges; and
(iii)Small artificial water sources constructed along the Canning Stock Route.

In addition Kendrick (2001) listed the Beard vegetation units, which are of reservation priority in this bioregion (Table 6).

Table 6. Reservation Priority of Beard Vegetation Units

Beard Veg Code	Ecosystem Description	Reservation Priority
39	Shrubland, mulga scrub	H
98	Hummock grasslands, shrub steppe; kanji over soft spinifex and *Triodia basedowii*	L
99	Hummock grasslands, shrub steppe; *Acacia coriacea* and *Hakea* over *Triodia basedowii*	L
117	Hummock grasslands, shrub steppe; soft spinifex	L
125	Bare areas, salt lakes	H
134	Mosaic; Hummock grasslands, open tree steppe; desert bloodwood and feathertop spinifex (on) sandhills/Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills	H
136	Hummock grasslands, shrub steppe; mixed shrubs over spinifex between sandhills	M
152	Hummock grasslands, shrub steppe; soft and hard spinifex, soft spinifex	M
157	Hummock grasslands, shrub steppe; hard spinifex *Triodia wiseana*	M
1251	Low woodland; coolabah and paperbark (*Melaleuca* sp.)	H

H = High Priority; M = Moderate Priority; L = Low Priority

4. METHODS

The remnant vegetation in the area was surveyed using the methods set out in the EPA Guidance No 51 (2004). Tracks were driven and transects walked through the bushland and all vegetation variations noted by Hart Simpson and Associates Pty Ltd (1994) within the proposed exploration and infrastructure areas were targeted.

In 2007 and 2010 permanent 50m x 50m quadrats were set up using a compass and oriented due N,S,E,W, with one (1) peg left at the NW corner. Where the remnant bushland was very narrow (eg along creeks) a strip quadrat was surveyed. Where this method was used is indicated in the quadrat data in Appendix B. Quadrats were placed to record the variation at the site. All species, including weeds were recorded. The vegetation, flora and weed surveys were conducted concurrently. This method was endorsed by S. van Leeuwen, the DEC person responsible for botanical surveys within the Pilbara Region (email received 20/04/2010). For each quadrat the following was recorded in the field:

- GPS reading (WGS84, equivalent to Geocentric Datum of Australia 1994 (GDA94) at NW corner;
- Digital photograph taken at the NW corner;
- Soil type;
- Presence, size and type of any outcropping rocks;
- Topography – eg. Ridge, upper slope, middle slope, lower slope, drainage line, minor creek, major creek, wetland;
- Aspect where this is applicable;
- Vegetation condition using the scale of Keighery (1994);
- Presence of any Declared Rare or Priority Flora or other significant flora;
- Additional information including dieback, age since fire, predators, erosion, weeds, grazing, tracks etc.; and
- All species were listed together with their percentage cover within the quadrat and average height.

The nearby area outside of the quadrat was also surveyed to record additional (opportunistic) species for that vegetation unit. In addition where the same vegetation unit was recorded any additional taxa were added to the flora list. These additional locations are listed in Appendix B with the suffix A, B, C, D etc.

Selected quadrats were resurveyed in 2011 using the method above. Any additional taxa within the quadrat and opportunistic taxa were recorded.

All species unknown in the field were collected, pressed and identified later using appropriate keys and by comparison with collections housed at the Western Australian Herbarium. A collection of each Rare or Priority Flora seen was made and forms completed and sent to the Rare Flora section of the Department of Environment and Conservation. The pressed and dried specimens will be sent to the Western Australian Herbarium for inclusion in their collection.

5. RESULTS

The results are a combination of the 3 surveys. Field work was undertaken between 25th June and 4th July inclusive in 2007; 27th April and 4th May 2010 and 16th-19th May 2011. Good rainfall had been recorded prior to April and May 2007, none before the 2010 survey but above average rainfall had been received between March and May 2011. In 2010 the area was very dry and a hot burn had occurred through the lease, hence the main reason for resurveying selected quadrats. A total of 112 permanent quadrats, 42 in 2007 and 70 in 2010 were established. The number of taxa recorded in 2010 for each quadrat was much lower than in 2007 due to the lack of rainfall in the area resulting in fewer plants and many of those disintegrating beyond recognition. In the few areas where the native vegetation had not been ravaged by fire the number of taxa recorded was higher.

5.1 Vegetation Associations

Hart Simpson and Associates Pty Ltd (HSA) undertook detailed vegetation mapping (See Appendix C). He described the vegetation units at the site using the format of Beard (1975). All the different vegetation complexes identified by HSA were targeted for the placement of quadrats. In Table 7 the vegetation complexes of Hart Simpson are listed together with the placement of quadrats surveyed in 2007 and 2010 by Bennett Environmental Consulting PL.

Table 7. Placement of quadrats in Hart Simpson Associates Mapping Units

HART SIMPSON ASSOCIATES Pty Ltd		BENNETT ENVIRONMENT CONSULTING Pty Ltd QUADRATS
VEGETATION COMPLEXES	MAP SYMBOL	
Woodlands		
1. *Corymbia opaca* Woodland	C	KIN44, KIN53, KIN91, KIN96
2. Riverine Woodland	D	KIN15, KIN27, KIN109
Shrublands		
1. *Acacia dictyophleba* Shrubland	I	Outside
2. *Acacia aneura* Shrubland	R	KIN73
Steppes		
1. Hummock Grass Steppe	A	KIN01, KIN04, KIN09, KIN25, KIN47, KIN85
2. *Acacia ancistrocarpa* and *Acacia ligulata* Shrub Steppe	F1	KIN03, KIN20, KIN24, KIN31, KIN32, KIN33, KIN41, KIN42, KIN48, KIN67, KIN94, KIN101
3. *Acacia retivenia* Shrub Steppe	F2	KIN17, KIN70
4. *Acacia inaequilatera* Shrub Steppe	F3	KIN06, KIN22, KIN36, KIN86, KIN89
5. Mixed Low Shrub Steppe	F4	KIN11, KIN13, KIN46, KIN50, KIN51, KIN106, KIN107
6. *Grevillea/Acacia* Shrub Steppe	F8	KIN40, KIN66, KIN112
7. *Acacia dictyophleba* Shrub Steppe	F9	KIN14, KIN21, KIN29, KIN35, KIN52, KIN55, KIN56, KIN57, KIN59
8. *Acacia wanyu* Shrub Steppe	F10	KIN39, KIN99
9. Open Shrub Steppe	G	KIN60, KIN110
10. Mallee of *Eucalyptus odontocarpa*	O	KIN30, KIN74
11. Tree Steppe of *Eucalyptus leucophloia*	B	KIN10, KIN45, KIN62,KIN69

HART SIMPSON ASSOCIATES Pty Ltd		BENNETT ENVIRONMENT CONSULTING Pty Ltd QUADRATS
VEGETATION COMPLEXES	**MAP SYMBOL**	
Grasslands 1. *Xerochloa laniflora* Grassland	L	KIN84
Scrubs 1. Chenopod Dwarf Scrub	E	KIN79
Shrub Savanna	H	KIN18, KIN19, KIN54, KIN58, KIN76, KIN87, KIN95
Complexes 1. Sand Dune Complex	J	KIN05, KIN07, KIN08, KIN12, KIN16, KIN61, KIN65, KIN111
2. Claypan Complex – little or no vegetation	K	KIN34, KIN78, KIN81
3. Sparse shrubs on clay soils	M	, KIN68, KIN71, KIN72
4. Drainage Line Complex	N	KIN02, KIN26, KIN37, KIN43, KIN92, KIN102, KIN105
5. Bare Stony Slope	P	No quadrat placed in this unit
6. White Quartzite Scree Complex	Q	KIN23, KIN28, KIN83, KIN100, KIN103
Overlap of Complexes	F1/F9	KIN38, KIN75
	F3/M	KIN49, KIN90, KIN93
	H/M	KIN97, KIN98
	F1/G	KIN63
	H/K	KIN64
	E/H/K	KIN77
	K/F3	KIN80
	F9/F4	KIN82
	F1/F3	KIN88
	H/F	KIN104
	F1/F4	KIN 19A, KIN21, KIN108

In the 2007 survey quadrat KIN11 was completely degraded being a Closed Tussock Grassland of **Cenchrus ciliaris*. In 2010 that area had been included in the development of the accommodation and associated infrastructure.

5.2 Vegetation of Quadrats established in 2007 and 2010

The vegetation unit of each quadrat recorded during the survey is described using the vegetation layers given in Table 8. The descriptions use that developed by Trudgen for work undertaken in the Pilbara Region of Western Australia.

Table 8. Vegetation Classification (from Trudgen, 2002)

LIFE FORM/ HEIGHT CLASS	CANOPY COVER				
	DENSE 70 % - 100%	**MID DENSE 30% - 70%**	**SPARSE 10% - 30%**	**VERY SPARSE 2% - 10%**	**SCATTERED <2%**
Trees >30 m	High Closed Forest	High Open Forest	High Woodland	High Open Woodland	Scattered Tall Trees
Trees 10-30 m	Closed Forest	Open Forest	Woodland	Open Woodland	Scattered Trees
Trees <10	Low Closed Forest	Low Open Forest	Low Woodland	Low Open Woodland	Scattered Low Trees
Shrubs > 2 m	Closed Scrub	Open Scrub	High Shrubland	High Open Shrubland	Scattered Tall Shrubs
Shrubs 1 - 2 m	Closed Heath	Open Heath	Shrubland	Open Shrubland	
Shrubs < 1 m	Low Closed Heath	Low Open Heath	Low Shrubland	Low Open Shrubland	
Herbs/Sedges/Grasses	Closed Herb, Sedge, *Grassland	Herb, Sedge, *Grassland	Open Herb, Sedge, *Grassland	Very Open Herb, Sedge, *Grassland	Scattered Herbs, Sedges, Grasses
Ferns	Closed Ferns	Ferns	Open Ferns	Very Open Ferns	
Mosses, liverworts	Closed Mosses	Mosses	Open Mosses	Very Open Mosses	

*Grasslands are then divided into:

- Tussock Grasslands (Perennial tussock species) eg *Eragrostis* species
- Hummock Grasslands (*Triodia* and *Plectrachne* species that form hummocks)
- Curly Spinifex Grasslands (*Plectrachne pungens*) that does not form hummocks
- Annual Tussock Grassland (eg annual *Sorghum* species)

The vegetation units recorded from the 2007 and 2010 surveys are recorded below. Detailed information for each quadrat is provided in Appendix B and their location is mapped in Appendix C.

i Hillsides

Three distinct hillside vegetation units recorded.

- The northern hillsides, around the proposed exploration camp site were basically covered in *Triodia epactia* and *Triodia wiseana.* On some slopes spindly shrubs of *Acacia pyrifolia* were recorded. This vegetation was recorded from KIN01, KIN04, KIN28, KIN69and KIN83.
- Open Heath dominated by *Acacia retivenea* over Hummock Grassland of *Triodia* species with rocks of quartzite and schistose rocks. This was represented by quadrat KIN17, KIN47 and KIN70.
- Woodland of *Eucalyptus leucophloia* over Scattered Herbs of *Ptilotus calostachyus* and Scattered Grasses of *Eriachne mucronata* or Hummock Grassland of *Triodia pungens*. This was represented by KIN45 and KIN62.
- Low Open Shrubland of *Indigofera monophylla* and *Senna glutinosa* subsp*. glutinosa* over Open Herbs dominated by *Cleome viscosa* and *Boerhavia gardneri* over Grassland dominated by *Triodia pungens*. This was represented by KIN85.

ii Scree at the base of hills

Three distinct vegetation units were recorded. All were recorded from quartzite scree slope and outcropping schist lower slopes.

- Low Shrubland of *Eremophila tietkensii.* This vegetation was open with the main cover being of small rocks. It was recorded from KIN23.
- Open Shrubland of *Acacia wanyu* over Low Shrubland of *Eremophila tietkensii* over Hummock Grassland of *Triodia pungens.* It was recorded from KIN38 and KIN99.
- High Open Shrubland of *Acacia synchronicia* over Low Open Shrubland dominated by *Eremophila tietkensii* over Grassland of *Triodia wiseana.* It was recorded from KIN100.
- Open Shrubland of *Acacia robeana* over Very Open Tussock Grassland of *Triodia angusta*. It was recorded from KIN103.

iii Sand dunes

The sand dunes were all low, only rising slightly above the level of the plain. Typically they included a greater number of taxa than the rocky soils with *Triodia schinzii* typically the dominant grass usually in association with *Triodia basedowii*. This vegetation association was represented by quadrats KIN07, KIN08, KIN16, KIN61 and KIN65.

iv Red sandy soils - Flat

This group of quadrats varied only slightly from the sand dunes as they also included several other taxa. The main variation was in the depth of the sand, although *Triodia basedowii* tended to be more dominant than in the sand dune quadrats. In several of the areas *Acacia acradenia* formed dense stands and was typically associated with *Acacia ligulata* (especially on the eastern side of the lease) and *Acacia dictyophleba*. The main variation observed was in the dominant taxa as illustrated below.

- *Acacia inaequilatera* dominant as observed at KIN22, KIN24, KIN36M KIN 50, KIN51, KIN86, KIN89, KIN90, and KIN98.
- *Acacia dictyophleba* dominant as observed at KIN14, KIN29, KIN52, KIN55, KIN59, KIN63, and KIN108.
- *Acacia ancistrocarpa* dominant but not in monoculture stands but typically associated with *Acacia ligulata, Acacia dictyophleba* and *Acacia inaequilatera.* This

was observed at KIN03, KIN05, KIN06, KIN09, KIN10, KIN11, KIN12, KIN13, KIN21, KIN25, KIN31, KIN32, KIN33, KIN46, KIN48, KIN49, KIN67, KIN75, KIN82, KIN88, KIN94, KIN97, KIN101, KIN106 and KIN107.

- *Acacia ligulata* dominant as observed at KIN64.
- *Acacia melleodora* dominant as observed at KIN111 and KIN112.
- *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii* as represented by quadrat KIN39.
- *Senna* taxa dominant as observed at KIN18, KIN19, KIN41, KIN42, KIN54, KIN58, KIN93, KIN95 and KIN104.
- *Grevillea* taxa dominant as observed at KIN40, and KIN66.
- *Hakea lorea* over *Triodia basedowii* as observed at KIN56 and KIN57.
- Grassland of *Triodia basedowii* as observed at KIN60, KIN71 and KIN110.

v. Lower Slope Above Creek

- Low Open Forest of *Acacia aneura* subsp. *macrocarpa* as observed at KIN73.
- Low Open Woodland of *Eucalyptus odontocarpa* as observed at KIN30 and KIN74.

vi. Drainage lines

In the field however the vegetation could be divided into that occurring on:

- Hill sides
  Open Shrubland of *Acacia* species sometimes dominated by *Acacia retivenea* over Low Open Heath of *Tephrosia rosea* var. *rosea* over Open Grassland of mixed taxa. This was represented by quadrat KIN92 and KIN102.
- Scree at base of hills
  1) Low Open Woodland of *Eucalyptus leucophloia* over Open Scrub of *Acacia retivenea* and *Grevillea wickhamii.* This was represented by quadrat KIN26.
  2) Open Scrub of *Acacia acradenia* and *Grevillea wickhamii* over Low Open Heath of *Keraudrenia velutina* subsp. *elliptica* and Hummock Grassland of *Triodia pungens.* This was represented by quadrat KIN37.
- Drainage lines at the base of hills
  1) Open Scrub of *Acacia eriopoda* and *Acacia ancistrocarpa* over Tussock Grassland *Eriachne* species or Hummock Grassland of *Triodia pungens*. This was represented by quadrat KIN35.
  2) Open Scrub of *Acacia ancistrocarpa* and *Grevillea wickhamii* over Hummock Grassland of *Triodia pungens.* This was represented by quadrats KIN02 and KIN20.
  3) High Open Shrubland of *Acacia eriopoda* and *Grevillea wickhamii* over Open Grassland of *Triodia schultzii* and *Triodia pungens*. This was represented by quadrat KIN43.
- Red sandy soils – flat ground
  1) Open Heath of *Acacia colei* over Annual Tussock Grassland. This was represented by quadrat KIN105.
  2) Open Scrub of *Acacia adsurgens* over Hummock Grassland of *Triodia pungens.* This was represented by quadrat KIN72.

vii Creek lines

This includes the creek and the banks above the creek.

- Within the creeks itself the vegetation was a High Open Woodland of *Eucalyptus camaldulensis* over Annual Tussock Grassland of several taxa including *Sorghum plumosum*. All banks of the creek were dominated by **Cenchrus ciliaris,* possibly due to distribution by flood waters, camels, donkeys and kangaroos. This was represented by quadrats KIN15, KIN27 and KIN109.
- On the floodplain above the banks the vegetation was Low Open Woodland of *Corymbia opaca* over Grassland dominated by **Cenchrus ciliaris* and *Sorghum plumosum*. All the areas where this vegetation was recorded the weed **Cenchrus ciliaris* was an understorey dominant. This was represented by KIN44, KIN53, KIN91 and KIN96.

viii Claypans

Claypans were dominant towards the northern side of the lease.

- Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa* over bare ground. This was represented by quadrat KIN68. There was a marked change in soil and vegetation with the adjoining area represented by quadrat KIN67.
- Low Shrubland dominated by *Tephrosia brevidens* over Very Open Herbs dominated by *Heliotropium corymbosum* over Tussock Grassland dominated by *Chrysopogon fallax.* This was represented by quadrat KIN76.
- Open Grassland of *Xerochloa laniflora* and *Dactyloctenium radulans*. This was represented by quadrats KIN77.
- Tussock Grassland of **Cenchrus ciliaris, Aristida inaequilatera, Xerochloa laniflora* and *Eragrostis eriopoda* as represented by quadrat KIN84.
- Areas of nearly bare ground. These areas were observed in 2010 but in the 2007 survey a herbfield with occasional scattered shrubs of *Acacia inaequilatera* and *Acacia acradenia* was recorded at quadrat KIN34. Although it had commenced to dry off at the time of the survey a diversity of annual taxa was recorded. It is anticipated that these areas of bare ground would be similar after good rainfall.
- Shrubland of *Eremophila forrestii* subsp. *forrestii* over Low Open Shrubland dominated by *Sclerolaena* species over Annual Tussock Grassland of *Aristida contorta*. Occasional shrubs of *Acacia inaequilatera* were present. This vegetation was recorded from quadrats KIN79, KIN80.
- Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Tussock Grassland dominated by **Cenchrus ciliaris.* This was represented by quadrat KIN81and KIN87.
- Low Open Shrubland of *Sclerolaena* species as recorded from quadrat KIN78.

5.3 Vegetation Condition

The vegetation condition recorded for each of the quadrats is included in Appendix B.

Table 9. Explanation of Vegetation Condition Rating (Keighery, 1994)

Rating	Description	Explanation
1	Pristine	Pristine or nearly so, no obvious signs of disturbance.
2	Excellent	Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species.
3	Very Good	Vegetation structure altered, obvious signs of disturbance. Disturbance to vegetation structure covers repeated fire, aggressive weeds, dieback, logging, grazing.
4	Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. Disturbance to vegetation structure covers frequent fires, aggressive weeds at high density, partial clearing, dieback and grazing.
5	Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. Disturbance to vegetation structure includes frequent fires, presence of very aggressive weeds, partial clearing, dieback and grazing.

Table 10 provides a summary of the vegetation condition recorded using the vegetation rating provided in Table 9. Due to fire frequency and severity and presence of feral animals the highest rating that could be applied was 2, excellent.

Table 10. Vegetation Condition recorded during the survey

Rating	Description	Quadrat Reference
2	Excellent	KIN01, KIN02, KIN03, KIN06, KIN07, KIN08, KIN14, KIN16, KIN17, KIN18, KIN19, KIN20, KIN21, KIN23, KIN24, KIN25, KIN26, KIN27, KIN28, KIN29, KIN30, KIN35, KIN37, KIN38, KIN39, KIN40, KIN41, KIN42, KIN45, KIN47, KIN60, KIN62, KIN78, KIN79, KIN82, KIN89, KIN94, KIN99, KIN100, KIN103, KIN107
2-3	Excellent to very good	KIN04, KIN05, KIN12, KIN31, HIN32, KIN33, KIN46, KIN50, KIN51, KIN52, KIN57, KIN63, KIN65, KIN66, KIN67, KIN68, KIN69. KIN70, KIN71, KIN74, KIN77, KIN83, KIN85, KIN87, KIN92, KIN97, KIN104, KIN105, KIN111, KIN112
3	Very good	KIN13, KIN43, KIN48, KIN49, KIN55, KIN56, KIN59, KIN61, KIN72, KIN73, KIN75, KIN80, KIN88, KIN90, KIN95, KIN96, KIN101, KIN106, KIN108, KIN110
2-4	Excellent to good	KIN15
3-4	Very good to good	KIN22, KIN44, KIN76, KIN81, KIN91, KIN93, KIN98
4	Good	KIN10, KIN36, KIN 53, KIN54, KIN58, KIN64, KIN84, KIN86, KIN102, KIN109
3-5	Very good to degraded	KIN34
4-5	Good to degraded	KIN09
5	Degraded	KIN11

As there were very few weeds recorded from the site the vegetation condition of the area was typically excellent to very good. There were occasional areas where **Cenchrus ciliaris* was dense and the condition then was degraded to completely degraded but these were typically only small areas, yet this taxon was reasonably common. Several of the tracks to the bores had plants of **Cenchrus ciliaris* along the edges.

Fire through the area appears to be relatively frequent and severe, killing many plants which then regenerate from seed or underground stems. In addition there was evidence of camels and donkeys through the area as evidenced from scats and hoof prints. These animals would eat the plants and assist with the transportation of weeds through the area.

It is essential that with the proposed exploration drilling and future mining of the area that care is taken to ensure additional weeds are not introduced. This should ensure that the very good vegetation condition is retained. Where quadrats established during this current survey occur adjacent to any disturbance, these could continue to be monitored to ensure that the condition is not compromised and that weeds are not introduced.

5.4 Significant Ecological Communities

No Threatened Ecological or Priority Ecological Communities are recorded for the study area. The PEC that occurs in the Rudall River National Park occurs in permanent pools along the river. No pools were recorded along either major creek during the 2010 survey.

Three of the ten Beard (1975) communities listed by Kendrick (2001) as of reservation status for the region were recorded during the surveys. These are:

- Shrubland, mulga scrub which has the Beard Vegetation Code 39. This unit was found in the south eastern area of the lease but in an area not proposed for any

development. It was small in area and occurred on a sandy slope above a creek. Quadrat KIN73 was placed in this community (see Appendix B).

- *Triodia wiseana* Grass Steppe on stony hills which has the Beard Vegetation Code 157. Quadrat KIN01 is representative of this community as may be quadrat KIN100 but the latter includes low shrubs.
- Mixed Shrub Steppe between sandhills with *Triodia schinzii* which has the Beard Vegetation Code of 136. Although there are several areas where Triodia schinzii was the dominant grass there was only one quadrat KIN111 where it occurred between sand hills.

5.5 Taxa

A total of 48 vascular plant families, 149 genera and 323 taxa (species, subspecies and varieties) were recorded during the survey. Poaceae (grass family), and Fabaceae (previously Papilionaceae, Caesalpiniaceae and Mimosaceae) were the dominant families with 32 and 16 genera and 60 and 59 taxa respectively. The other dominant family was Malvaceae (previously Sterculiaceae and Malvaceae) with 10 genera and 38 taxa. These 3 families represent 6.2% of the total number of families, 38.9% of the total number of genera and 48.9% of the total number of taxa. Appendix A has the complete list of taxa recorded and Appendix B lists the taxa recorded for each quadrat.

A vegetative wattle with hairy phyllodes was collected from several sites. This was shown to B. Maslin, the researcher of wattles at the Western Australian Herbarium who thinks it may be the juvenile form of *Acacia eriopoda*, regrowing after fire. He requires a flowering collection to determine its status. In this report it is referred to as *Acacia* affin. *eriopoda*. If, when a flowering collection is made and it still has hairy phyllodes it will be a new taxon.

5.6 Significant Taxa

No significant taxa were recorded during the 2010 survey but a Priority 3 taxon, *Comesperma pallidum*, was recorded during the 2007 survey. *Comesperma pallidum* was recorded from KIN06. It was a lax shrub obtaining support from a shrub of *Acacia ancistrocarpa*. One plant only was observed. No photograph was taken of this taxon in the field but the one included in FloraBase (Western Australian Herbarium, 2010a) is indicated below.



Photograph of *Comesperma pallidum* extracted from FloraBase

5.7 Introduced Taxa

A total of 5 weeds were recorded during the current survey. All have been determined as weeds by the Western Australian Herbarium (2010a) and Department of Conservation and Land Management (1999). The rating allocated to each weed by CALM (1999) is based on three criteria:

Invasiveness – ability to invade natural bushland in good to excellent condition or ability to invade waterways;

Distribution – wide current or potential distribution including consideration of known history of wide spread distribution elsewhere in the world; and

Environmental impacts – Ability to change the structure, composition and function of ecosystems. In particular an ability to form a monoculture in a vegetation community.

Ratings indicate the following:

High indicates this weed is prioritised for control and/or research ie prioritising funding to it;

Moderate indicates control or research effort should be directed to it if funds are available, however it should be monitored (possibly a reasonably high level of monitoring);

Mild indicates monitoring of the weed and control where appropriate; and

Low indicates that this species would require a low level of monitoring.

Table 11. Weeds recorded during the survey classified according to CALM (1999)

SCIENTIFIC NAME	COMMON NAME	CALM RATING	INVASIVENESS	IMPACTS
**Cenchrus ciliaris*	Buffel grass	High	✓	✓
**Aerva javanica*	Kapok bush	High	✓	✓
**Citrullus lanatus*	Pie melon	Low		
**Bidens bipinnata*	Beggar's ticks	To be assessed		
**Cucumis melo* subsp. *agrestis*	Melon	To be assessed		

Those weeds rated as high are the ones that should be targeted for removal. Two of the weeds recorded during the survey have not as yet been assessed for their environmental impact.

**Cenchrus ciliaris* was relatively common throughout the area. It was dominant on the edge of the creek lines and where areas had previously been ripped for rehabilitation. The clay pan, which was not adjacent to previous mining activity, also recorded dense areas of this taxon. Camels and donkeys are common introduced animals in the area so together with native animals would aid in its dispersal. When exploration drilling occurs it is essential that care be taken to ensure this taxon is not dispersed into areas where it currently does not occur.

**Citrullus lanatus* was recorded in damp soil close to creeks. This plant formed dense areas over the ground with several green and cream mottled, round fruits up to 150mm wide. Several of the fruits had been opened, presumably by donkeys and camels and the seed scattered on the ground.

**Cucumis melo* subsp. *agrestis* was also recorded from several locations. It occurs as scattered plants and nowhere was observed as a dense mass. The elongated fruits of this taxon are characteristic making it readily recognisable.

**Aerva javanica* was only recorded from Kintyre Hill in both 2007 and 2010 on hill slopes that had previously been ripped and rehabilitated after preliminary drilling in the 1990's. In the 2007 survey some plants were recorded from KIN11, a degraded site which in 2010 had been developed. In 2011 additional populations of this taxon were recorded from:

- 403366E; 7529765N where in excess of 25 plants, were observed along the track edge and centre plus a few plants in the surrounding bushland; and
- 402451E; 7529674N where only one plant was observed.

This taxon, although common in the Pilbara and Kimberley areas of Western Australia could be readily eliminated from this site. It is imperative that this taxon is not introduced into other areas of the site particularly with the extended drilling programme and the monitoring of bores etc. Control of this weed should be undertaken.

**Bidens bipinnata* was recorded on the bank of the southern arm of the creek, at several of the locations sampled. This would be very difficult to control as it spread when the creek floods. In addition **Portulaca oleracea* is listed by FloraBase (Western Australian Herbarium 2010a) as an introduced plant but in Hussey *et.al*, (2007) it is stated that it is regarded as a native in most of the State but as a weed in the southwest. It is not included as a weed in this report.

The area surveyed had previously been drilled and a camp established. When this was closed the disturbed area was ripped and left to rehabilitate naturally. The last area was ripped in March 2002. Generally those ripped areas had regenerated well, but many have encouraged the growth of **Cenchrus ciliaris.* Many of the degraded areas observed in 2007 where previous disturbance areas had been ripped, in 2010 now had the accommodation and associated infrastructure erected. Plants of **Cenchrus ciliaris* were recorded along many of the tracks that had been constructed to bores etc. with the current exploration phase.

Hart Simpson and Associates Pty Ltd also recorded **Pseudognaphalium luteoalbum, *Emex australis, *Brassica tournefortii, *Sonchus oleraceus* and **Mesembryanthemum crystallinum,* none of which were recorded during the 2007 and 2010 surveys.

5.8 2011 Survey

The aim of the 2011 survey was to re-survey quadrats established in 2007 and 2010 in all of Hart Simpson Associates Pty Ltd vegetation complexes. However as 3 days was allowed for surveying some of the complexes/units in the far south of the lease where no tracks currently exist could not be included. These were *Acacia aneura* Shrubland, *Xerochloa laniflora* Grassland and *Acacia wanyu* Shrub Steppe. No particular effort was made to resurvey those quadrats placed in overlap of complexes, although as indicated in Table 12, four overlap quadrats were surveyed. Variations noted within the vegetation units accounts for some vegetation complexes having more than one quadrat re-surveyed.

A total of thirty seven quadrats or relevees (38% of total number established in 2007 and 2010) resurveyed in 2011 were: Quadrat 01; Quadrat 14; Quadrat 15; Quadrat 16; Quadrat 17; Quadrat 18; Quadrat 19; Quadrat 23; Quadrat 27; Quadrat 28; Quadrat 30; Quadrat 31; Quadrat 32; Quadrat 40; Quadrat 43; Quadrat 45; Quadrat 46; Quadrat 47; Quadrat 48; Quadrat 60, Quadrat 65; Quadrat 67; Quadrat 68; Quadrat 75; Quadrat 77; Quadrat 78; Quadrat 79; Quadrat 80; Quadrat 89, Quadrat 95' Quadrat 96; Quadrat 97; Quadrat 100; Quadrat 103; Quadrat 105; Quadrat 111 and Quadrat 112.

Table 12. Highlighted quadrats were re-surveyed in 2011

HART SIMPSON AND ASSOCIATES Pty Ltd VEGETATION COMPLEXES	BENNETT ENVIRONMENT CONSULTING Pty Ltd 2007 and 2010 QUADRATS
Woodlands	
3. *Corymbia opaca* Woodland	KIN44, KIN53, KIN91, KIN96
4. Riverine Woodland	KIN15, KIN27, KIN109
Shrublands	
3. *Acacia dictyophleba* Shrubland	Outside
4. *Acacia aneura* Shrubland	KIN73
Steppes	
12. Hummock Grass Steppe	KIN01, KIN04, KIN09, KIN25, KIN47, KIN85
13. *Acacia ancistrocarpa* and *Acacia ligulata* Shrub Steppe	KIN03, KIN20, KIN24, KIN31, KIN32, KIN33, KIN41, KIN42, KIN48, KIN67, KIN94, KIN101
14. *Acacia retivenia* Shrub Steppe	KIN17, KIN70
15. *Acacia inaequilatera* Shrub Steppe	KIN06, KIN22, KIN36, KIN86, KIN89

HART SIMPSON AND ASSOCIATES Pty Ltd VEGETATION COMPLEXES	BENNETT ENVIRONMENT CONSULTING Pty Ltd 2007 and 2010 QUADRATS
16. Mixed Low Shrub Steppe	KIN11, KIN13, KIN46, KIN50, KIN51, KIN106, KIN107
17. *Grevillea/Acacia* Shrub Steppe	KIN40, KIN66, KIN112
18. *Acacia dictyophleba* Shrub Steppe	KIN14, KIN21, KIN29, KIN35, KIN52, KIN55, KIN56, KIN57, KIN59
19. *Acacia wanyu* Shrub Steppe	KIN39, KIN99
20. Open Shrub Steppe	KIN60, KIN110
21. Mallee of *Eucalyptus odontocarpa*	KIN30, KIN74
22. Tree Steppe of *Eucalyptus leucophloia*	KIN10, KIN45, KIN62, KIN69
Grasslands 2. *Xerochloa laniflora* Grassland	KIN84
Scrubs 2. Chenopod Dwarf Scrub	KIN79
Shrub Savanna	KIN18, KIN19, KIN54, KIN58, KIN76, KIN87, KIN95
Complexes 7. Sand Dune Complex	KIN05, KIN07, KIN08, KIN12, KIN16, KIN61, KIN65, KIN111
8. Claypan Complex – little or no vegetation	KIN34, KIN78, KIN81
9. Sparse shrubs on clay soils	KIN68, KIN71, KIN72
10. Drainage Line Complex	KIN02, KIN26, KIN37, KIN43, KIN92, KIN102, KIN105
11. Bare Stony Slope	No quadrat placed in this unit
12. White Quartzite Scree Complex	KIN23, KIN28, KIN83, KIN100, KIN103
Overlap of Complexes	
Acacia ancistrocarpa and *Acacia ligulata* Shrub Steppe with *Acacia dictyophleba* Shrub Steppe	KIN75
Shrub Savanna with Sparse shrubs on clay soils	KIN97
Chenopod Dwarf Scrub with Shrub Savanna with Claypan Complex – little or no vegetation	KIN77
Claypan Complex – little or no vegetation with *Acacia inaequilatera* Shrub Steppe	KIN80

An additional 25 taxa were recorded during the 2011 survey. This now brings the total number of taxa found to 348, the number of genera to 155 and the number of vascular plant families to 49. Two additional weeds were found, **Chloris virgata* was recorded from quadrat KIN68 and **Malvastrum americanum* from quadrat KIN96. Previously it has been stated (5.7) that two additional areas of **Aerva javanica* were located in 2011. Both **Chloris virgata* and **Malvastrum americanum* are rated as having a high environmental impact with rapid invasiveness (Department of Environment and Conservation, 2011). No Declared Rare or Priority Flora were recorded during the 2011 survey.

The additional rains had encouraged the growth of seedlings and the flowering of grasses in particular the *Triodia* species. Some of the claypans had dense areas of *Marsilea hirsuta* which were not observed in 2010. This plant is only temporary whilst there is sufficient water to ensure its growth. The impact of fire and dry season had had a major impact on the vegetation which was recovering very well in 2011.

Photographic comparisons between a few quadrats established in 2007 or 2010 and re-visited in 2011.



Quadrat KIN40. Photograph taken in 2007 when *Grevillea eriostachya* was in flower and before the fire and low rainfall of 2010.



Quadrat KIN40. Photograph taken in 2011. The majority of *Grevillea eriostachya* shrubs have been killed by fire. Only a few were regenerating.



Quadrat KIN77. Photograph taken in 2010 after long dry summer



Quadrtat KIN77. Photograph taken in 2011 after good summer rains



Quadrat KIN79. Photograph taken in 2010 after long dry summer



Quadrat KIN79. Photograph taken in 2011 after good summer rains



Quadrat KIN80. Photograph taken in 2010 after long dry summer



Quadrat KIN80. Photograph taken in 2011 after good summer rains



Quadrat KIN96. Photograph taken in 2010 after long dry summer



Quadrat KIN96. Photograph taken in 2011 after good summer rains



Quadrat KIN43. Photograph taken in 2010 after long dry summer

Quadrat KIN43. Photograph taken in 2011 after good summer rains



6. COMPARISON WITH HART SIMPSON AND ASSOCIATES PTY LTD (1994 AND 1997)

The vegetation mapping undertaken by Hart Simpson and Associates Pty Ltd was ground truthed for the areas surveyed. Dr Hart's mapping is very detailed and was accurate but due to fires etc since the original survey some of the vegetation units described were now found to have blended across other vegetation units.

Hart Simpson and Associates Pty Ltd discussed the significance of fire. Dr Hart stated that the burnt and unburnt areas were strikingly different and could be readily distinguished by the size of the *Triodia* plants and height of the shrubs. Most of the taxa at the site are killed by fire and need to regenerate from seed, however when the fire was not severe some *Triodia* plants survived. Some of the units he described were not as distinguishable as he suggested, in particular community M where *Senna* species were dominant. In the eastern and northern areas where he located this community it was not as apparent in 2007 and 2010, yet where it was located in the western and southern areas it was distinctive.

The two degraded quadrats established in 2007, KIN11 and KIN13 were not described by Hart. Quadrat KIN11 was dominated by **Cenchrus ciliaris* but in 2010 that area had been used for the establishment of buildings. Quadrat KIN13 is the old ripped airstrip which was dominated by *Aristida inaequiglumis* and was still undeveloped in 2010.

Hart Simpson and Associates Pty Ltd undertook a detailed vegetation and flora assessment of the whole lease and beyond. The 2007 survey was only of the proposed exploration and development areas at that time but in 2010 the survey of the total lease was completed.

7. DISCUSSION

A large part of the area surveyed in 2007 had previously been drilled and a camp established. When this was closed the disturbed area was ripped and left to rehabilitate naturally, the last occurring in March 2002. Generally those ripped areas had regenerated well, but many have encouraged the growth of **Cenchrus ciliaris.* On the positive side *Triodia* species have regenerated well, even in the harsher rocky soils of the hillsides. Similarly the shrub taxa are also regrowing so with time it would blend well with the surrounding undisturbed vegetation at the site.

In 2010 the current drilling programme had utilised some of the ripped areas, excluding the airstrip, for the establishment of the village and associated roads and infrastructure. Also constructed is an upgraded road into the camp from Telfer which is slightly north of that used in 2007. The track used in 2007 has been closed which is a positive move, as it ensures that the Aboriginal significant site, the claypan, will continue to be protected.

One priority flora, *Comesperma pallidum* a Priority 3 flora was found in 2007 but no additional plants were located in 2010. It was recorded from within the area where it is intended to undertake exploration drilling. Only one plant was located along the transects walked.

The vegetation within the site varied with the rock types and associated soils. Hillslopes with *Acacia retivenea* were only recorded from the southern area of the lease where the rocks were more schistose than in the northern area. *Eucalyptus leucophloia* was recorded on a few hillslopes generally in protected areas on the slopes.

The sandy soils typically included *Triodia basedowii* and *Triodia schinzii* associated with *Acacia ligulata* and *Stylobasium spathulatum*. The latter taxon was more common on the raised dunes rather than on the flatter sandy soils. *Dicrastylis georgei* and *Lachnostachys roseoazurea* were typically associated with the sandy soils across the lease.

The drainage lines recorded varied directly with the taxa located on the adjacent hill slopes and flat areas. As an example *Acacia retivenia* was common in the drainage lines to the south

of the lease but less common in the north of the lease. *Grevillea wickhamii* occurred across all vegetation units and did not appear to be restricted to a specific soil.

Care will need to be taken with any development at the site to ensure that weeds, in particular **Cenchrus ciliaris* and **Aerva javanica* are not transported into areas where they do not presently occur. The area of **Aerva javanica* on Kintyre Hill, which had previously been ripped and left to rehabilitate in 2010 has had recent drilling commence on this hill. The seed of this taxon is light and fluffy and is readily carried by wind or vehicle and 2 further locations of **Aerva javanica* were recorded in 2011. This taxon should be controlled immediately as the area it occupies is small and drilling rigs etc have already commenced exploratory drilling of the area. A careful check must be made to ensure that this taxon is not spread further. Plants must be removed immediately they are observed. Plants of **Cucumis melo* subsp. *agrestis* were recorded in several locations but it was not a dominant at any of them. Opportunistically removing fruits whenever they are observed should reduce its potential to spread. One area of this taxon observed in 2010 had the fruits opened and eaten by some animals. None of the weeds were listed as Declared Weeds. In 2011 a few plants of **Cenchrus virgata* were recorded from quadrat KIN68, a clay pan area.

A very hot and destructive fire had burnt most of the site in 2010. Fire has a major impact on the environment as most of the taxa recorded from the site need to regenerate from seed, with only a few suckering from underground stems. *Hakea lorea* is one of the exceptions as it regrows from the underground stem. Driving across *Triodia* plants also kills them so it was excellent to see that tracks to the bores etc had been established with this current exploration phase. In the summer of 2011 above average rainfall had been recorded and the bushland was recovering well. Many seedlings had germinated and grasses, in particular *Triodia* species were flowering and commencing to seed.

No detailed survey was undertaken outside of the lease area but as the track between the site and the road to Telfer was driven the major vegetation units associated with the sandy soils, sand dunes and rocks were observed to be the same as those at the site.

A comparison was made between the vegetation units of Hart Simpson and Associates Pty Ltd and the quadrats of the 2007 and 2010 surveys. The GPS points of the current survey were provided to Pinpoint Cartographics for placing on the Hart Simpson and Associates Pty Ltd map. This resulted in the plots in Appendix C. Table 2 lists the map symbols used in this map.

All of the complexes described by Hart and Simpson and Associates Pty Ltd have had permanent quadrats established and taxa recorded. In addition in the mapping Dr Hart included some complexes of different complexes eg H/K, which indicates that complex has some of the characteristics of Units H, and K. Some of the quadrats over lain on the mapping of Hart are not included in his mapping unit but more closely resembled a different unit, indicating that subsequent fires etc have altered the vegetation.

Acacia aneura was stated by Hart as being restricted in the Pilbara and is also listed as being of conservation consideration by Kendrick (2001). Several stands of Mulga were also observed along the track between Kintyre and Telfer. A few plants of a mallee, *Eucalyptus odontocarpa*, were observed during the 2007 survey but a large stand was recorded in 2010. None of the vegetation units present are listed by the Department of Environment and Conservation (2010b) as Threatened or Priority Ecological Communities.

The variations observed between 2007 and 2010 indicate that time since fire can result in a marked difference in the constitution of the vegetation units. With excellent rainfall as experienced in 2011 the bushland recovers well but it will be some time before the shrubs become well established.

Although no formal survey was undertaken of the vegetation outside of the area surveyed, it would appear that the same vegetation units are all included in the Rudall River National Park and along the track to Telfer. This is based on observation as the track between the Kintyre site and Talawana track and between Kintyre and Telfer were traversed in the car.

With the proposed development it is essential that care is taken to ensure that weeds are not moved from areas of infestation to those with no or limited weeds, in particular **Aerva javanica* which currently only occurs in three small areas.

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Colin Reeves is thanked for preparing the Hart vegetation maps and upgrading the datum to WGS84.

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APPENDIX A

Taxa listed under vascular plant family

NB. Where a taxon is listed both as a single specific name and a variety of the same name it is because the varieties are only identifiable from flowering examples. For example – *Hibiscus sturtii* (vegetative only), *Hibiscus sturtii* var. *campylochlamys* and *Hibiscus sturtii* var. *platychlamys* both were in flower.

LEGEND

ABBREVIATION	DESCRIPTION
sp.	Species, used where the plant is vegetative
subsp.	Subspecies
forma	Forma
var.	Variety
*	Weed
affin.	Closest to that species
?	Unsure if that is the correct species
x	Hybrid

Vascular Plant Family	*Taxon*
Pteridaceae	
	Cheilanthes sieberi
Marsileaceae	
	Marsilea hirsuta
Poaceae	
	Amphipogon caricinus
	Aristida contorta
	Aristida holathera var. *holathera*
	Aristida inaequiglumis
	Aristida latifolia
	Brachyachne prostrata
	**Cenchrus ciliaris*
	Chloris pectinata
	**Chloris virgata*
	Chrysopogon fallax
	Chrysopogon pallidus
	Cymbopogon procerus
	Cynodon dactylon
	Dactyloctenium radulans
	Dichanthium fecundum
	Digitaria ctenantha
	Elytrophorus spicatus
	Enneapogon caerulescens
	Enneapogon polyphyllus
	Enneapogon purpurascens
	Eragrostis cumingii
	Eragrostis dielsii
	Eragrostis eriopoda
	Eragrostis falcata
	Eragrostis laniflora
	Eragrostis tenellula
	Eriachne aristidea
	Eriachne benthamii
	Eriachne ciliata
	Eriachne flaccida
	Eriachne helmsii
	Eriachne mucronata
	Eriachne obtusa
	Eriachne pulchella
	Eriachne sulcata
	Eulalia aurea
	Eulalia fulva
	Iseilema eremaeum
	Panicum decompositum
	Paractaenum refractum
	Paraneurachne muelleri
	Paspalidium basicladum
	Paspalidium rarum

Vascular Plant Family *Taxon*
Poaceae (cont.)
Perotis rara
Schizachyrium fragile
Setaria surgens
Sorghum plumosum
Sporobolus actinocladus
Sporobolus australasicus
Themeda triandra
Tragus australianus
Triodia angusta
Triodia basedowii
Triodia bitextura
Triodia epactia
Triodia longiceps
Triodia pungens
Triodia schinzii
Triodia sp. Shovelanna Hill
Triodia wiseana
Tripogon loliiformis
Triraphis mollis
Urochloa holosericea subsp. sericea
Whiteochloa airoides
Whiteochloa cymbiformis
Xerochloa laniflora
Cyperaceae
Bulbostylis barbata
Cyperus bifax
Cyperus cunninghamii
Cyperus iria
Cyperus rigidellus
Cyperus squarrosus
Fimbristylis dichotoma
Fimbristylis oxystachya
Fimbristylis ? *oxystachya*
Lipocarpha microcephala
Schoenoplectus dissachanthus
Philydraceae
Philydrum lanuginosum
Moraceae
Ficus brachypoda
Proteaceae
Grevillea eriostachya
Grevillea stenobotrya
Grevillea sp.
Grevillea ? *striata*
Grevillea wickhamii subsp. *hispidula*
Grevillea wickhamii subsp. *aprica*
Hakea lorea

Vascular Plant Family	*Taxon*
Santalaceae	
	Anthobolus leptomerioides
	Exocarpos aphyllus
	Santalum lanceolatum
Chenopodiaceae	
	Atriplex semilunaris
	Dysphania plantaginella
	Dysphania rhadinostachya subsp. *rhadinostachya*
	Maireana georgei
	Maireana melanocoma
	Maireana tomentosa
	Maireana villosa
	Rhagodia eremaea
	Rhagodia spinescens
	Salsola australis
	Salsola australis 'strobilifera'
	Salsola tragus subsp. *tragus*
	Sclerolaena bicornis var. bicornis
	Sclerolaena cornishiana
	Sclerolaena crenata
	Sclerolaena cuneata
	Sclerolaena diacantha
	Sclerolaena eriacantha
	Sclerolaena lanicuspis
Amaranthaceae	
	**Aerva javanica*
	Alternanthera nodiflora
	Amaranthus mitchellii
	Gomphrena canescens subsp. *canescens*
	Gomphrena cunninghamii
	Ptilotus aervoides
	Ptilotus aphyllus
	Ptilotus astrolasius var. *astrolasius*
	Ptilotus auriculifolius
	Ptilotus calostachyus
	Ptilotus clementii
	Ptilotus exaltatus
	Ptilotus helipteroides
	Ptilotus macrocephalus
	Ptilotus obovatus
	Ptilotus polystachyus forma *polystachyus*
	Ptilotus schwartzii forma *schwartzii*
Nyctaginaceae	
	Boerhavia coccinea
	Boerhavia gardneri
Gyrostemonaceae	
	Gyrostemon tepperi

Vascular Plant Family *Taxon*
Aizoaceae
Trianthema pilosa
Trianthema triquetra
Trianthema turgidifolia
Molluginaceae
Glinus oppositifolius
Mollugo molluginis
Portulacaceae
Calandrinia ptychosperma
**Portulaca oleracea*
Portulaca pilosa
Caryophyllaceae
Polycarpaea corymbosa
Lauraceae
Cassytha filiformis
Cleomaceae
Cleome viscosa
Brassicaceae
Lepidium phlebopetalum
Lepidium pholidogynum
Stenopetalum anfractum
Stenopetalum decipiens
Droseraceae
Drosera indica
Surianaceae
Stylobasium spathulatum
Fabaceae
Acacia acradenia
Acacia adoxa var. *adoxa*
Acacia adsurgens
Acacia affin. *eriopoda* (hairy phyllodes)
Acacia ancistrocarpa
Acacia aneura var. ? *macrocarpa*
Acacia bivenosa
Acacia colei
Acacia coriacea subsp. *pendens*
Acacia dictyophleba
Acacia eriopoda
Acacia inaequilatera
Acacia ligulata
Acacia melleodora
Acacia pyrifolia
Acacia retivenea subsp. *clandestina*
Acacia robeorum
Acacia synchronicia
Acacia tumida
Acacia validinervia
Acacia victoriae

Vascular Plant Family

Taxon

Fabaceae (cont.)

Acacia wanyu
Aeschynomene indica
Crotalaria crispata
Crotalaria cunninghamii
Crotalaria medicaginea var. *neglecta*
Cullen pogonocarpum
Cullen stipulaceum
Desmodium filiforme
Indigofera boviperda subsp. *boviperda*
Indigofera brevidens
Indigofera colutea
Indigofera georgei
Indigofera linifolia
Indigofera monophylla
Indigofera sp.
Jacksonia aculeata
Otion simplicifolium ms
Petalostylis cassioides
Rhynchosia minima
Senna artemisioides subsp. *helmsii*
Senna artemisioides subsp. *oligophylla*
Senna ferraria
Senna glutinosa subsp. *glutinosa*
Senna glutinosa subsp. *pruinosa*
Senna glutinosa subsp. x *luerssenii*
Senna notabilis
Senna sericea
Senna venusta
Swainsona formosa
Tephrosia arenicola
Tephrosia densa ms
Tephrosia rosea var. *clementii*
Tephrosia rosea var. *glabrior* ms
Tephrosia rosea var. *rosea*
Tephrosia sp. Bungaroo Creek
Tephrosia supina
**Trifolium angustifolium*
Vigna lanceolata
Zornia albiflora

Zygophyllaceae

Tribulopis angustifolia
Tribulus hirsutus
Tribulus macrocarpus
Tribulus suberosus
Zygophyllum iodocarpum

Vascular Plant Family

Taxon

Polygalaceae

Comesperma pallidum
Polygala isingii

Euphorbiaceae

Euphorbia alsiniflora
Euphorbia australis
Euphorbia biconvexa
Euphorbia boophthona
Euphorbia tannensis subsp. eremophila

Phyllanthaceae

Phyllanthus erwinii
Phyllanthus lacunellus

Celastraceae

Macgregoria racemigera

Sapindaceae

Dodonaea coriacea

Malvaceae

Abutilon cunninghamii
Abutilon lepidum
Abutilon leucopetalum
Abutilon macrum
Abutilon otocarpum
Abutilon oxycarpum
Abutilon oxycarpum subsp. *prostratum*
Corchorus laniflorus
Corchorus lasiocarpus
Corchorus parviflorus
Corchorus sidoides subsp. *sidoides*
Corchorus tridens
Corchorus sp.
Corchorus walcottii
Gossypium australe
Hibiscus burtonii
Hibiscus coatesii
Hibiscus leptocladus
Hibiscus sturtii
Hibiscus sturtii var. *campylochlamys*
Hibiscus sturtii var. *platychlamys*
Keraudrenia velutina subsp. *elliptica* ms
Keraudrenia velutina subsp. *velutina*
**Malvastrum americanum*
Melhania oblongifolia
Rulingia kempeana
Rulingia loxophylla
Sida arenicola
Sida brownii
Sida cardiophylla
Sida echinocarpa

Vascular Plant Family *Taxon*
Malvaceae (cont.)
Sida excedentifolia ms
Sida fibulifera
Sida platycalyx
Sida sp.
Sida sp. Rabbit flat
Sida sp. ? spiciform panicles
Sida ? ammophila
Sida sp. sand dune
Triumfetta chaetocarpa
Waltheria indica
Waltheria virgata
Elatinaceae
Bergia perennis subsp. *exigua*
Violaceae
Hybanthus aurantiacus
Lythraceae
Ammannia baccifera
Ammannia multiflora
Myrtaceae
Calytrix carinata
Corymbia opaca
Eucalyptus aspera
Eucalyptus brevifolia
Eucalyptus camaldulensis
Eucalyptus kingsmillii subsp. *kingsmillii*
Eucalyptus ? *kingsmillii* subsp. *kingsmillii*
Eucalyptus leucophloia subsp. *leucophloia*
Eucalyptus odontocarpa
Haloragaceae
Haloragis gossei
Araliaceae
Trachymene oleracea subsp. *oleracea*
Apocynaceae
Sarcostemma viminale subsp. *australe*
Convolvulaceae
Bonamia media
Bonamia pannosa
Bonamia rosea
Evolvulus alsinoides var. *decumbens*
Evolvulus alsinoides var. *villosicalyx*
Ipomoea muelleri
Polymeria ambigua
Boraginaceae
Halgania solanacea
Heliotropium cunninghamii
Heliotropium diversifolium
Heliotropium ovalifolium

Vascular Plant Family *Taxon*
Boraginaceae (cont.)
Heliotropium tenuifolium
Trichodesma zeylanicum var. *grandiflorum*
Lamiaceae
Dicrastylis costelloi var. *eriantha*
Dicrastylis doranii
Dicrastylis georgei var. *georgei*
Newcastelia cephalantha
Newcastelia roseoazurea
Solanaceae
Nicotiana benthamiana
Solanum centrale
Solanum diversiflorum
Solanum lasiophyllum
Scrophulariaceae
Eremophila forrestii subsp. *forrestii*
Eremophila gilesii subsp. *variabilis*
Eremophila latrobei subsp. *glabra*
Eremophila latrobei var. *latrobei*
Eremophila longifolia
Eremophila tietkensii
Orobanchaceae
Buchnera linearis
Striga squamigera
Phrymaceae
Peplidium aithocheilum
Peplidium muelleri
Plantaginaceae
Stemodia viscosa
Rubiaceae
Canthium latifolium
Oldenlandia crouchiana
Oldenlandia pterospora
Synaptantha tillaeacea
Cucurbitaceae
**Cucumis melo* subsp. *agrestis*
Mukia maderaspatana
Campanulaceae
Wahlenbergia tumidifructa
Goodeniaceae
Dampiera candicans
Dampiera cinerea
Goodenia armitiana
Goodenia heterochila
Goodenia microptera
Goodenia sp.
Goodenia stobbsiana
Goodenia triodiophila

Vascular Plant Family *Taxon*
Goodeniaceae (cont.)
Goodenia vilmoriniae
Scaevola parvifolia subsp. *pilbarae*
Velleia connata
Asteraceae
**Bidens bipinnata*
Blumea tenella
Calocephalus knappii
Calotis hispidula
Calotis plumulifera
Centipeda minima subsp. *macrocephala*
Chrysocephalum apiculatum
Chrysocephalum eremaeum
Pluchea rubelliflora
Pluchea tetranthera
Pterocaulon serrulatum
Pterocaulon sphacelatum
Rhodanthe humboldtiana
Rutidosis helichrysoides
Streptoglossa decurrens
Streptoglossa liatroides

APPENDIX B

Quadrat Data

NB. Where a taxon is listed both as a single specific name and a variety of the same name it is because the varieties are only identifiable from flowering examples. For example – *Hibiscus sturtii* (vegetative only), *Hibiscus sturtii* var. *campylochlamys* and *Hibiscus sturtii* var. *platychlamys* both were in flower.

LEGEND

ABBREVIATION	DESCRIPTION
sp.	Species, used where the plant is vegetative
subsp.	Subspecies
forma	Forma
var.	Variety
*	Weed
affin.	Closest to that species
?	Unsure if that is the correct species
x	Hybrid
sp. Rabbit flat	Name accepted by the Western Australian Herbarium prior to being given a formal name
	Additional taxa recorded in 2011

QUADRAT 01

Approximate Location: Quadrat placed in hills above camp site
Datum (WGS84): 404432E; 7531179N
01A: 404862E; 7530771N
01B: 404242E; 7530608N
01C: 403929E; 7532028N
01D: 404198E; 7531154N
01E: 407058E; 7530480N
01F: 407066E; 7530473N - resurveyed in 2011
Soil: Reddish brown silty loam
Rocks: Schistose acid rocks with quartzite rocks. Outcropping varied between sites but the surface was covered in rocks varying in size from 2-20cm
Topography: Whole of knoll - middle, upper slopes and ridge
Field Vegetation Description: Hummock Grassland of *Triodia epactia* and *Triodia wiseana*
Vegetation Condition: 1-2
Notes: This was the common vegetation on the hills and slopes. Occasionally on the very low hills get *Eucalyptus* white bark as small trees



TAXON	HEIGHT (cm)	% COVER
Acacia robeorum	75	<1
Bulbostylis barbata	20	10
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Eriachne pulchella	15	15
Gomphrena canescens subsp. *canescens*	10	<1
Grevillea wickhamii subsp. *hispidula*	175	1
Nicotiana benthamiana	30	<1

TAXON	HEIGHT (cm)	% COVER
Ptilotus exaltatus	15	<1
Schizachyrium fragile	20	50
Sclerolaena lanicuspis	10	1
Senna glutinosa subsp. *pruinosa*	50	<1
Sida excedentifolia	25	<1
Tribulus suberosus	40	<1
Triodia epactia	50	85
Triodia wiseana	40	10
Abutilon lepidum	Opportunistic	
Acacia adoxa var. *adoxa*	Opportunistic	
Acacia ancistrocarpa	Opportunistic	
Atriplex semilunaris	Opportunistic	
Dactyloctenium radulans	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila tietkensii	Opportunistic	
Eriachne ciliata	Opportunistic	
Euphorbia australis	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Goodenia heterochila	Opportunistic	
Goodenia stobbsiana	Opportunistic	
Iseilema eremaeum	Opportunistic	
Maireana georgei	Opportunistic	
Paractaenum refractum	Opportunistic	
Ptilotus calostachyus	Opportunistic	
Ptilotus polystachyus	Opportunistic	
Rhagodia eremaea	Opportunistic	
Senna sericea	Opportunistic	
Sporobolus australasicus	Opportunistic	
Trianthema triquetra	Opportunistic	
Trianthema turgidifolia	Opportunistic	
Triodia angusta	Opportunistic	
Zygophyllum iodocarpum	Opportunistic	

QUADRAT 02

Approximate Location: Along the track to north bore, near the northern extension of the lease
Datum (WGS84): 402830E; 7432285N
Soil: Reddish brown silty clay
Rocks: Very few, mostly absent
Topography: Flat below hills
Field Vegetation Description: Open Scrub of *Acacia* species over Tussock Grassland of *Eriachne* species
Vegetation Condition: 2
Notes: Narrow belt along a drainage line through the area. Fauna trap 2-4 at 405013E; 7528594N

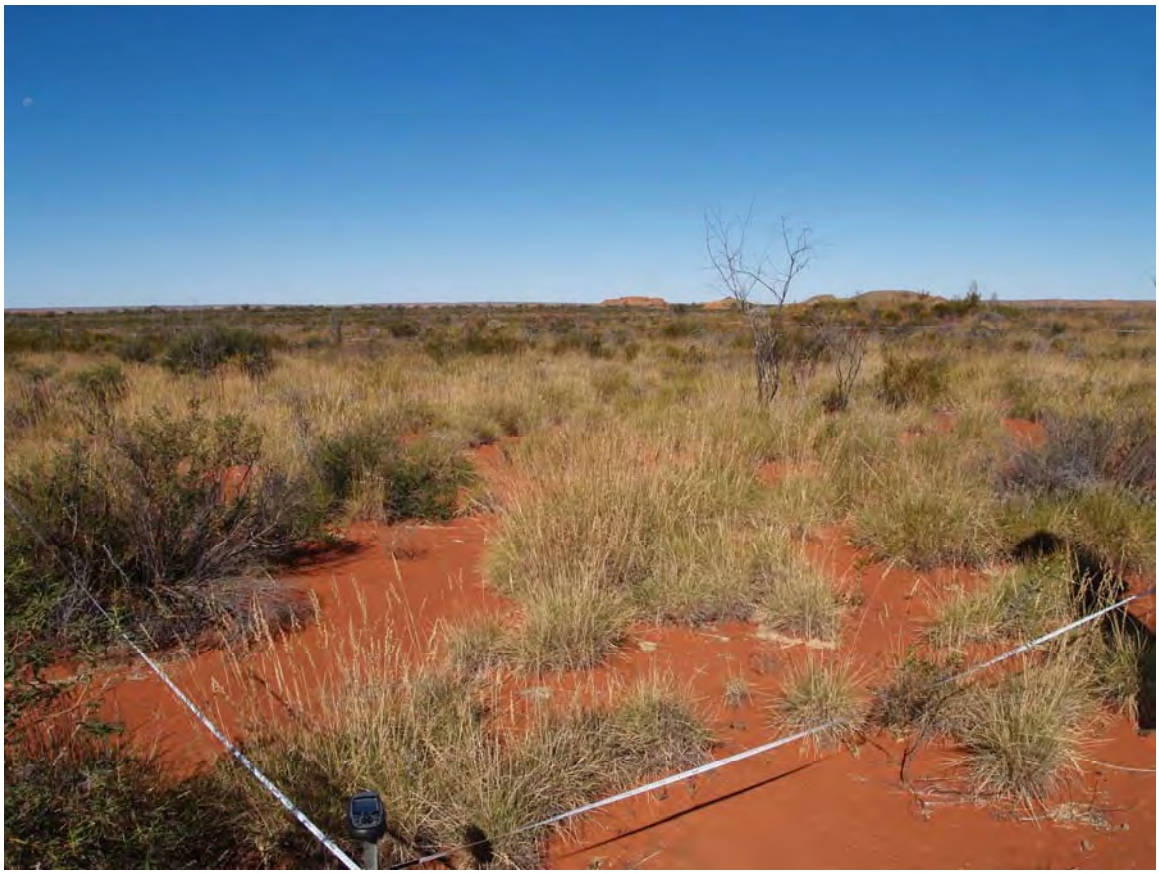


TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	40	1
Acacia colei	400	50
Acacia eriopoda	300	3
Acacia inaequilatera	110	5
Alternanthera nodiflora	30	20
Ammannia baccifera	10	1
Aristida contorta	25	1
Boerhavia coccinea	25	<1
Calotis plumulifera	50	<1
**Cenchrus ciliaris*	70	15
Centipeda minima subsp. *macrocephala*	10	60
Chrysopogon fallax	100	25

TAXON	HEIGHT (cm)	% COVER
Cleome viscosa	40	<1
Corchorus sp.	25	5
Corymbia opaca	600	<1
Crotalaria medicaginea	15	<1
**Cucumis melo* subsp. *agrestis*	Twiner	<1
Cyperus rigidellus	35	1
Dactyloctenium radulans	20	2
Enneapogon polyphyllus	30	1
Eremophila forrestii subsp. *forrestii*	60	1
Eremophila latrobei subsp. *glabra*	100	1
Eragrostis cumingii	30	30
Eriachne flaccida	50	60
Eulalia aurea	90	15
Euphorbia boophthona	20	1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	25	<1
Goodenia sp.	2	2
Gossypium australe	110	2
Hakea lorea subsp. *lorea*	200	<1
Heliotropium tenuifolium	25	<1
Marsilea hirsuta	5	5
Mukia maderaspatana	Twiner	5
Paraneurachne muelleri	70	3
Phyllanthus lacunellus	30	<1
Polycarpaea corymbosa	15	<1
Portulaca pilosa	5	<1
Pterocaulon sphacelatum	20	5
Ptilotus obovatus	70	2
Senna artemisioides subsp. *oligophylla*	100	5
Senna artemisioides subsp. *helmsii*	90	1
Senna glutinosa subsp. x *luerssenii*	110	2
Sporobolus australasicus	15	20
Streptoglossa decurrens	5	<1
Tragus australianus	70	<1
Trichodesma zeylanicum	100	1
Triodia pungens	90	10
Tripogon loliiformis	25	<1
Vigna lanceolata	20	5
Whiteochloa airoides	40	2
Acacia synchronicia	Opportunistic	
Calandrinia ptychosperma	Opportunistic	
Eucalyptus camaldulensis	Opportunistic	
Indigofera linifolia	Opportunistic	
Sclerolaena cornishiana	Opportunistic	

QUADRAT 03

Approximate Location: Area to the south of the hills behind the camp site and towards the area of the proposed exploration drilling
Datum (WGS84): 404703E; 7530508N
03A 405078E; 7528659N
03B 404863E; 7530916N
03C 404630E; 7529934N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia* species dominated by *Acacia ancistrocarpa* over Closed Hummock Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2
Notes: Burnt about 5 years

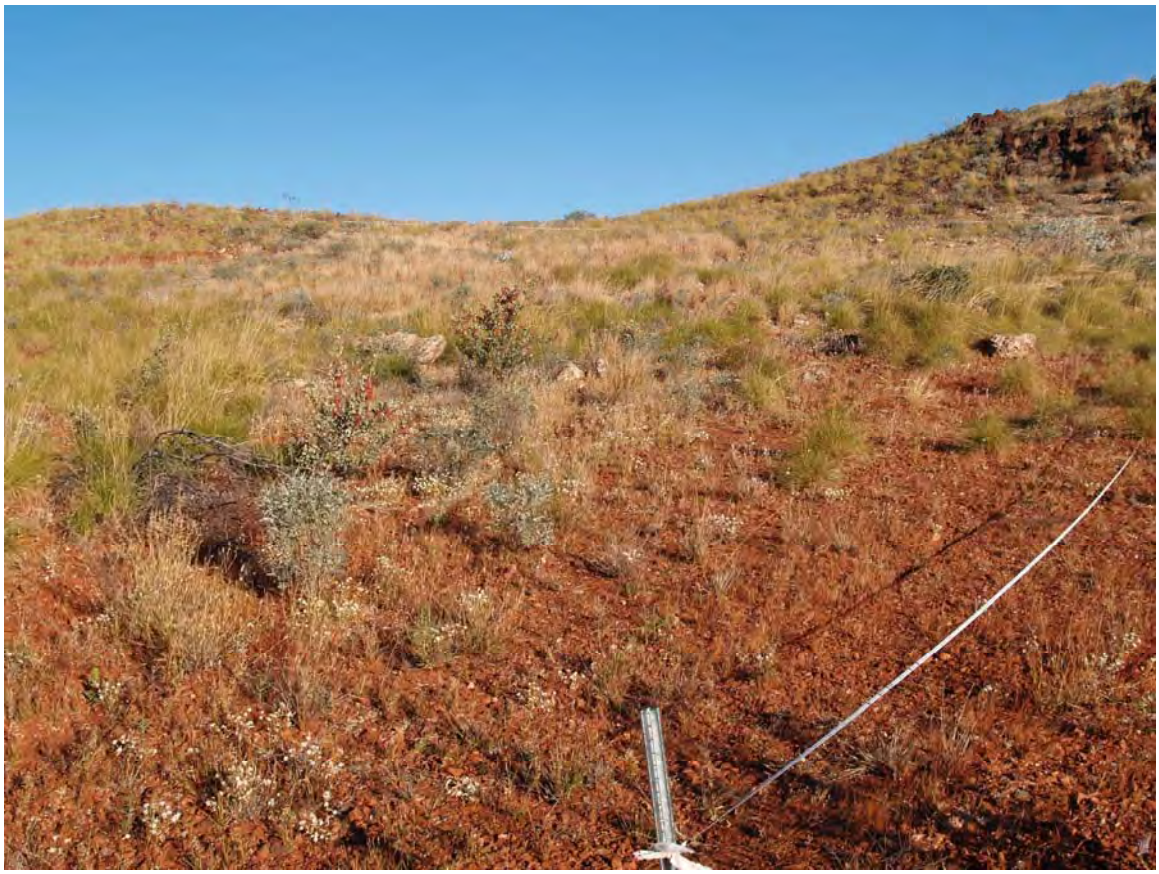


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	400	15 (10% dead)
Acacia melleodora	90	5
Aristida holathera	35	<1
Bonamia rosea	50	1
**Cenchrus ciliaris*	10	<1
Corchorus sidoides subsp. *sidoides*	50	1
Dampiera candicans	40	1
Eragrostis eriopoda	40	5

TAXON	HEIGHT (cm)	% COVER
Eriachne aristidea	10	2
Grevillea wickhamii subsp. *hispidula*	250	15
Hakea lorea subsp. *lorea*	250	2
Haloragis gossei	15	2
Hybanthus aurantiacus	35	5
Indigofera monophylla	50	8
Newcastelia roseoazurea	35	3
Oldenlandia pterospora	10	<1
Paraneurachne muelleri	60	3
Paspalidium rarum	15	2
Petalostylis cassioides	60	5
Scaevola parvifolia subsp. *pilbarae*	40	5
Schizachyrium fragile	70	1
Senna artemisioides subsp. *oligophylla*	60	1
Senna glutinosa subsp. *glutinosa*	110	1
Sida arenicola	100	1
Sida cardiophylla	60	2
Trianthema pilosa	5	1
Trichodesma zeylanicum	70	1
Triodia basedowii	100	35
Triodia pungens	70	1
Triodia schinzii	100	35
Abutilon macrum	Opportunistic	
Acacia colei	Opportunistic	
Acacia retivenea subsp. *clandestina*	Opportunistic	
Calytrix carinata	Opportunistic	
Cassytha filiformis	Opportunistic	
Dicrastylis doranii	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eucalyptus leucophloia subsp.*leucophloia*	Opportunistic	
Grevillea eriostachya	Opportunistic	
Jacksonia aculeata	Opportunistic	

QUADRAT 04

Approximate Location: Hill slope where previously drilled
Datum (WGS84): 404705E; 7529552N
04B 404613E; 7529449N
04C 404562E; 7529436N
04D 404669E; 7529433N
04E 405476E; 7529565N
Soil: Red silty loam
Rocks: Shistose with quartzite. Small amount of outcropping often present
Topography: Middle, upper and ridge
Field Vegetation Description: High Shrubland of *Grevillea wickhamii* subsp. *hispidula* and *Senna glutinosa* subsp. *pruinosa* over Closed Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2-3
Notes: Quadrat area has been ripped and rehabilitated



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	50	<1
Acacia pyrifolia	150	1
**Aerva javanica*	70	1
Aristida holathera	35	2
Boerhavia coccinea	20	1
Bulbostylis barbata	15	2
**Cenchrus ciliaris*	50	15
Cleome viscosa	24	1

TAXON	HEIGHT (cm)	% COVER
Enneapogon polyphyllus	45	2
Enneapogon purpurascens	15	30
Eragrostis eriopoda	40	1
Eriachne aristidea	15	5
Eriachne pulchella	15	2
Gomphrena canescens subsp. *canescens*	20	5
Grevillea wickhamii subsp. *hispidula*	175	5
Heliotropium ovalifolium	50	2
Heliotropium tenuifolium	35	2
Indigofera monophylla	60	8
Oldenlandia crouchiana	30	<1
Oldenlandia pterospora	10	1
Paraneurachne muelleri	50	1
Ptilotus exaltatus	15	<1
Ptilotus helipteroides	40	5
Salsola tragus	30	2
Schizachyrium fragile	40	25
Senna artemisioides subsp. *oligophylla*	70	2
Senna glutinosa subsp. *pruinosa*	110	1
Sporobolus australasicus	30	5
Triodia pungens	90	50
Triodia schinzii	75	1
Acacia eriopoda	Opportunistic	
Acacia melleodora	Opportunistic	
Acacia robeorum	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Eriachne mucronata	Opportunistic	
Euphorbia australis	Opportunistic	
Euphorbia boophthona	Opportunistic	
Mukia maderaspatana	Opportunistic	
Nicotiana benthamiana	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Senna sericea	Opportunistic	
Sida cardiophylla	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Triodia epactia	Opportunistic	

QUADRAT 05

Approximate Location: Below the hills in the previously drilled area
Datum (WGS84): 404559E; 7529640N
05A 404167E; 7529503N
05B 404327E; 7529246N
Soil: Red clayey sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Where the area has been ripped there is a lot of **Cenchrus ciliaris*. The undisturbed areas are in very good condition\.



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	175	8
Acacia melleodora	100	1
Acacia robeorum	40	<1
Aristida holathera	30	<1
Aristida inaequiglumis	80	1
**Cenchrus ciliaris*	60	15
Cleome viscosa	20	1
Corchorus sidoides subsp. *sidoides*	35	2
Corymbia opaca	200	<1

TAXON	HEIGHT (cm)	% COVER
Dicrastylis georgei	60	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Enneapogon purpurascens	15	5
Eragrostis eriopoda	50	3
Eremophila longifolia	125	<1
Eriachne aristidea	30	2
Eriachne pulchella	15	2
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	20	2
Goodenia vilmoriniae	15	<1
Hakea lorea subsp. *lorea*	300	1
Hakea chordophylla	175	3
Haloragis gossei	60	1
Heliotropium ovalifolium	80	5
Hibiscus sturtii	50	1
Indigofera monophylla	50	2
Paraneurachne muelleri	35	3
Paspalidium rarum	15	<1
Petalostylis cassioides	70	6
Portulaca pilosa	10	1
Ptilotus astrolasius subsp. *astrolasius*	40	2
Ptilotus exaltatus	30	2
Ptilotus obovatus	70	<1
Ptilotus polystachyus subsp. *polystachyus*	55	2
Salsola tragus	35	<1
Scaevola parvifolia subsp. *pilbarae*	35	2
Sclerolaena cornishiana	20	<1
Senna artemisioides subsp. *oligophylla*	50	1
Senna ferraria	50	<1
Senna glutinosa subsp. *glutinosa*	300	2
Sida arenicola	100	2
Solanum centrale	35	2
Solanum lasiophyllum	60	3
Sporobolus australasicus	10	<1
Streptoglossa decurrens	30	<1
Tephrosia rosea var. *clementii*	50	<1
Trianthema pilosa	5	1
Triodia basedowii	70	50
Triodia schinzii	110	5
Waltheria virgata	50	<1
Whiteochloa airoides	70	<1
Acacia ligulata	Opportunistic	
Acacia tumida	Opportunistic	
Bonamia rosea	Opportunistic	
Corchorus laniflorus	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Gossypium australe	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Oldenlandia pterospora	Opportunistic	

TAXON	HEIGHT (cm)	% COVER
Pterocaulon sphacelatum	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Trichodesma zeylanicum	Opportunistic	
Triodia pungens	Opportunistic	

QUADRAT 06

Approximate Location:
Datum (WGS84): 405269E; 7529989N
06B 405520E; 7529533N
06C 405553E; 7529711N
06D 405651E; 7529950N
06E 404636E; 7528268N
06F 404157E; 7528537N
06G 404297E; 7528745N
06H 404406E; 7528810N
Soil: Red sand
Rocks: N/A
Topography: Flat between hills
Field Vegetation Description: Open Heath of *Acacia ancistrocarpa* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 1-2
Notes: Fire at quadrat site 4-5 years previously. All shrubs less than 2m tall
Drill bore at 405553E; 7529711N



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	25
Acacia melleodora	150	2
Aristida inaequiglumis	90	3
Bonamia rosea	50	<1
**Cenchrus ciliaris*	15	<1

TAXON	HEIGHT (cm)	% COVER
Cleome viscosa	25	<1
Comesperma pallidum	60	<1
Corymbia opaca	300	<1
Dampiera candicans	50	<1
Dicrastylis georgei	50	5
Dodonaea coriacea	50	1
Eragrostis eriopoda	35	<1
Goodenia vilmoriniae	15	<1
Haloragis gossei	15	<1
Indigofera monophylla	30	7
Paraneurachne muelleri	60	5
Paspalidium basicladum	35	<1
Ptilotus astrolasius subsp. *astrolasius*	30	1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Sida arenicola	30	1
Solanum centrale	45	<1
Streptoglossa decurrens	70	<1
Trichodesma zeylanicum	10	<1
Triodia basedowii	75	75
Acacia eriopoda	Opportunistic	
Acacia ligulata	Opportunistic	
Acacia retivenea subsp. *clandestina*	Opportunistic	
Aristida holathera	Opportunistic	
Calotis plumulifera	Opportunistic	
Calytrix carinata	Opportunistic	
Canthium latifolium	Opportunistic	
Crotalaria crispata	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Dysphania rhadinostachya subsp. *rhadinostachya*	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	
Euphorbia alsiniflora	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Indigofera linifolia	Opportunistic	
Jacksonia aculeata	Opportunistic	
Melhania oblongifolia	Opportunistic	
Polycarpaea corymbosa	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Rhagodia spinescens	Opportunistic	
Salsola tragus	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Tephrosia rosea var. *clementii*	Opportunistic	
Whiteochloa airoides	Opportunistic	

QUADRAT 07

Approximate Location:
Datum (WGS84): 404791E; 7530001N
07B 404921E; 7530942N
07C 404269E; 7530684N
07D 404425E; 7530618N
07E 407038E; 7530410N

Soil: Red sand dune. The quadrat site had outcropping rock on the ridge. This was not always the case with the other locations
Rocks: <5%
Topography: Dune all slopes and ridge
Field Vegetation Description: High Shrubland of *Grevillea wickhamii* subsp. *hispidula* over Shrubland of mixed taxa over Closed Hummock Grassland dominated *Triodia basedowii*
Vegetation Condition: 1-2
Notes: Area unburnt for more than 5 years



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	250	3
Acacia melleodora	90	1
Aristida holathera	25	5
Corchorus sidoides subsp. *sidoides*	60	10
Corymbia opaca	100	<1
Dicrastylis georgei	40	5
Eragrostis eriopoda	50	5
Eriachne aristidea	15	<1
Gossypium australe	150	1

TAXON	HEIGHT (cm)	% COVER
Grevillea eriostachya	200	1
Grevillea sp.	70	<1
Grevillea wickhamii subsp. *hispidula*	250	30
Heliotropium diversifolium	15	1
Heliotropium ovalifolium	25	5
Indigofera monophylla	20	1
Paraneurachne muelleri	50	5
Petalostylis cassioides	50	15
Senna artemisioides subsp. *oligophylla*	75	5
Senna artemisioides subsp. *helmsii*	100	5
Senna ferraria	110	2
Sida arenicola	125	1
Stylobasium spathulatum	150	5
Trianthema pilosa	5	1
Trichodesma zeylanicum	15	<1
Triodia basedowii	100	75
Triodia schinzii	110	2
Acacia dictyophleba	Opportunistic	
Acacia retivenea subsp. *clandestina*	Opportunistic	
Calytrix carinata	Opportunistic	
Cassytha filiformis	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Hibiscus sturtii var. *campylochlamys*	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Jacksonia aculeata	Opportunistic	
Ptilotus astrolasius subsp. *astrolasius*	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	

QUADRAT 08

Approximate Location: Pale colour indicated on the aerial photograph
Datum (WGS84): 405642E; 7530067N
08A 404866E; 7530473N
08B 405959E; 7530343N
08C 404780E; 7528344N
Soil: Red sand, slight rise
Rocks: N/.A
Topography: Ridge
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* over Hummock Grass dominated by *Triodia schinzii*
Vegetation Condition: 2
Notes: Equivalent to R.Hart vegetation type J

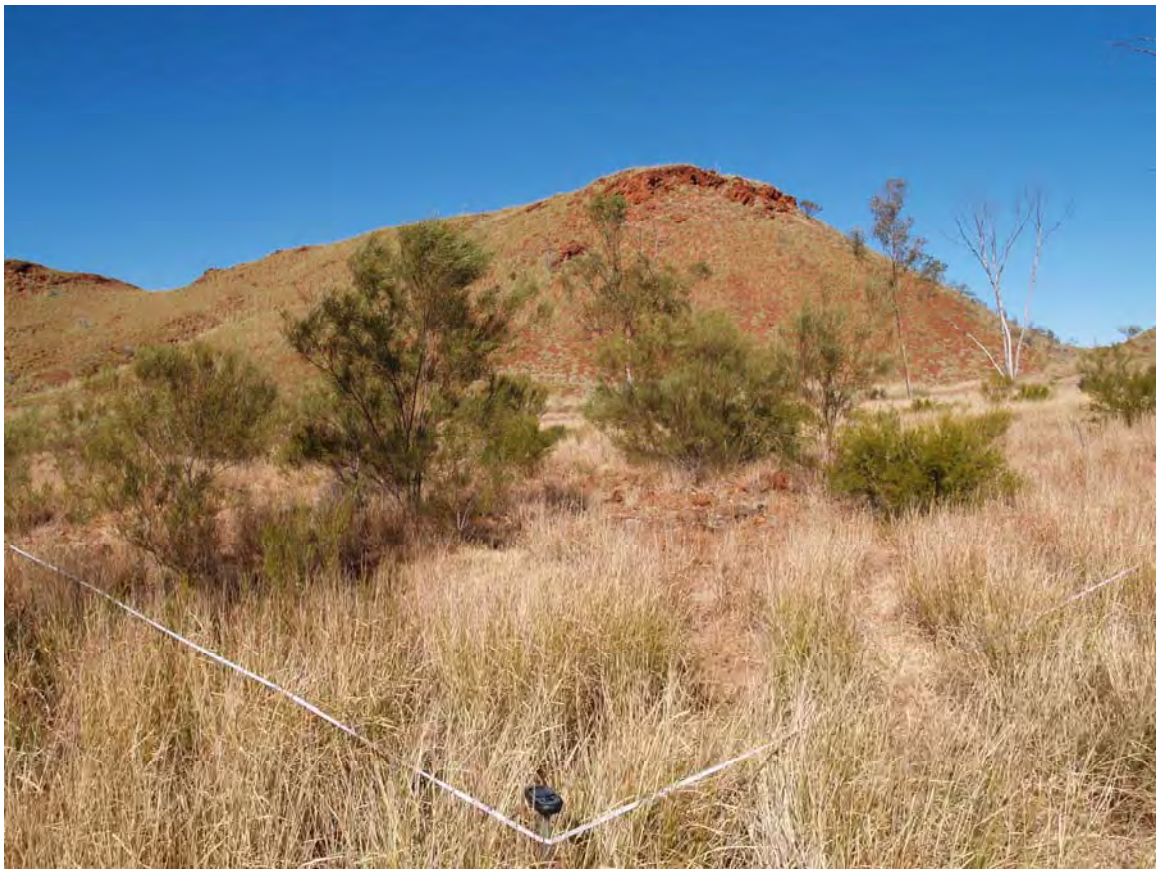


TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	250	3
Acacia melleodora	90	1
Aristida holathera	25	5
Corchorus sidoides subsp. *sidoides*	60	10
Corymbia opaca	100	<1
Dicrastylis georgei	40	5
Eragrostis eriopoda	50	5
Eriachne aristidea	15	<1
Gossypium australe	150	1

TAXON	HEIGHT (cm)	% COVER
Grevillea sp.	70	<1
Grevillea eriostachya	200	1
Grevillea wickhamii subsp. *hispidula*	250	30
Heliotropium diversifolium	15	1
Heliotropium ovalifolium	25	5
Indigofera monophylla	20	1
Paraneurachne muelleri	50	5
Petalostylis cassioides	50	15
Senna artemisioides subsp. *oligophylla*	75	5
Senna artemisioides subsp. *helmsii*	100	5
Senna ferraria	110	2
Sida arenicola	125	1
Stylobasium spathulatum	150	5
Trianthema pilosa	5	1
Trichodesma zeylanicum	15	<1
Triodia basedowii	100	75
Triodia schinzii	110	2
Acacia dictyophleba	Opportunistic	
Acacia retivenea subsp. *clandestina*	Opportunistic	
Calytrix carinata	Opportunistic	
Cassytha filiformis	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Hibiscus sturtii var. *campylochlamys*	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Jacksonia aculeata	Opportunistic	
Ptilotus astrolasius subsp. *astrolasius*	Opportunistic	
Ptilotus polystachyus var. *polystachyus*	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	

QUADRAT 09

Approximate Location: Proposed exploration accommodation site
Datum (WGS84): 404334E; 7530984N
Soil: Silty clay
Rocks: Shistose quartz with a large number of small angular rocks over the surface
Topography: Flat below hills
Field Vegetation Description: Scattered Low Trees of *Eucalyptus leucophloia* subsp.*leucophloia* over Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 4-5
Notes: Area ripped and left to rehabilitate of own accord. Nearly the whole area is **Cenchrus ciliaris* but is surrounded by hills with the vegetation of KIN01. At this site there were 8 *Eucalyptus* trees, 5 of which were dead and 3 alive



TAXON	HEIGHT (cm)	% COVER
Acacia colei	175	3
Acacia eriopoda	250	10
Acacia melleodora	150	<1
Acacia retivenea subsp. *clandestina*	15	<1
Acacia robeorum	150	5
**Cenchrus ciliaris*	50	65
Cleome viscosa	70	<1
Clianthus formosus	10	<1
Cynodon dactylon	40	1
Dactyloctenium radulans	15	50
Enneapogon polyphyllus	20	<1

TAXON	HEIGHT (cm)	% COVER
Enneapogon purpurascens	15	2
Eriachne aristidea	15	<1
Eucalyptus leucophloia subsp.*leucophloia*	800	2 (2dead)
Euphorbia australis	5	<1
Gomphrena canescens subsp*. canescens*	10	11
Gossypium australe	50	<1
Indigofera georgei	30	<1
Melhania oblongifolia	50	<1
Mukia maderaspatana	Twiner	<1
Pterocaulon sphacelatum	50	<1
Ptilotus exaltatus	55	<1
Salsola tragus	50	<1
Sclerolaena cornishiana	15	<1
Sclerolaena lanicuspis	10	5
Senna ferraria	60	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Streptoglossa decurrens	5	5
Stylobasium spathulatum	200	1.5
Tephrosia rosea var*. clementii*	50	<1
Trianthema triquetra	5	10
Triodia pungens	70	2
Triodia wiseana	60	1
Vigna lanceolata	Twiner	<1
Aristida holathera	Opportunistic	
Fimbristylis oxystachya	Opportunistic	
Lepidium pholidogynum	Opportunistic	
Newcastelia cephalantha	Opportunistic	
Sida fibulifera	Opportunistic	
Triodia epactia	Opportunistic	

QUADRAT 10

Approximate Location: Track between proposed exploration camp and laydown area
Datum (WGS84): 404263E; 7530754N
Soil: Mixture of sand and schist
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* subsp.*leucophloia* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 4
Notes: Between sand dune on south and hill on the north. Quadrat of uneven shape to ensure that it stayed within the same vegetation unit. Western boundary 40m, northern and southern boundary 60m and eastern boundary 30m



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	3
Acacia ancistrocarpa	175	3
Acacia eriopoda	300	5
Acacia melleodora	120	1
Acacia synchronicia (narrow leaf form)	150	2
Aristida holathera	50	<1
Blumea tenella	15	<1
Bonamia rosea	20	<1
Bulbostylis barbata	15	5
Cassytha filiformis	Twiner	<1
**Cenchrus ciliaris*	15	<1

TAXON	HEIGHT (cm)	% COVER
Dactyloctenium radulans	15	1
Dodonaea coriacea	30	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	20	5
Eragrostis laniflora	10	2
Eriachne aristidea	15	<1
Eriachne mucronata	20	<1
Eucalyptus leucophloia subsp. *leucophloia*	700	10
Euphorbia boophthona	10	<1
Gomphrena canescens subsp. *canescens*	10	1
Goodenia heterochila	30	<1
Hybanthus aurantiacus	70	<1
Jacksonia aculeata	40	2 (5% dead)
Mukia maderaspatana	Twiner	<1
Oldenlandia crouchiana	5	<1
Paraneurachne muelleri	50	5
Petalostylis cassioides	60	1
Ptilotus exaltatus	10	<1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Salsola tragus	30	<1
Schizachyrium fragile	15	2
Sclerolaena lanicuspis	10	3
Senna sericea	100	1
Sida arenicola	120	1
Solanum lasiophyllum	50	1
Sporobolus australasicus	5	2
Trachymene oleracea subsp. *oleracea*	10	<1
Trichodesma zeylanicum	10	<1
Triodia pungens	120	60
Keraudrenia velutina subsp. *elliptica*	Opportunistic	

QUADRAT 11

Approximate Location: Proposed exploration laydown area
Datum (WGSD84): 404388E; 7530626N
Soil: Silty loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 5
Notes: Area ripped and allowed to rehabilitate naturally



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	150	2
**Aerva javanica*	50	3
**Cenchrus ciliaris*	70	95
Evolvulus alsinoides var. *villosicalyx*	10	<1
Grevillea wickhamii subsp. *hispidula*	200	1
Hybanthus aurantiacus	25	<1
Indigofera monophylla	35	1
Keraudrenia velutina subsp. *elliptica*	50	5
Paraneurachne muelleri	60	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Salsola tragus	50	<1
Scaevola parvifolia subsp. *pilbarae*	15	<1
Trichodesma zeylanicum	20	<1

QUADRAT 12

Approximate Location: To south of KIN11
Datum (WGS84): 404514E; 7530522N
Soil: Red sand
Rocks: N/A
Topography: Low rise to flat
Field Vegetation Description: Open Heath of mixed taxa over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	175	15
Acacia melleodora	120	2
Aristida holathera	70	2
Bonamia rosea	40	10
Cassytha filiformis	Twiner	<1
**Cenchrus ciliaris*	60	<1
Corchorus sidoides subsp. *sidoides*	60	10
Dicrastylis georgei	60	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Enneapogon purpurascens	25	<1
Eriachne aristidea	20	<1
Eriachne benthamii	60	<1
Eriachne pulchella	35	<1

TAXON	HEIGHT (cm)	% COVER
Euphorbia boophthona	70	<1
Gomphrena canescens subsp. *canescens*	5	<1
Grevillea ? *striata*	70	<1
Grevillea eriostachya	110	1
Hybanthus aurantiacus	50	1
Jacksonia aculeata	35	<1
Keraudrenia velutina subsp. *elliptica*	60	5
Newcastelia roseoazurea	50	<1
Oldenlandia pterospora	10	<1
Paspalidium basicladum	15	<1
Petalostylis cassioides	100	3
Santalum lanceolatum	100	<1
Scaevola parvifolia subsp. *pilbarae*	40	30
Senna artemisioides subsp. *oligophylla*	70	<1
Sida arenicola	120	<1
Sida cardiophylla	50	3
Trianthema pilosa	2	2
Trichodesma zeylanicum	50	<1
Triodia basedowii	90	60
Triodia schinzii	90	5

QUADRAT 13

Approximate Location: Previous airstrip
Datum (WGS84): 403909E; 7532174N
Soil: Silty loam
Rocks: Quartz schist mixture, 5cm or less in size
Topography: Flat
Field Vegetation Description: Closed Grassland of *Aristida inaequiglumis*
Vegetation Condition: 3
Notes: Area ripped after site was decommissioned



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	300	<1
Acacia ancistrocarpa	200	1
Acacia dictyophleba	200	1
Acacia synchronicia	170	1
Aristida holathera	50	2
Aristida inaequiglumis	100	85-95
Boerhavia coccinea	20	<1
Bonamia media	5	<1
Bonamia rosea	30	2
Brachyachne prostrata	2	<1
**Cenchrus ciliaris*	60	2
Cleome viscosa	35	<1
Corchorus sidoides subsp. *sidoides*	60	1

TAXON	HEIGHT (cm)	% COVER
Dactyloctenium radulans	5	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	1
Enneapogon purpurascens	10	<1
Eragrostis eriopoda	70	<1
Eriachne aristidea	15	2
Eriachne mucronata	60	1
Evolvulus alsinoides var. *villosicalyx*	20	<1
Gomphrena canescens subsp. *canescens*	10	<1
Indigofera monophylla	60	<1
Melhania oblongifolia	40	<1
Portulaca pilosa	2	<1
Pterocaulon sphacelatum	5	<1
Ptilotus calostachyus	70	<1
Sclerolaena cornishiana	15	<1
Sclerolaena eriacantha	20	2
Sclerolaena lanicuspis	15	2
Senna artemisioides subsp. *oligophylla*	60	<1
Senna glutinosa subsp. *glutinosa*	75	<1
Senna glutinosa subsp. *pruinosa*	120	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Trianthema triquetra	5	1
Triodia pungens	150	<5
Acacia inaequilatera	Opportunistic	
Eremophila tietkensii	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Mukia maderaspatana	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	

QUADRAT 14

Approximate Location: Southern end of airstrip
Datum (WGS84): 404251E; 7532061N
14A 404125E; 7531734N
14B 404237E; 7531445N
14C 404654E; 7531497N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland to High Open Shrubland of *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia schinzii*
Vegetation Condition: 1-2
Notes: Burnt many years previously. Area burnt in 2010 regrowth will occurring.



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia dictyophleba	300	30
Acacia inaequilatera	250	5
Aristida contorta	35	<1
Aristida holathera	30	1
Aristida inaequiglumis	110	5
Bonamia rosea	40	5
Bulbostylis barbata	15	<1
Calytrix carinata	70	<1
**Cenchrus ciliaris*	70	1

TAXON	HEIGHT (cm)	% COVER
Cleome viscosa	30	<1
Corchorus sidoides subsp. *sidoides*	35	<1
Corymbia opaca	250	<1
Cymbopogon procerus	70	1
Dicrastylis georgei	40	1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	2
Enneapogon polyphyllus	40	<1
Enneapogon purpurascens	10	<1
Eragrostis eriopoda	70	<1
Eriachne aristidea	35	1
Eriachne mucronata	60	<1
Euphorbia boophthona	20	<1
Euphorbia alsiniflora	15	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia microptera	15	<1
Goodenia vilmoriniae	40	<1
Hakea lorea subsp. *lorea*	50	<1
Haloragis gossei	10	<1
Heliotropium diversifolium	15	<1
Hibiscus coatesii	50	<1
Indigofera monophylla	40	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	40	2
Paspalidium basicladum	15	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	10	<1
Ptilotus astrolasius subsp. *astrolasius*	45	<1
Ptilotus polystachyus var. *polystachyus*	35	<1
Salsola australis	60	2
Scaevola parvifolia subsp. *pilbarae*	40	2
Senna artemisioides subsp. *helmsii*	40	<1
Senna artemisioides subsp. *oligophylla*	90	1
Senna notabilis	10	<1
Sida arenicola	120	<1
Sida echinocarpa	60	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	25	<1
Streptoglossa decurrens	50	<1
Swainsona formosa	5	,1
Tephrosia arenicola	80	<1
Tephrosia arenicola	60	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	20	<1
Triodia basedowii	90	5
Triodia schinzii	150	75
Vigna lanceolata	10	<1
Acacia colei	Opportunistic	
Boerhavia gardneri	Opportunistic	
Convolvulus muelleri	Opportunistic	
Eremophila latrobei subsp. *glabra*	Opportunistic	

TAXON	HEIGHT (cm)	% COVER
Gossypium australe	Opportunistic	
Sclerolaena lanicuspis	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Solanum centrale	Opportunistic	

QUADRAT 15

Approximate Location: Creek at South bore
Datum (WGS84): 405641E; 7528767N
15A 406056E; 7529699N
15B 405323E; 7531414N
15C 402693E; 7532920N
15D 406041E; 7529679N
15F 403670E; 7533109N
15G 400796E; 7530925N

Soil: Sandy river gravels with sandy banks
Rocks: Scattered rocks carried by river
Topography: Major creek
Field Vegetation Description: Scattered Low Trees to Low Open Woodland of *Eucalyptus camaldulensis* over bare sand in the creek and Tussock Grassland of **Cenchrus ciliaris* on the bank
Vegetation Condition: 2-4
Notes: Several *Eucalyptus* seedlings have germinated in the creek since the last flow of water. Approximately 20% of the quadrat is in the creek bed. Some of the **Cenchrus ciliaris* plants are stabilizing the soil as some individuals are on small individual mounds. Capped bore on the eastern side of the creek near the location of the south bore



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	600	1
Calandrinia ptychosperma	5	<1
Calotis plumulifera	25	<1

**Cenchrus ciliaris*	60	70
Corchorus laniflorus	60	<1
Corymbia opaca	900	<1
**Cucumis melo* subsp. *agrestis*	Twiner	<1
Cyperus iria	60	<1
Cyperus squarrosus	10	<1
Desmodium filiforme	10	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	5	<1
Eragrostis cumingii	15	<1
Eriachne aristidea	15	<1
Eucalyptus camaldulensis	1000	3
Euphorbia australis	15	<1
Glinus oppositifolius	5	<1
Goodenia vilmoriniae	5	<1
Gossypium australe	150	<1
Indigofera georgei	75	<1
Ipomoea muelleri	10	<1
Philydrum lanuginosum	5	<1
Polycarpaea corymbosa	15	<1
Polymeria ambigua	5	<1
Portulaca pilosa	10	<1
Ptilotus obovatus	50	<1
Rhagodia eremaea	95	5
Rhynchosia minima	Twiner	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	60	<1
Sporobolus australasicus	15	<1
Stemodia viscosa	25	<1
Synaptantha tillaeacea	15	<1
TAXON	**HEIGHT (cm)**	**% COVER**
Trianthema pilosa	5	<1
Triodia pungens	110	1
Vigna lanceolata	15	<1
Wahlenbergia tumidifructa	20	<1
Waltheria indica	50	<1
Whiteochloa airoides	60	<1
Abutilon cunninghamii	Opportunistic	
Aeschynomene indica	Opportunistic	
Alternanthera nodiflora	Opportunistic	
Amaranthus mitchellii	Opportunistic	
Ammannia baccifera	Opportunistic	
Ammannia multiflora	Opportunistic	
**Bidens bipinnata*	Opportunistic	
Bonamia media	Opportunistic	
Buchnera linearis	Opportunistic	
Centipeda minima subsp. *macrocephala*	Opportunistic	
Cheilanthes sieberi	Opportunistic	
Chrysopogon pallidus	Opportunistic	
Cleome viscosa	Opportunistic	
Cyperus bifax	Opportunistic	

TAXON	HEIGHT (cm)	% COVER
Cyperus cunninghamii	Opportunistic	
Digitaria ctenantha	Opportunistic	
Drosera indica	Opportunistic	
Elytrophorus spicatus	Opportunistic	
Eragrostis cumingii	Opportunistic	
Eragrostis tenellula	Opportunistic	
Eriachne ciliata	Opportunistic	
Eulalia aurea	Opportunistic	
Evolvulus alsinoides var. *villosicalyx*	Opportunistic	
Fimbristylis affin. *ciliaris*	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Lipocarpha microcephala	Opportunistic	
Marsilea hirsuta	Opportunistic	
Peplidium muelleri	Opportunistic	
Perotis rara	Opportunistic	
Ptilotus polystachyus subsp. *polystachyus*	Opportunistic	
Setaria surgens	Opportunistic	
Themeda australis	Opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	Opportunistic	
Additional taxa 2011		
Bulboschoenus barbata	Opportunistic	
Schoenoplexus dissacanthus	Opportunistic	

QUADRAT 16

Approximate Location: Bank on the west side of the creek
Datum (WGS84): 405547E; 7528791N
16A 405142E; 7431385N
16B 405174E; 7527801N
16C 405614E; 7528532N
16D 406101E; 7529685N
16E 405961E; 7529632N
Soil: Red silty sand
Rocks: N/A
Topography: Ridge of dune
Field Vegetation Description: Shrubland of mixed taxa over Hummock Grassland of *Triodia* species
Vegetation Condition: 1-2
Notes: At site 16A there was less diversity and more **Cenchrus ciliaris*. The shrubs were dominated by *Acacia ancistrocarpa, Acacia eriopoda* and *Grevillea wickhamii* subsp. *aprica*



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	100	5
Acacia eriopoda	200	10
Acacia melleodora	70	1
Aristida holathera	30	<1
Boerhavia coccinea	30	<1
Bulbostylis barbata	10	<1
**Cenchrus ciliaris*	70	1
Corchorus laniflorus	60	<1

TAXON	HEIGHT (cm)	% COVER
Corchorus sidoides subsp. *sidoides*	30	<1
Crotalaria crispata	15	<1
Dicrastylis georgei	50	<1
Dodonaea coriacea	60	<1
Eragrostis eriopoda	60	<1
Eriachne aristidea	30	<1
Euphorbia australis	2	1
Euphorbia alsiniflora	10	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Goodenia vilmoriniae	20	<1
Gossypium australe	200	5
Hakea lorea subsp. *lorea*	110	<1
Heliotropium tenuifolium	15	<1
Melhania oblongifolia	25	<1
Mollugo molluginis	30	<1
Newcastelia roseoazurea	50	<1
Oldenlandia pterospora	10	<1
Polycarpaea corymbosa	10	<1
Polymeria ambigua	10	<1
Ptilotus obovatus	70	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	1
Senna artemisioides subsp. *oligophylla*	50	1
Senna artemisioides subsp. *helmsii*	40	<1
Sida arenicola	125	<1
Sida fibulifera	10	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	110	<1
Streptoglossa decurrens	70	1
Stylobasium spathulatum	175	2
Trianthema pilosa	5	<1
Trichodesma zeylanicum	15	<1
Triodia basedowii	90	80
Triodia pungens	90	<1
Vigna lanceolata	10	<1
Whiteochloa airoides	70	<1
Zornia albiflora	25	<1
Additional taxa 2011 quadrat		
Desmodium filiform	3	<1
Fimbristylis dichotoma	30	<1
Fimbristylis microcarya	60	<1
Heliotropium ovalifolium	50	<1
Portulaca pilosa	30	<1
Tribulus hirsutus	30	1
Acacia colei	Opportunistic	
Calotis plumulifera	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	
Eriachne mucronata	Opportunistic	
Euphorbia boophthona	Opportunistic	
Glinus oppositifolius	Opportunistic	

TAXON	HEIGHT (cm)	% COVER
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Haloragis gossei	Opportunistic	
Hibiscus burtonii	Opportunistic	
Indigofera georgei	Opportunistic	
Ipomoea muelleri	Opportunistic	
Lepidium pholidogynum	Opportunistic	
Panicum decompositum	Opportunistic	
Rhodanthe humboldtiana	Opportunistic	

QUADRAT 17

Approximate Location: Hill slope to the east of south bore
Datum (WGS84): 405729E; 7528730N
17A 405277E; 7528988N
17B 405038E; 7627981N
17C 404321E; 7577679N
17D 403801E; 7527205N
Soil: Sandy loam
Rocks: Chunky quartzite rocks
Topography: Middle, upper slopes and ridge
Field Vegetation Description: Open Heath dominated by *Acacia retivenea* subsp. *clandestina* over Hummock Grassland of *Triodia* species
Vegetation Condition: 1-2
Notes: Burnt recently. This vegetation unit occurred on most hills in the southern section of the lease



TAXON	HEIGHT (cm)	% COVER
Acacia pyrifolia	100	<1
Acacia retivenea subsp. *clandestina*	175	30
Bulbostylis barbata	10	<1
Eriachne aristidea	10	<1
Gomphrena canescens	10	<1
Grevillea wickhamii subsp. *aprica*	200	5
Schizachyrium fragile	10	<1
Sida arenicola	70	<1
Tribulus suberosus	50	<1

TAXON	HEIGHT (cm)	% COVER
Triodia pungens	150	75
Acacia inaequilatera	Opportunistic	
Acacia synchronicia	Opportunistic	
Aristida contorta	Opportunistic	
Bonamia rosea	Opportunistic	
Cleome viscosa	Opportunistic	
Corymbia opaca	Opportunistic	
Dicrastylis georgei	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila tietkensii	Opportunistic	
Euphorbia australis	Opportunistic	
Gomphrena cunninghamii	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Indigofera georgei	Opportunistic	
Newcastelia cephalantha	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Ptilotus auriculifolius	Opportunistic	
Ptilotus helipteroides	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Sida fibulifera	Opportunistic	
Sporobolus australasicus	Opportunistic	
Stenopetalum anfractum	Opportunistic	
Streptoglossa liatroides	Opportunistic	
Tephrosia rosea subsp. *clementii*	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Trianthema pilosa	Opportunistic	
Triodia epactia	Opportunistic	
Triodia longiceps	Opportunistic	
Triodia schinzii	Opportunistic	
Zygophyllum iodocarpum	Opportunistic	

QUADRAT 18

Approximate Location: Plain above creek on the track to the south bore
Datum (WGS84): 405888E; 7529070N
18A 405417E; 7528681N
18B 405504E; 7528916N
18C 405523E; 7528122N
18D 403801E; 7527205N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* and *Acacia ligulata* over Low Shrubland dominated by *Senna artemisioides* subsp. *helmsii* over Hummock Grassland of *Triodia* species
Vegetation Condition: 1-2
Notes:



TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	50	<1
Acacia ancistrocarpa	300	20
Acacia ligulata	250	5
Aristida holathera	25	3
Bonamia rosea	50	1
Bulbostylis barbata	10	2
**Cenchrus ciliaris*	90	<1
Cleome viscosa	30	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	20	<1
Eragrostis cumingii	15	<1
Eragrostis eriopoda	40	<1

Eriachne aristidea	10	<1
Eriachne ciliata	30	1
Euphorbia australis	10	<1
Euphorbia boophthona	15	1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	30	<1
Gomphrena canescens	10	<1
Goodenia triodiophila	15	<1
Haloragis gossei	25	<1
Heliotropium tenuifolium	10	<1
Hibiscus sturtii var. *platychlamys*	30	<1
Indigofera monophylla	50	<1
Mukia maderaspatana	Twiner	<1
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	75	2
Paspalidium rarum	10	<1
Perotis rara	20	<1
Polycarpaea corymbosa	15	<1
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	20	<1
Ptilotus obovatus	100	1
Ptilotus polystachyus var. *polystachyus*	90	2
Rhagodia eremaea	90	1
Salsola australis	65	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *helmsii*	175	1-20
Senna artemisioides subsp. *oligophylla*	100	5
Sida arenicola	120	1
Solanum lasiophyllum	50	1
Sporobolus australasicus	10	<1
Streptoglossa liatroides	25	<1
Tragus australianus	15	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	20	<1
Triodia basedowii	95	40
Triodia pungens	100	2
Triodia schinzii	110	20
Acacia eriopoda	Opportunistic	
Enneapogon polyphyllus	Opportunistic	
Eremophila latrobei subsp. *latrobei*	Opportunistic	
Eremophila latrobei var. *latrobei*	Opportunistic	
Eremophila longifolia	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Pluchea rubelliflora	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Sida echinocarpa	Opportunistic	
Sida fibulifera	Opportunistic	
Sida platycalyx	Opportunistic	
Solanum centrale	Opportunistic	

QUADRAT 19

Approximate Location: Along track to south bore
Datum (WGS84): 406133E; 7529739N
19A 405470E; 7531450N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Senna* species
Vegetation Condition: 2
Notes: Dense cover of *Acacia* species away from the quadrat



TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	25	<1
Abutilon otocarpum	60	1
Acacia colei	250	1
Acacia ligulata	170	2
Acacia melleodora	150	1
Acacia validinervia	250	5
Aristida holathera	60	<1
Buchnera linearis	30	<1
Bulbostylis barbata	10	1
Calotis hispidula	5	<1
Calotis plumulifera	25	5
**Cenchrus ciliaris*	50	2

Crotalaria crispata	10	<1
Dactyloctenium radulans	30	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	20	<1
Enneapogon polyphyllus	20	<1
Eragrostis eriopoda	50	<1
Eriachne aristidea	20	<1
Euphorbia australis	5	<1
Euphorbia boophthona	40	<1
Evolvulus alsinoides var. *villosicalyx*	15	2
Fimbristylis dichotoma	50	<1
Gomphrena canescens	10	<1
Goodenia triodiophila	25	<1
Goodenia vilmoriniae	20	<1
Hakea lorea subsp. *lorea*	200	<1
Haloragis gossei	20	<1
Heliotropium tenuifolium	30	<1
Ipomoea muelleri	twiner	3
Mukia maderaspatana	Twiner	<1
Newcastelia roseoazurea	50	<1
Oldenlandia pterospora	15	<1
Paspalidium rarum	10	<1
Perotis rara	30	1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	15	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	50	<1
Salsola tragus	15	<1
Scaevola parvifolia subsp. *pilbarae*	50	5
Schizachyrium fragile	20	<1
Sclerolaena cornishiana	25	1
Senna artemisioides subsp. *helmsii*	100	10
Senna artemisioides subsp. *oligophylla*	150	15
Sida arenicola	120	<1
Sida platycalyx	50	3
Solanum lasiophyllum	50	<1
Sporobolus australasicus	20	<1
Streptoglossa decurrens	90	<1
Trianthema pilosa	5	<1
Trichodesma zeylanicum	50	<1
Triodia basedowii	90	70
Triodia pungens	100	5
Triraphis mollis	50	<1
Abutilon otocarpum	Opportunistic	
Acacia dictyophleba	Opportunistic	
Melhania oblongifolia	Opportunistic	
Pterocaulon serrulatum	Opportunistic	
Sida fibulifera	Opportunistic	
Triraphis mollis	Opportunistic	

QUADRAT 20

Approximate Location: Drainage line near camp site
Datum (WGS84): 404380E; 7431248N
20B 404495E; 7531460N
20C 404292E; 7531149N
Soil: Silty mud
Rocks: Scattered stone from the hillside
Topography: Drainage line in the valley
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* and *Grevillea wickhamii* subsp. *aprica* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Quadrat was a strip 60m x 40m as was a narrow vegetation unit at the base of several hillslopes. Burnt regularly



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	20	5
Acacia ancistrocarpa	250	40
Acacia dictyophleba	120	<1
Acacia eriopoda	175	<1
Acacia pyrifolia	175	<1
Acacia synchronicia (narrow leaf form)	50	<1
Aristida holathera	60	1
Aristida inaequiglumis	60	2
Bonamia media	40	<1
Bonamia rosea	35	7

TAXON	HEIGHT (cm)	% COVER
Bulbostylis barbata	15	5
Calotis plumulifera	15	<1
**Cenchrus ciliaris*	70	2
Cleome viscosa	35	<1
Corchorus sidoides subsp. *sidoides*	50	2
Corymbia opaca	400	<1
Dampiera candicans	70	<1
Dodonaea coriacea	50	<1
Dysphania plantaginella	5	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	30	1
Eragrostis tenellula	50	<1
Eriachne aristidea	15	8
Euphorbia boophthona	30	<1
Gomphrena canescens subsp. *canescens*	15	<1
Goodenia vilmoriniae	70	<1
Gossypium australe	70	<1
Grevillea wickhamii subsp. *aprica*	400	15
Hakea lorea subsp. *lorea*	70	<1
Haloragis gossei	15	1
Hibiscus coatesii	45	3
Hybanthus aurantiacus	40	3
Indigofera monophylla	50	2
Keraudrenia velutina subsp. *elliptica*	60	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	50	10
Paspalidium basicladum	25	1
Petalostylis cassioides	55	3
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	20	<1
Ptilotus astrolasius subsp. *astrolasius*	50	<1
Ptilotus calostachyus	70	<1
Ptilotus exaltatus	15	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Schizachyrium fragile	40	<1
Senna artemisioides subsp. *oligophylla*	100	1
Senna glutinosa subsp. *glutinosa*	200	<1
Sida arenicola	140	<1
Sida cardiophylla	60	<1
Solanum lasiophyllum	60	<1
Sporobolus australasicus	15	<1
Tephrosia arenicola	30	<1
Trachymene oleracea subsp. *oleracea*	25	<1
Trianthema turgidifolia	30	<1
Trichodesma zeylanicum	50	<1
Triodia pungens	95	60
Tripogon loliiformis	5	<1
Whiteochloa airoides	60	2

QUADRAT 21

Approximate Location: Near the corner of track into site and track to south bore
Datum (WGS84): 405870E; 7531078N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* and *Acacia melleodora* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Burnt



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	5
Acacia melleodora	150	5
Aristida holathera	15	<1
Calotis plumulifera	15	<1
**Cenchrus ciliaris*	20	<1
Corchorus sidoides subsp. *sidoides*	25	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	<1
Eragrostis eriopoda	30	<1
Eragrostis tenellula	60	<1
Eriachne aristidea	50	<1
Eriachne pulchella	15	<1
Euphorbia australis	1	<1

TAXON	HEIGHT (cm)	% COVER
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	10	<1
Goodenia microptera	50	<1
Hakea lorea subsp. *lorea*	200	<1
Haloragis gossei	15	<1
Newcastelia roseoazurea	50	2
Lipocarpha microcephala	50	<1
Macgregoria racemigera	5	<1
Paraneurachne muelleri	50	5
Polycarpaea corymbosa	20	1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	40	<1
Scaevola parvifolia subsp. *pilbarae*	25	3
Senna artemisioides subsp. *oligophylla*	120	5
Senna artemisioides subsp. *helmsii*	60	2
Sida arenicola	90	<1
Sida cardiophylla	60	1
Sida platycalyx	75	<1
Streptoglossa decurrens	75	2
Stylobasium spathulatum	150	2
Trianthema pilosa	5	<1
Triodia pungens	110	60
Zornia albiflora	5	<1

QUADRAT 22

Approximate Location: East end of airstip
Datum (WGS85): 404634E; 7532017N
22A 403497E; 7531182N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia inaequilatera*, *Acacia ancistrocarpa* and *Acacia synchronicia* over Open Hummock Grassland of *Triodia* species and Tussock Grassland of **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes: In some areas *Acacia inaequilatera* up to 40% cover



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	250	10
Acacia inaequilatera	250	10
Aristida holathera	50	<1
Aristida inaequiglumis	170	6
Bonamia rosea	30	<1
Bulbostylis barbata	10	<1
Calotis plumulifera	20	10
**Cenchrus ciliaris*	80	5
Chrysopogon fallax	100	5
Cleome viscosa	25	<1

TAXON	HEIGHT (cm)	% COVER
Corymbia opaca	400	<1
Crotalaria crispata	70	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	15	<1
Eragrostis eriopoda	50	<1
Eragrostis tenellula	70	2
Eriachne aristidea	30	<1
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Gomphrena canescens subsp. *canescens*	5	<1
Indigofera brevidens	40	<1
Indigofera colutea	10	<1
Indigofera sp.	40	2
Melhania oblongifolia	30	<1
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	35	<1
Perotis rara	10	<1
Polycarpaea corymbosa	15	<1
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	60	5
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	70	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna artemisioides subsp. *helmsii*	50	<1
Sida cardiophylla	30	<1
Sida platycalyx	40	<1
Trianthema pilosa	1	<1
Trichodesma zeylanicum	90	2
Triodia pungens	110	60
Triodia schinzii	150	10
Vigna lanceolata	10	<1
Wahlenbergia tumidifructa	15	<1
Whiteochloa airoides	90	<1
Acacia synchronicia	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	

QUADRAT 23

Approximate Location: Western end of runway on south side
Datum (WGS84): 403342E; 7532167N
23A 404215E; 7527705N
23B 403839E; 7527765N
23C 404560E; 7527043N
23D 404886N; 7527152N
Soil: Red silty mud
Rocks: Quartzite <10cm over surface
Topography: Flat
Field Vegetation Description: Low Open Shrubland of *Eremophila tienkensii* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Located in the scree at the base of hills



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	250	1
Acacia eriopoda	70	1
Acacia synchronicia	200	3
Acacia robeorum	80	1
Acacia victoriae	150	<1
Aristida contorta	20	5
Brachyachne prostrata	5	2
**Cenchrus ciliaris*	40	<1
Dactyloctenium radulans	10	2

TAXON	HEIGHT (cm)	% COVER
Enneapogon purpurascens	15	<1
Eragrostis eriopoda	50	<1
Eremophila tietkensii	90	20
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	15	5
Gomphrena canescens subsp. *canescens*	10	<1
Hibiscus sturtii var. *platychlamys*	60	<1
Iseilema eremaeum	5	<1
Lepidium pholidogynum	5	<1
Maireana georgei	50	<1
Maireana melanocoma	15	<1
Paspalidium rarum	15	<1
Polycarpaea corymbosa	20	2
Pterocaulon sphacelatum	15	<1
Ptilotus exaltatus subsp. *exaltatus*	50	<1
Schizachyrium fragile	25	1
Sclerolaena lanicuspis	5	2
Senna glutinosa subsp. *glutinosa*	120	<1
Senna glutinosa subsp. *pruinosa*	150	2
Solanum lasiophyllum	60	<1
Sporobolus actinocladus	10	<1
Sporobolus australasicus	10	<1
Synaptantha tillaeacea	2	<1
Tragus australianus	15	<1
Trianthema triquetra	2	<1
Triodia pungens	100	60
Tripogon loliiformis	15	5
Wahlenbergia tumidifructa	25	<1
Acacia acradenia	Opportunistic	
Acacia tumida	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Eragrostis dielsii	Opportunistic	
Goodenia vilmoriniae	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Portulaca pilosa	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Sida echinocarpa	Opportunistic	
Trianthema turgidifolia	Opportunistic	

QUADRAT 24

Approximate Location: Western edge of runway
Datum (WGS84): 403027E; 7532453N
24A 404050E; 7532003N
24B 403100E; 7531496N
24C 402796E; 7532451N
24D 402315E; 7533366N
24E 403803E; 7531160N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia* species over Hummock Grassland of *Triodia schinzii*
Vegetation Condition: 2
Notes: Large number of dead shrubs on the ground
Acacias occur in groups with open grassed areas between



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	1
Acacia ancistrocarpa	300	5
Acacia dictyophleba	300	1
Acacia inaequilatera	150	1
Acacia ligulata	250	5-20
Aristida inaequiglumis	100	5
Boerhavia coccinea	15	<1

TAXON	HEIGHT (cm)	% COVER
Bonamia rosea	60	<1
Bulbostylis barbata	15	5
Calotis plumulifera	40	<1
**Cenchrus ciliaris*	70	5
Corchorus sidoides subsp. *sidoides*	50	<1
Crotalaria crispata	50	<1
Cymbopogon procerus	70	<1
Dicrastylis georgei	45	<1
Eragrostis eriopoda	30	1
Eragrostis laniflora	50	<1
Eragrostis tenellula	70	30
Eriachne aristidea	35	<1
Eulalia aurea	90	<1
Euphorbia australis	5	<1
Euphorbia boophthona	20	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Fimbristylis dichotoma	60	<1
Gomphrena canescens subsp. *canescens*	15	<1
Goodenia vilmoriniae	15	<1
Gossypium australe	50	<1
Hakea lorea subsp. *lorea*	40	1
Haloragis gossei	15	<1
Indigofera monophylla	50	1
Mukia maderaspatana	Twiner	<1
Oldenlandia pterospora	10	<1
Polycarpaea corymbosa	10	1
Portulaca pilosa	10	<1
Pterocaulon sphacelatum	5	<1
Ptilotus astrolasius subsp. *astrolasius*	60	<1
Ptilotus obovatus	70	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Senna artemisioides subsp. *oligophylla*	60	1
Synaptantha tillaeacea	5	<1
Tephrosia rosea var. *clementii*	30	<1
Trianthema pilosa	2	<1
Triodia schinzii	150	50
Whiteochloa airoides	90	<1
Zornia albiflora	15	<1
Grevillea stenobotrya	Opportunistic	
Petalostylis cassioides	Opportunistic	
Schizachyrium fragile	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna notabilis	Opportunistic	
Vigna lanceolata	Opportunistic	

QUADRAT 25

Approximate Location: Flat area between hills
Datum (WGS84): 404115E; 7531301N
25A 403623E; 7531018N
Soil: Silty clay
Rocks: Quartzite, schist off the hill side
Topography: Flat
Field Vegetation Description: Closed Hummock Grassland of *Triodia wiseana*
Vegetation Condition: 1-2
Notes: Some area of the quadrat ripped. This is the dominant vegetation in the flat between the hills where enter the current camp site and new accommodation area



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	<1
Acacia ancistrocarpa	50	<1
Acacia eriopoda	70	<1
Acacia retivenea subsp. *clandestina*	125	<1
Acacia robeorum	50	<1
Amphipogon caricinus	40	<1
Aristida holathera	50	<1
Aristida inaequiglumis	90	<1
Bonamia rosea	50	<1
Brachyachne prostrata	10	<1
Bulbostylis barbata	15	3
Corchorus sidoides subsp. *sidoides*	50	<1

TAXON	HEIGHT (cm)	% COVER
Crotalaria crispata	50	<1
Enneapogon purpurascens	15	<1
Eragrostis laniflora	70	<1
Eragrostis tenellula	50	<1
Eriachne aristidea	15	2
Eriachne pulchella	15	<1
Grevillea wickhamii subsp. *aprica*	400	3
Haloragis gossei	15	<1
Hibiscus coatesii	25	<1
Lepidium pholidogynum	10	<1
Portulaca pilosa	5	<1
Pterocaulon sphacelatum	25	<1
Ptilotus exaltatus	10	<1
Ptilotus polystachyus var. *polystachyus*	10	<1
Schizachyrium fragile	10	<1
Sclerolaena lanicuspis	25	<1
Sida arenicola	120	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	15	<1
Trianthema turgidifolia	5	<1
Trichodesma zeylanicum	15	<1
Triodia epactia	90	10
Triodia pungens	90	2
Triodia wiseana	110	60
Bonamia media	Opportunistic	
Mukia maderaspatana	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Trianthema triquetra	Opportunistic	

QUADRAT 26

Approximate Location: Drainage line at base of hill
Datum (WGS84): 404038E; 7531240N
26A 403662E; 7530995N
Soil: Silty clay
Rocks: N/A
Topography: Drainage line
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* subsp.*leucophloia* over Open Scrub of *Acacia retivenea* subsp. *clandestina* and *Grevillea wickhamii* subsp. *aprica*
Vegetation Condition: 1-2
Notes: At the base of hills. Quadrat follows the drainage line varying in width from 4-10m

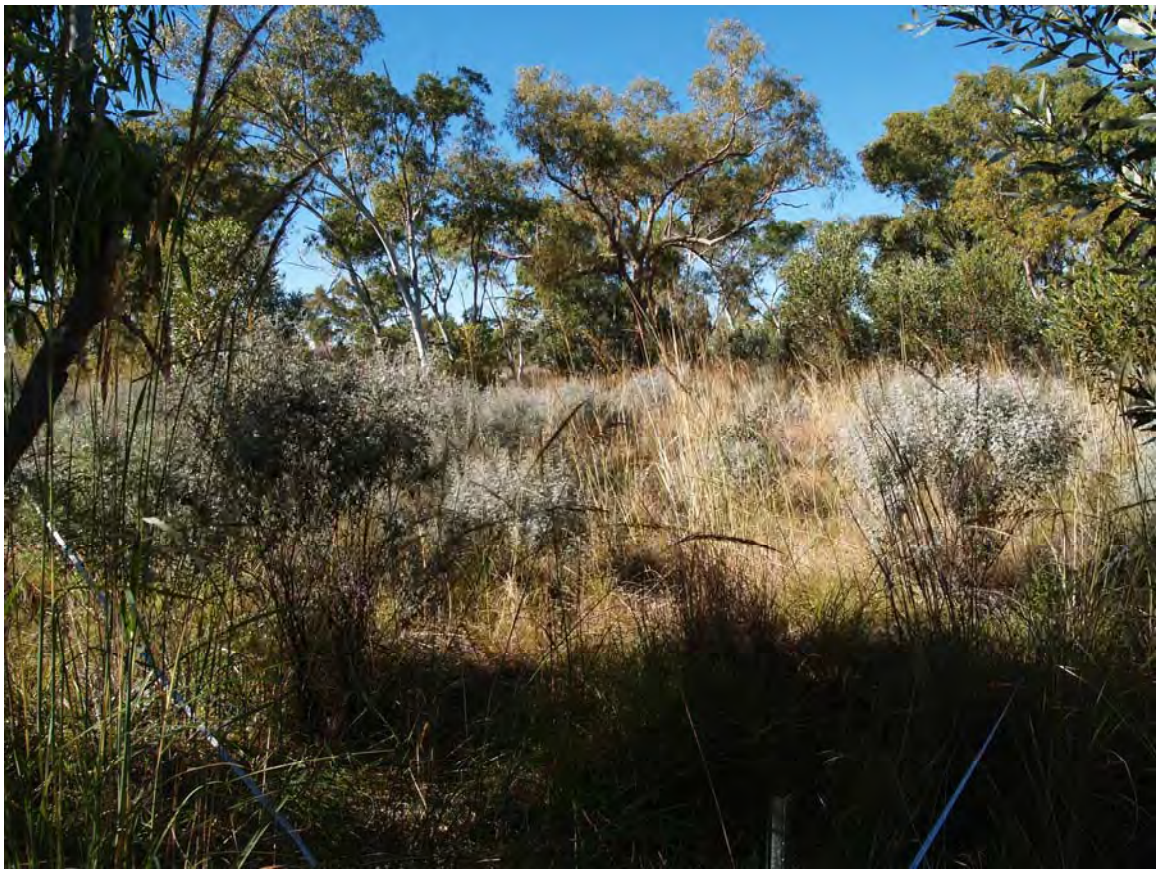


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	2
Acacia colei	250	<1
Acacia retivenea subsp. *clandestina*	150	35
Acacia robeorum	50	<1
Anthobolus leptomerioides	60	<1
Bulbostylis barbata	15	<1
Cymbopogon procerus	70	1
Dactyloctenium radulans	15	<1
Dodonaea coriacea	150	1
Enneapogon purpurascens	15	1
Eragrostis laniflora	50	<1
Eragrostis laniflora	30	<1

TAXON	HEIGHT (cm)	% COVER
Eriachne aristidea	20	<1
Eriachne mucronata	50	20
Eucalyptus leucophloia subsp.*leucophloia*	700	5
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	5	<1
Grevillea wickhamii subsp. *aprica*	200	35
Hibiscus coatesii	100	2
Mukia maderaspatana	Twiner	<1
Paraneurachne muelleri	60	5
Ptilotus exaltatus	10	<1
Rulingia kempeana	180	5
Scaevola parvifolia subsp. *pilbarae*	30	2
Schizachyrium fragile	30	5
Senna glutinosa subsp. *glutinosa*	150	8
Solanum centrale	30	<1
Solanum lasiophyllum	50	<1
Triodia pungens	110	15
Abutilon otocarpum	Opportunistic	
Acacia victoriae	Opportunistic	
Blumea tenella	Opportunistic	
Corymbia opaca	Opportunistic	
**Cucumis melo* subsp. *agrestis*	Opportunistic	
Goodenia vilmoriniae	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Keraudrenia velutina subsp. *elliptica*	Opportunistic	
Ptilotus macrocephalus	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Stenopetalum decipiens	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Vigna lanceolata	Opportunistic	

QUADRAT 27

Approximate Location: At north bore but away from the disturbance
Datum (WGS84): 400435E; 7535690N
Soil: Varying between brown silty loam and red sand
Rocks: N/A
Topography: Flat area near bore
Field Vegetation Description: Low Woodland of *Eucalyptus camaldulensis* and *Corymbia opaca* over Open Heath of *Indigofera georgei* and Annual Tussock Grassland of *Sorghum plumosum* and *Chrysopogon fallax*
Vegetation Condition: 1
Notes: Closer to the location of the bore is a lot of **Cenchrus ciliaris*. Area flooded at times. *Eucalyptus camaldulensis* in places has up to 40% cover



TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	70	<1
Acacia colei	700	20
Calotis plumulifera	10	<1
**Cenchrus ciliaris*	70	3
Centipeda minima subsp. *macrocephala*	10	5
Chrysopogon fallax	100	35
Cleome viscosa	25	<1
Corymbia opaca	1000	5
Cymbopogon procerus	70	<1
Eragrostis cumingii	25	3
Eragrostis tenellula	50	5

TAXON	HEIGHT (cm)	% COVER
Eriachne obtusa	70	5
Eucalyptus camaldulensis	900	10
Eulalia aurea	75	5
Euphorbia biconvexa	25	<1
Evolvulus alsinoides var. decumbens	Twiner	1
Evolvulus alsinoides var. *villosicalyx*	15	<1
Indigofera colutea	70	5
Indigofera georgei	150	35
Ipomoea muelleri	Twiner	<1
Mukia maderaspatana	Twiner	<1
Phyllanthus lacunellus	20	<1
Polycarpaea corymbosa	15	<1
Pterocaulon sphacelatum	35	<1
Rutidosis helichrysoides	45	10
Santalum lanceolatum	50	<1
Senna notabilis	20	<1
Setaria surgens	45	5
Sorghum plumosum	200	35
Sporobolus australasicus	15	<1
Vigna lanceolata	Twiner	2
Ammannia multiflora	Opportunistic	
Aristida holathera	Opportunistic	
Chrysocephalum apiculatum	Opportunistic	
Dysphania rhadinostachya	Opportunistic	
Macgregoria racemigera	Opportunistic	
Sida echinocarpa	Opportunistic	
Triodia longiceps	Opportunistic	

QUADRAT 28

Approximate Location: Along track to north bore
Datum (WGS84): 403194E; 7531383N
28A 405417E; 7528980N
Soil: Silty clay
Rocks: Rocky slopes of quartzitic rocks and schist
Topography: All slopes to ridge
Field Vegetation Description: Low Open Woodland of *Eucalyptus leucophloia* subsp.*leucophloia* over Closed Hummock Grassland of *Triodia* species
Vegetation Condition: 1-2
Notes: Occurred on a few hillslopes. Possibly unburnt for several years

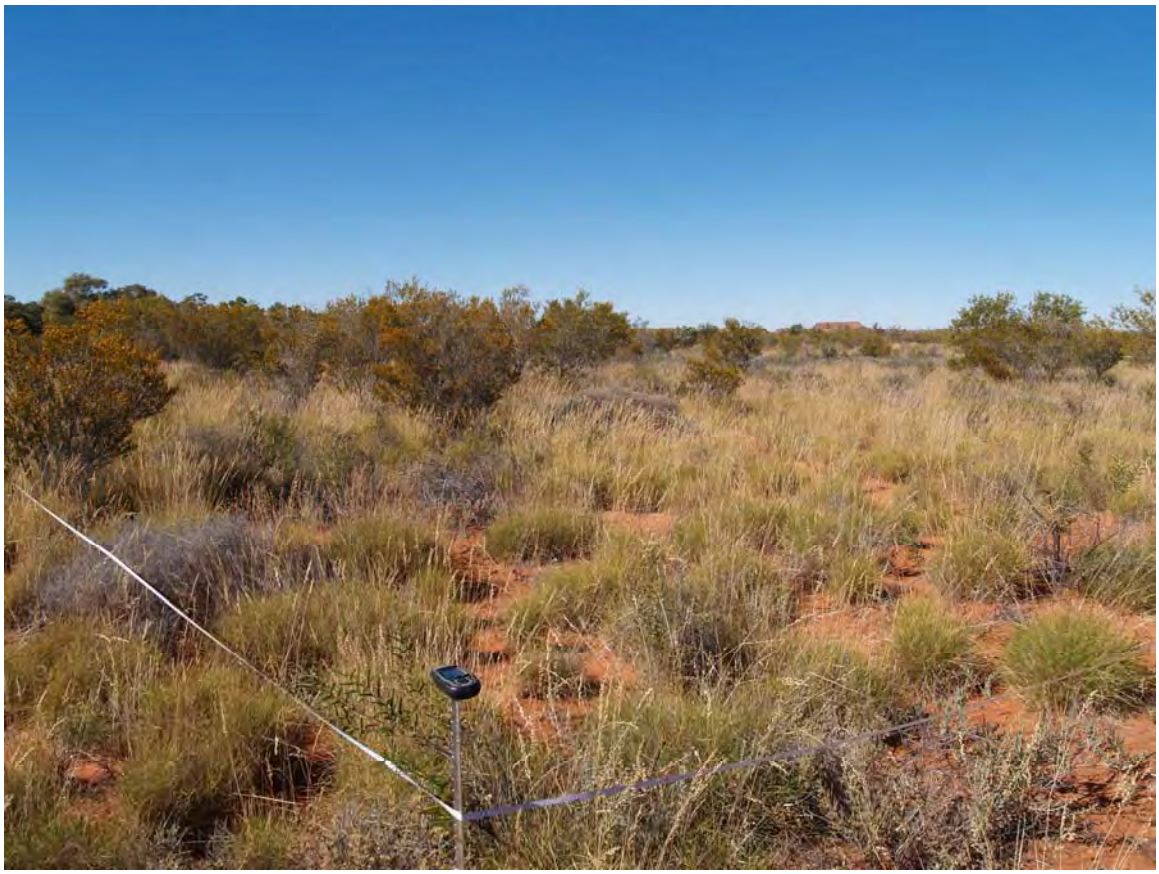


TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia	250	2
Acacia robeorum	175	1
Brachyachne prostrata	10	<1
Eriachne pulchella	10	<1
Eucalyptus leucophloia subsp. *leucophloia*	600	5
Fimbristylis dichotoma	15	<1
Grevillea wickhamii subsp. *aprica*	20	<1
Mukia maderaspatana	Twiner	<1
Portulaca oleracea	5	<1
Ptilotus calostachyus	70	<1
Ptilotus exaltatus	30	<1

TAXON	HEIGHT (cm)	% COVER
Pterocaulon sphacelatum	35	<1
Sclerolaena diacantha	20	<1
Sclerolaena lanicuspis	25	<1
Senna glutinosa subsp. *glutinosa*	50	<1
Senna glutinosa subsp. *pruinosa*	30	<1
Senna notabilis	10	<1
Sida cardiophylla	20	<1
Sporobolus australasicus	10	<1
Trianthema turgidifolia	20	<1
Triodia pungens	110	45
Triodia wiseana	110	45
Xerochloa laniflora	10	<1
Dactyloctenium radulans	Opportunistic	
Dicrastylis costelloi var. *eriantha*	Opportunistic	
Ptilotus clementii	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Tephrosia supina	Opportunistic	

QUADRAT 29

Approximate Location: Track to north bore
Datum (WGS84): 400538E; 7535273N
29A 400877E; 7535011N
Soil: Red sand dune
Rocks: N/A
Topography: Slightly raised dune
Field Vegetation Description: Open Scrub of *Acacia dictyophleba* and *Acacia validinervia* over Low Shrubland of *Otion simplicifolium* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 1-2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	250	15
Acacia validinervia	300	10
Aristida holathera	50	<1
Bonamia rosea	70	5
Cassytha filiformis	Twiner	<1
Eragrostis eriopoda	30	<1
Grevillea eriostachya	200	1
Halgania solanacea	25	1
Indigofera boviperda subsp. *boviperda*	30	1
Newcastelia roseoazurea	50	5
Otion simplicifolium	60	25
Paraneurachne muelleri	70	1

TAXON	HEIGHT (cm)	% COVER
Petalostylis cassioides	100	5
Ptilotus schwartzii subsp. *schwartzii*	50	<1
Scaevola parvifolia subsp. *pilbarae*	20	3
Sida arenicola	120	<1
Sida cardiophylla	40	<1
Triodia basedowii	90	25
Acacia colei	Opportunistic	
Calytrix carinata	Opportunistic	
Dicrastylis georgei	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eremophila longifolia	Opportunistic	
Eriachne ciliata	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Paspalidium rarum	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Sorghum plumosum	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 30

Approximate Location: Track to north bore
Datum (WGS84): 401632E; 7534122N
30A 402035E; 7533670N
30B 402113E; 7533597N – *Eucalyptus odontocarpa* common
Soil: Red loamy sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Open Woodland of *Eucalyptus odontocarpa* over High Shrubland of *Acacia dictyophleba* over Open Grassland of *Aristida inaequiglumis* over Hummock Grassland of *Triodia basedowii*, *Triodia pungens* and *Triodia schinzii*
Vegetation Condition: 1-2
Notes: Gradually blends into the west end of the airstrip



TAXON	HEIGHT (cm)	% COVER
Abutilon lepidum	30	<1
Acacia dictyophleba	300	10
Acacia validinervia	200	<1
Aristida holathera	50	<1
Aristida inaequiglumis	100	5
Bonamia rosea	30	1
Bulbostylis barbata	15	<1
Calotis plumulifera	30	<1
Chrysocephalum apiculatum	70	2
Corymbia opaca	400	<1
Eragrostis eriopoda	50	<1
Eragrostis tenellula	50	<1

TAXON	HEIGHT (cm)	% COVER
Eremophila forrestii subsp. *forrestii*	70	2
Euphorbia australis	2	<1
Euphorbia boophthona	70	<1
Evolvulus alsinoides var. *villosicalyx*	30	<1
Fimbristylis dichotoma	35	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia armitiana	50	<1
Newcastelia roseoazurea	80	2
Melhania oblongifolia	30	<1
Paraneurachne muelleri	70	5
Polycarpaea corymbosa	10	<1
Pterocaulon sphacelatum	105	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Sida excedentifolia	109	<1
Sida fibulifera	10	<1
Trichodesma zeylanicum	40	<1
Triodia basedowii	110	10
Triodia pungens	100	35
Triodia schinzii	120	5
Tripogon loliiformis	5	<1
Vigna lanceolata	Twiner	<1
Zornia albiflora	5	<1
Acacia ancistrocarpa	Opportunistic	
Acacia colei	Opportunistic	
**Cenchrus ciliaris*	Opportunistic	
Dicrastylis georgei	Opportunistic	
Eucalyptus odontocarpa	Opportunistic	Up to 15% cover
Grevillea ? *striata*	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	

QUADRAT 31

Approximate Location: Previous track (2007) into lease from Telfer track. At the lease boundary
Datum (WGS84): 407448E; 7531752N
31B 406473E; 7531808N
31D 407099E; 7531480N
31E 407066E; 7530793N
Soil: Red sand
Rocks: N/A
Topography: Sand
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa, Acacia ligulata* and *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Open areas with very fe3w to no shrubs. Possibly killed by fire



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	2-30
Acacia dictyophleba	300	15-20
Acacia ligulata	250	2-40
Aristida holathera	40	1
Bonamia rosea	50	2
Calytrix carinata	70	<1
Dicrastylis georgei	70	5
Dodonaea coriacea	50	<1
Eriachne aristidea	15	<1
Euphorbia australis	5	<1

TAXON	HEIGHT (cm)	% COVER
Goodenia armitiana	30	1
Goodenia triodiophila	30	<1
Grevillea eriostachya	200	1
Grevillea stenobotrya	150	1
Halgania solanacea	35	5
Newcastelia roseoazurea	30	<1
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	10	<1
Paraneurachne muelleri	50	1
Petalostylis cassioides	70	3
Ptilotus obovatus	50	<1
Scaevola parvifolia subsp. *pilbarae*	25	<1
Senna artemisioides subsp. *oligophylla*	60	1
Stylobasium spathulatum	70	<1
Tribulus hirsutus	30	<1
Triodia basedowii	100	85
Acacia colei	Opportunistic	
Aristida holathera	Opportunistic	
Calotis plumulifera	Opportunistic	
Chrysocephalum eremaeum	Opportunistic	
Eragrostis eriopoda	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Rulingia loxophylla	Opportunistic	
Sclerolaena cornishiana	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Solanum lasiophyllum	Opportunistic	

QUADRAT 32

Approximate Location: Track into camp
Datum (WGS84): 406002E; 7531530N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Sida echinocarpa* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Only on south side of track so must have been heavily disturbed previously. Angled diamond bore present near SE corner. Not a very large area approximately 200m x 200m. Fire 2.5 years ago 2011 a Grassland of *Triodia basedowii*



TAXON	HEIGHT (cm)	% COVER
Acacia melleodora	120	1
Aristida holathera	35	<1
Bonamia rosea	59	1
Dactyloctenium radulans	10	<1
Dodonaea coriacea	70	<1
Eragrostis eriopoda	35	<1
Eriachne aristidea	30	<1
Euphorbia australis	15	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	35	<1
Grevillea stenophylla	175	<1

TAXON	HEIGHT (cm)	% COVER
Grevillea wickhamii subsp. wickhamii	50	<1
Hakea lorea subsp. *lorea*	110	<1
Haloragis gossei	15	<1
Newcastelia roseoazurea	50	10
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	50	1
Portulaca oleracea	5	<1
Ptilotus polystachyus	70	<1
Senna seedlings	2	<1
Sida cardiophylla	25	10
Sida echinocarpa	175	15
Streptoglossa decurrens	90	<1
Trianthema pilosa	2	<1
Trichodesma zeylanicum	70	<1
Triodia basedowii	80	70
Acacia ancistrocarpa	Opportunistic	
Blumea tenella	Opportunistic	
Corchorus laniflorus	Opportunistic	
Crotalaria crispata	Opportunistic	
Fimbristylis oxystachya	Opportunistic	
Grevillea wickhamii subsp. *aprica*	Opportunistic	
Ptilotus aphyllus	Opportunistic	
Scaevola parvifolia subsp. *pilbarae*	Opportunistic	
Senna glutinosa subsp. *glutinosa*	Opportunistic	
Sida sp. *excedentifolia*	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 33

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404882E; 7528428N
33A 404451E; 7528845N
33B 404696E; 7528979N
33C 404832E; 7529036N
33D 405178E; 7528998N
33E 405410E; 7528524N
33F 405180E; 7528077N
33G 404940E; 7527874N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub dominated by *Acacia ancistrocarpa* over Low Shrubland dominated by *Bonamia rosea* and *Indigofera monophylla* over Closed Hummock Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes:

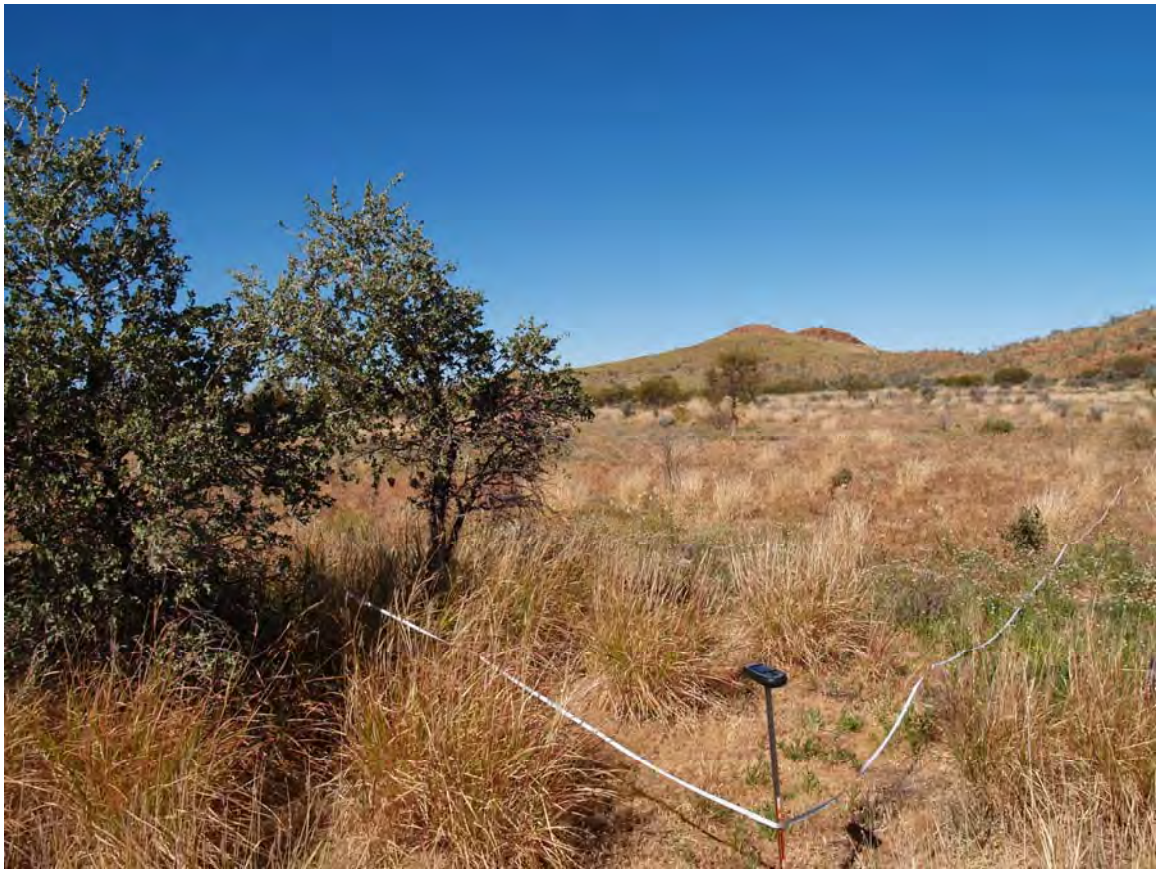


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia ligulata	175	2
Acacia melleodora	200	2
Aristida holathera	15	<1
Bonamia rosea	70	10

TAXON	HEIGHT (cm)	% COVER
Corchorus sidoides subsp. *sidoides*	50	1
Dicrastylis georgei	70	3
Dodonaea coriacea	50	<1
Eragrostis laniflora	80	<1
Gossypium australe	150	<1
Hibiscus coatesii	60	<1
Indigofera monophylla	50	3-Oct
Oldenlandia pterospora	15	<1
Ptilotus astrolasius subsp. *astrolasius*	60	1
Ptilotus obovatus	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Sida arenicola	120	<1
Sida cardiophylla	50	<1
Streptoglossa decurrens	90	1
Triodia basedowii	90	70
Triodia schinzii	110	15
Buchnera linearis	Opportunistic	
Bulbostylis barbata	Opportunistic	
Calotis plumulifera	Opportunistic	
Dactyloctenium radulans	Opportunistic	
Dampiera candicans	Opportunistic	
Dysphania rhadinostachya subsp. *rhadinostachya*	Opportunistic	
Eriachne aristidea	Opportunistic	
Euphorbia boophthona	Opportunistic	
Gomphrena canescens subsp. *canescens*	Opportunistic	
Goodenia vilmoriniae	Opportunistic	
Haloragis gossei	Opportunistic	
Heliotropium ovalifolium	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Polycarpaea corymbosa	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Senna glutinosa subsp. *pruinosa*	Opportunistic	
Solanum centrale	Opportunistic	
Stylobasium spathulatum	Opportunistic	

QUADRAT 34

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404384E; 7528335N
Soil: Claypan
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia inaequilatera* and *Acacia ancistrocarpa* over Herbs of mixed taxa dominated by *Calotis plumulifera*
Vegetation Condition: varied between 3 and 5
Notes: Large amount of **Cenchrus ciliaris* around the quadrats. Occasional small open areas of fine mud. Whole area surrounded by *Acacia inaequilatera* and *Acacia ancistrocarpa* over **Cenchrus ciliaris*



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	350	2
Acacia inaequilatera	350	<1
Aristida contorta	50	2
Aristida holathera	40	10
Aristida inaequiglumis	100	<1
Calocephalus knappii	10	20
Calotis plumulifera	30	50
**Cenchrus ciliaris*	90	20
Chrysocephalum apiculatum	50	<1
Cleome viscosa	70	2
Corchorus laniflorus	60	2
Crotalaria crispata	10	<1

TAXON	HEIGHT (cm)	% COVER
Dactyloctenium radulans	15	5
Dysphania rhadinostachya subsp. *rhadinostachya*	20	<1
Eragrostis tenellula	40	<1
Eremophila forrestii subsp. *forrestii*	80	1
Euphorbia australis	2	<1
Fimbristylis dichotoma	35	<1
Gomphrena canescens subsp. *canescens*	10	<1
Gossypium australe	100	2
Hakea lorea subsp. *lorea*	250	1
Heliotropium diversifolium	15	<1
Hibiscus sturtii	50	<1
Indigofera colutea	5	1
Mukia maderaspatana	twiner	<1
Perotis rara	15	25
Pluchea tetranthera	60	<1
Portulaca oleracea	10	<1
Portulaca pilosa	5	1
Pterocaulon sphacelatum	20	<1
Ptilotus macrocephalus	45	1
Ptilotus obovatus	80	1
Ptilotus polystachyus var. *polystachyus*	70	1
Rhagodia eremaea	60	<1
Salsola tragus	50	1
Sclerolaena cuneata	50	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna artemisioides subsp. *helmsii*	60	1
Senna glutinosa subsp. *glutinosa*	15	2
Sida cardiophylla	50	1
Sida echinocarpa	30	<1
Sida fibulifera	30	1
Sida platycalyx	50	10
Solanum lasiophyllum	30	<1
Sorghum plumosum	150	1
Streptoglossa liatroides	40	<1
Trianthema triquetra	1	<1
Tripogon loliiformis	70	3
Triraphis mollis	25	1
Vigna lanceolata	twiner	<1
Alternanthera nodiflora	Opportunistic	
Lepidium pholidogynum	Opportunistic	
Pluchea rubelliflora	Opportunistic	
Sclerolaena lanicuspis	Opportunistic	

QUADRAT 35

Approximate Location: This area walked only so no definite tracks etc to locate exactly. Drainage line
Datum (WGS84): 405111E; 7527939N
Soil: Red silty loam
Rocks: N/A
Topography: Drainage line
Field Vegetation Description: Open Scrub of *Acacia eriopoda* and *Acacia ancistrocarpa* over Grassland of *Sorghum plumosum* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 1-2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	10
Acacia colei	250	<1
Acacia eriopoda	350	35
Aristida inaequiglumis	90	3
Bonamia rosea	50	<1
Bulbostylis barbata	10	<1
Calotis plumulifera	30	<1
**Cenchrus ciliaris*	75	15
Crotalaria crispata	10	<1
Dactyloctenium radulans	10	2
Dysphania rhadinostachya subsp. *rhadinostachya*	30	<1
Eragrostis eriopoda	50	1

TAXON	HEIGHT (cm)	% COVER
Eragrostis laniflora	15	<1
Euphorbia boophthona	50	<1
Gomphrena canescens subsp. *canescens*	25	<1
Gossypium australe	50	<1
Grevillea wickhamii subsp. *hispidula*	200	1
Heliotropium diversifolium	15	<1
Hibiscus sturtii	35	<1
Indigofera colutea	10	<1
Paraneurachne muelleri	70	2
Polycarpaea corymbosa	15	<1
Portulaca pilosa	15	<1
Pterocaulon sphacelatum	30	<1
Ptilotus macrocephalus	70	<1
Ptilotus polystachyus var. *polystachyus*	75	<1
Senna artemisioides subsp. *oligophylla*	70	1
Senna artemisioides subsp. *helmsii*	50	<1
Sorghum plumosum	110	25
Trichodesma zeylanicum	50	<1
Triodia pungens	150	50
Vigna lanceolata	twiner	<1
Whiteochloa airoides	90	2
Cymbopogon procerus	Opportunistic	
Eremophila forrestii subsp. *forrestii*	Opportunistic	

QUADRAT 36

Approximate Location: This area walked only so no definite tracks etc to locate exactly
Datum (WGS84): 404782E; 7527778N
36A 404468E; 7527714N
36B 403885E; 7527438N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia inaequilatera* over Open Shrubland of *Acacia* species over Closed Hummock Grassland dominated by *Triodia schinzii*
Vegetation Condition: Good
Notes: Occasional groups of *Acacia ancistrocarpa* but generally very open grassland



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	150	5
Acacia colei	100	<1
Acacia inaequilatera	400	5
Acacia ligulata	120	<1
Acacia melleodora	150	2
Aristida inaequiglumis	90	<1
Bonamia rosea	70	10
Cleome viscosa	15	<1
Crotalaria crispata	10	<1
Eragrostis eriopoda	50	<1
Eremophila forrestii subsp. *forrestii*	70	<1

TAXON	HEIGHT (cm)	% COVER
Eriachne aristidea	15	<1
Eucalyptus camaldulensis	450	<1
Euphorbia australis	2	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia vilmoriniae	10	<1
Gossypium australe	70	<1
Haloragis gossei	10	<1
Indigofera monophylla	50	2
Oldenlandia pterospora	15	<1
Paraneurachne muelleri	70	1
Ptilotus macrocephalus	35	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	90	<1
Scaevola parvifolia subsp. *pilbarae*	50	<1
Senna artemisioides subsp. *oligophylla*	80	2
Senna artemisioides subsp. *helmsii*	60	1
Senna glutinosa subsp. *pruinosa*	30	<1
Senna notabilis	10	<1
Sida arenicola	130	<1
Sida cardiophylla	75	1
Solanum lasiophyllum	30	<1
Streptoglossa decurrens	30	1
Trianthema pilosa	5	<1
Tribulus hirsutus	5	<1
Trichodesma zeylanicum	15	<1
Triodia basedowii	90	10
Triodia schinzii	110	70
Vigna lanceolata	twiner	<1
Whiteochloa airoides	70	<1
Acacia retivenea subsp. *clandestina*	Opportunistic	
Acacia synchronicia	Opportunistic	
Calotis plumulifera	Opportunistic	
**Cenchrus ciliaris*	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Hibiscus sturtii	Opportunistic	
Mollugo molluginis	Opportunistic	
Paspalidium rarum	Opportunistic	
Perotis rara	Opportunistic	
Portulaca pilosa	Opportunistic	
Ptilotus clementii	Opportunistic	
Ptilotus exaltatus	Opportunistic	
Ptilotus helipteroides	Opportunistic	
Sida echinocarpa	Opportunistic	
Sorghum plumosum	Opportunistic	
Trachymene oleracea subsp. *oleracea*	Opportunistic	
Waltheria indica	Opportunistic	

QUADRAT 37

Approximate Location: Drainage line
Datum (WGS84): 403730E; 7527142N
37A 403635E; 7526923N
Soil: Silty clay
Rocks: Scattered quartz rocks on the surface
Topography: Drainage line
Field Vegetation Description: Open Scrub of *Acacia acradenia* and *Grevillea wickhamii* subsp. hispidula over Low Open Heath of *Keraudrenia velutina* subsp. *elliptica* and Hummock Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Quadrat was linear along the drainage line



TAXON	HEIGHT (cm)	% COVER
Acacia acradenia	175	35
Acacia eriopoda	60	1
Bulbostylis barbata	15	<1
Crotalaria crispata	70	<1
Eucalyptus aspera	400	1
Eucalyptus leucophloia subsp. *leucophloia*	400	2
Grevillea wickhamii subsp. *hispidula*	300	35
Hybanthus aurantiacus	30	<1
Keraudrenia velutina subsp. *elliptica*	50	40
Paraneurachne muelleri	70	5
Sporobolus australasicus	15	<1
Triodia pungens	70	60
Acacia retivenea subsp. *clandestina*	Opportunistic	
Pterocaulon sphacelatum	Opportunistic	
Streptoglossa decurrens	Opportunistic	

QUADRAT 38

Approximate Location: Middle of proposed accommodation village
Datum (WGS84): 403503E; 7526828N
Soil: Silty loam
Rocks: Numerous rocks on the surface
Topography: Lower slope
Field Vegetation Description: Open Shrubland of *Acacia wanyu* over Low Shrubland of *Eremophila tienksenii* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 1-2
Notes: Quartzite scree slope and outcropping schist. Area consists of a series of rounded hillocks



TAXON	HEIGHT (cm)	% COVER
Abutilon macrum	25	<1
Acacia wanyu	200	3-10
Aristida contorta	20	10
Aristida holathera	20	<1
Boerhavia gardneri	4	<1
Bulbostylis barbata	15	2
**Cenchrus ciliaris*	50	<1
Cleome viscosa	35	3
Corchorus sidoides subsp. *sidoides*	40	11
Enneapogon purpurascens	14	<1
Eremophila tietkensii	90	20
Euphorbia boophthona	40	<1

TAXON	HEIGHT (cm)	% COVER
Evolvulus alsinoides var. *villosicalyx*	60	<1
Fimbristylis dichotoma	15	<1
Gomphrena canescens subsp. *canescens*	5	<1
Gomphrena cunninghamii	30	<1
Goodenia vilmoriniae	10	<1
Heliotropium tenuifolium	14	2
Indigofera monophylla	30	<1
Maireana melanocoma	30	<1
Paspalidium rarum	5	<1
Polycarpaea corymbosa	15	2
Portulaca oleracea	5	<1
Pterocaulon sphacelatum	30	1
Ptilotus helipteroides	35	2
Ptilotus macrocephalus	25	<1
Salsola tragus	10	<1
Sclerolaena lanicuspis	10	<1
Senna artemisioides subsp. *helmsii*	90	1
Senna glutinosa subsp. x *luerssenii*	90	1
Senna notabilis	5	<1
Sida brownii	40	1
Sida platycalyx	30	<1
Solanum lasiophyllum	40	<1
Streptoglossa decurrens	10	1
Trachymene oleracea subsp. *oleracea*	40	3
Trianthema triquetra	2	<1
Tribulus suberosus	30	<1
Triodia pungens	110	50
Abutilon lepidum	Opportunistic	
Acacia acradenia	Opportunistic	

QUADRAT 39

Approximate Location: Track to village
Datum (WGS84): 404385E; 7527063N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Burnt over 5 years



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	2
Acacia coriacea subsp. *pendens*	200	<1
Acacia eriopoda	300	25
Acacia wanyu	150	10
Aristida holathera	60	<1
Bulbostylis barbata	15	<1
Calandrinia ptychosperma	10	<1
Cleome viscosa	70	<1
Corchorus sidoides subsp. *sidoides*	50	<1
Cymbopogon procerus	70	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	10	<1
Enneapogon purpurascens	50	<1

TAXON	HEIGHT (cm)	% COVER
Eragrostis eriopoda	70	<1
Eremophila forrestii subsp. *forrestii*	50	1
Gomphrena canescens subsp. *canescens*	10	<1
Goodenia vilmoriniae	70	<1
Haloragis gossei	15	<1
Keraudrenia velutina subsp. *elliptica*	50	<1
Paraneurachne muelleri	90	2
Polycarpaea corymbosa	30	<1
Ptilotus exaltatus	30	<1
Ptilotus helipteroides	90	<1
Schizachyrium fragile	70	<1
Senna artemisioides subsp. *oligophylla*	70	1
Senna glutinosa subsp. *pruinosa*	90	1
Trachymene oleracea subsp. *oleracea*	50	<1
Trichodesma zeylanicum	50	<1
Triodia basedowii	70	80
Triodia pungens	70	5
Euphorbia boophthona	Opportunistic	
Hybanthus aurantiacus	Opportunistic	
Ptilotus schwartzii subsp. *schwartzii*	Opportunistic	
Sida excedentifolia	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Tribulus macrocarpus	Opportunistic	

QUADRAT 40

Approximate Location: Along track to borrow pit on main track into site
Datum (WGS84): 407024E; 7530857N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Grevillea eriostachya*, *Acacia ligulata* and *Acacia dictyophleba* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Still in the same community as KIN41 but there are occasional dense areas of *Grevillea* species, *Hakea lorea* subsp. *lorea* scattered through. Burnt 2.5 years before 2011 survey killing all *Grevillea eriostachya* only 2 regenerating



TAXON	HEIGHT (cm)	% COVER
Acacia ligulata	300	10
Acacia dictyophleba	350	15
Anthobolus leptomerioides	120	1
Aristida holathera	40	<1
Bonamia rosea	50	5
Calytrix carinata	70	<1
**Cenchrus ciliaris*	60	<1
Cleome viscosa	50	<1
Eragrostis eriopoda	50	<1
Euphorbia boophthona	30	<1
Fimbristylis dichotoma	50	<1

TAXON	HEIGHT (cm)	% COVER
Grevillea eriostachya	350	8
Heliotropium tenuifolium	20	<1
Hibiscus coatesii	50	<1
Lepidium phlebopetalum	2	<1
Newcastelia roseoazurea	50	<1
Oldenlandia pterospora	10	<1
Paspalidium rarum	5	<1
Ptilotus polystachyus var. *polystachyus*	50	<1
Scaevola parvifolia subsp. *pilbarae*	40	1
Senna artemisioides subsp. *oligophylla*	120	<1
Sida cardiophylla	50	<1
Sida cardiophylla	10	<1
Solanum centrale	50	<1
Stylobasium spathulatum	100	1
Trianthema pilosa	10	<1
Trichodesma zeylanicum	30	<1
Triodia basedowii	100	60
Grevillea stenobotrya	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Triodia bitextura	Opportunistic	

QUADRAT 41

Approximate Location: To north of track out to Telfer Road
Datum (WGS84): 406687E; 7532020N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia dictyophleba* over Closed Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Animal survey area as peg 245 recorded and there were 3 closed pit traps, raised about 1 foot above the ground level. Burnt more than 10 years but several dead *Acacia* plants



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	300	25
Anthobolus leptomerioides	70	<1
Aristida holathera	25	<1
Dicrastylis georgei	50	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	5	<1
Eragrostis tenellula	70	<1
Eriachne aristidea	15	<1
Eriachne pulchella	10	<1
Fimbristylis ? oxystachya	20	<1
Haloragis gossei	10	<1
Heliotropium diversifolium	15	<1
Newcastelia roseoazurea	50	<1

TAXON	HEIGHT (cm)	% COVER
Oldenlandia pterospora	10	<1
Petalostylis cassioides	70	<1
Ptilotus schwartzii subsp. *schwartzii*	60	<1
Scaevola parvifolia subsp. *pilbarae*	20	2
Sida echinocarpa	25	<1
Solanum centrale	50	<1
Trichodesma zeylanicum	10	<1
Triodia basedowii	110	90
Acacia ancistrocarpa	Opportunistic	
Acacia coriacea subsp. *pendens*	Opportunistic	
Acacia ligulata	Opportunistic	
Aristida contorta	Opportunistic	
Bonamia rosea	Opportunistic	
Dodonaea coriacea	Opportunistic	
Eragrostis eriopoda	Opportunistic	
Euphorbia boophthona	Opportunistic	
Fimbristylis dichotoma	Opportunistic	
Grevillea eriostachya	Opportunistic	
Hakea lorea subsp. *lorea*	Opportunistic	
Melhania oblongifolia	Opportunistic	
Paraneurachne muelleri	Opportunistic	
Polygala isingii	Opportunistic	
Senna artemisioides subsp. *oligophylla*	Opportunistic	
Senna artemisioides subsp. *helmsii*	Opportunistic	
Sida cardiophylla	Opportunistic	

QUADRAT 42

Approximate Location: Near Borrow Pit at the base of the hills
Datum (WGS84): 407084E; 7530602N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia* species dominated by *Acacia dictyophleba* over Hummock Grassland dominated by *Triodia basedowii*
Vegetation Condition: 2
Notes: Recent burn. Community ends at KIN31E



TAXON	HEIGHT (cm)	% COVER
Acacia ligulata	200	10
Acacia dictyophleba	200	15-30
Aristida holathera	25	<1
Bonamia rosea	50	5
Calytrix carinata	70	<1
Eragrostis eriopoda	50	<1
Fimbristylis ? oxystachya	60	<1
Jacksonia aculeata	50	<1
Newcastelia roseoazurea	50	<1
Lepidium phlebopetalum	2	<1
Oldenlandia pterospora	2	<1
Paraneurachne muelleri	60	<1

TAXON	HEIGHT (cm)	% COVER
Petalostylis cassioides	70	1
Scaevola parvifolia subsp. *pilbarae*	30	2
Sida excedentifolia	20	<1
Sida cardiophylla	50	<1
Stylobasium spathulatum	200	10
Trichodesma zeylanicum	25	<1
Triodia basedowii	90	65
Triodia schinzii	130	5
Euphorbia australis	Opportunistic	
Grevillea eriostachya	Opportunistic	
Grevillea stenobotrya	Opportunistic	
Grevillea wickhamii subsp. *hispidula*	Opportunistic	
Schizachyrium fragile	Opportunistic	
Sida sp. Rabbit flat	Opportunistic	

QUADRAT 43

Approximate Location: Near south bore
Datum (WGS84): 406043E; 7528693N
Soil: Red sand
Rocks: N/A
Topography: Drainage line
Field Vegetation Description: High Open Shrubland of *Acacia eriopoda* and *Grevillea wickhamii* subsp. *aprica* over Open Grassland of *Triodia schinzii* and *Triodia pungens*
Vegetation Condition: 3
Notes: Area burnt. Litter leaves 15% and branches 30%



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	120	5
Acacia eriopoda	300	5-10
Acacia pyrifolia	200	<1
Acacia retivenea subsp. *clandestina*	200	5
Calytrix carinata	50	<1
Exocarpos aphyllus	70	<1
Grevillea wickhamii subsp. *aprica*	200	2
Keraudrenia velutina	50	<1
Trianthema pilosa	10	<1

TAXON	HEIGHT (cm)	% COVER
Trichodesma zeylanicum var. *grandiflorum*	70	<1
Triodia basedowii	80	1
Triodia pungens	50	20
Triodia schinzii	120	1-3
Acacia retivenea subsp. *clandestina*	opportunistic	
Aristida inaequiglumis	opportunistic	
Bonamia rosea	opportunistic	
Grevillea eriostachya	opportunistic	
Hakea lorea	opportunistic	
Hybanthus aurantiacus	opportunistic	
Indigofera monophylla	opportunistic	
Paspalidium rarum	opportunistic	
Petalostylis cassioides	opportunistic	
Scaevola parvifolia subsp. *pilbarae*	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 44

Approximate Location:
Datum (WGS84): 405376E; 7530783N
Soil: Red silty sandy loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Open Woodland of *Corymbia opaca* over Grassland dominated by **Cenchrus ciliaris* and *Sorghum plumosum*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	2
Acacia dictyophleba	400	2
Aristida inaequiglumis	60	5
**Cenchrus ciliaris*	80	15
Chrysopogon fallax	100	5
Cleome viscosa	90	5
Corchorus sidoides subsp. *sidoides*	70	3
Corymbia opaca	800	5
Eragrostis eriopoda	60	3
Evolvulus alsinoides var. *villosicalyx*	20	<1
Gossypium australe	160	1
Hakea lorea subsp. *lorea*	170	<1
Indigofera colutea	20	<1
Indigofera monophylla	30	<1
Paspalidium rarum	15	<1
Portulaca pilosa	30	<1
Ptilotus obovatus	50	<1
Salsola tragus subsp. *tragus*	50	<1
Sclerolaena cornishiana	40	<1
Senna artemisioides subsp. *helmsii*	50	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *oligophylla*	50	<1
Sorghum plumosum	100	10
Trianthema pilosa	40	<1
Tribulus hirsutus	15	3
Triodia pungens	120	15
Triodia pungens	90	2
Eriachne aristidea	opportunistic	
Petalostylis cassioides	opportunistic	
Rhagodia eremaea	opportunistic	

QUADRAT 45

Approximate Location:
Datum (WGS84): 403649E; 7529406N
45B: 403689E; 7529982N
45C: 403161E; 7531447N
45D: 403161E; 7531447N
Soil: Red silty clay
Rocks: Chunky rocks outcropping
Topography: Middle to upper slope
Field Vegetation Description: Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* over Scattered Herbs of *Ptilotus calostachyus* and Scattered Grasses of *Eriachne mucronata*
Vegetation Condition: 2
Notes: Recent fire



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	20	<1
Acacia pyrifolia	70	<1
Cleome viscosa	70	<1
Dichanthium fecundum	50	<1
Dodonaea coriacea	20	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	40	<1
Eragrostis eriopoda	40	25
Eriachne mucronata	40	5
Eucalyptus leucophloia subsp. *leucophloia*	1000	10-15
Euphorbia australis	5	<1
Fimbristylis dichotoma	20	<1
Gomphrena canescens	5	<1
Goodenia armitiana	60	<1
Hibiscus coatesii	20	1
Newcastelia cephalantha	70	1
Nicotiana benthamiana	70	<1
Paraneurachne muelleri	50	<1

TAXON	HEIGHT (cm)	% COVER
Polygala isingii	5	<1
Ptilotus calostachyus	50	5
Ptilotus exaltatus	60	1
Ptilotus obovatus	80	<1
Ptilotus polystachyus	50	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna glutinosa subsp. *glutinosa*	150	1
Sida arenicola	70	<1
Solanum centrale	10	<1
Sporobolus australasicus	10	<1
Stemodia viscosa	50	<1
Tephrosia densa	10	<1
Tephrosia supina	10	5
Trachymene oleracea	15	<1
Tribulus hirsutus	10	<1
Tribulus suberosus	20	<1
Triodia pungens	50	5

QUADRAT 46

Approximate Location: Along road to north bore
Datum (WGS84): 403560E; 7529185N
46B: 403755E; 7529829N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* and *Acacia ligulata* over Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes: Quadrat covers recent and older burn



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	5
Acacia ligulata	200	10
Aristida inaequiglumis	70	<1
Cleome viscosa	90	<1
Eragrostis eriopoda	70	10
Euphorbia australis	20	<1
Indigofera monophylla	30	<1
Ipomoea muelleri	15	<1
Newcastelia roseoazurea	40	<1
Paraneurachne muelleri	60	2
Paspalidium rarum	10	<1
Petalostylis cassioides	70	10
Ptilotus astrolasius var. *astrolasius*	30	1
Ptilotus exaltatus	50	<1
Scaevola parvifolia subsp. *pilbarae*	30	5
Senna artemisioides subsp. *oligophylla*	60	<1
Senna glutinosa subsp. *glutinosa*	200	<1
Sida cardiophylla	50	<1
Solanum lasiophyllum	70	<1
Stylobasium spathulatum	175	2
Tribulus hirsutus	40	3

TAXON	HEIGHT (cm)	% COVER
Triodia basedowii	90	60
Triodia schinzii	100	2-30
Hakea lorea	Opportunistic	
Sida arenicola	Opportunistic	

QUADRAT 47

Approximate Location:
Datum (WGS84): 403173E; 7529128N
47B: 403406E; 7529539N
Soil: Red silty loam
Rocks: Chunky rocks
Topography: Crest of low hill
Field Vegetation Description: Low Open Shrubland of *Acacia retivenea* subsp. *clandestina* and *Grevillea wickhamii* over Grassland of *Eriachne aristidea*
Vegetation Condition: 2
Notes: Low hill. Area burnt about 2 years



TAXON	HEIGHT (cm)	% COVER
Acacia retivenea subsp. *clandestina*	50	5
Eriachne aristidea	30	25
Eriachne mucronata	50	5
Grevillea wickhamii subsp. *aprica*	40	2
Hibiscus coatesii	40	<1
Iseilema eremaeum	20	<1
Newcastelia cephalantha	40	2
Senna glutinosa subsp. *glutinosa*	30	<1
Tephrosia densa	50	<1
Triodia pungens	20	5
Acacia pyriformis	opportunistic	
Eriachne ciliata	opportunistic	
Fimbristylis dichotoma	opportunistic	
Gomphrena canescens	opportunistic	
Newcastelia cephalantha	opportunistic	
Nicotiana benthamiana	opportunistic	
Paraneurachne muelleri	opportunistic	
Ptilotus exaltatus	opportunistic	
Schizachyrium fragile	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Sida sp. *excedentifolia*	opportunistic	
Solanum lasiophyllum	opportunistic	
Trachymene oleracea	opportunistic	
Trianthema pilosa	opportunistic	
Tribulus suberosus	opportunistic	

QUADRAT 48

Approximate Location:
Datum (WGS84): 403332E; 7528876N
Soil: Red silty loam clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia ancistrocarpa* and *Acacia ligulata* over Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Grassland of *Triodia epactia*
Vegetation Condition: 3
Notes: Numerous *Sida* seedlings with <1% survival. Surrounded by burnt area

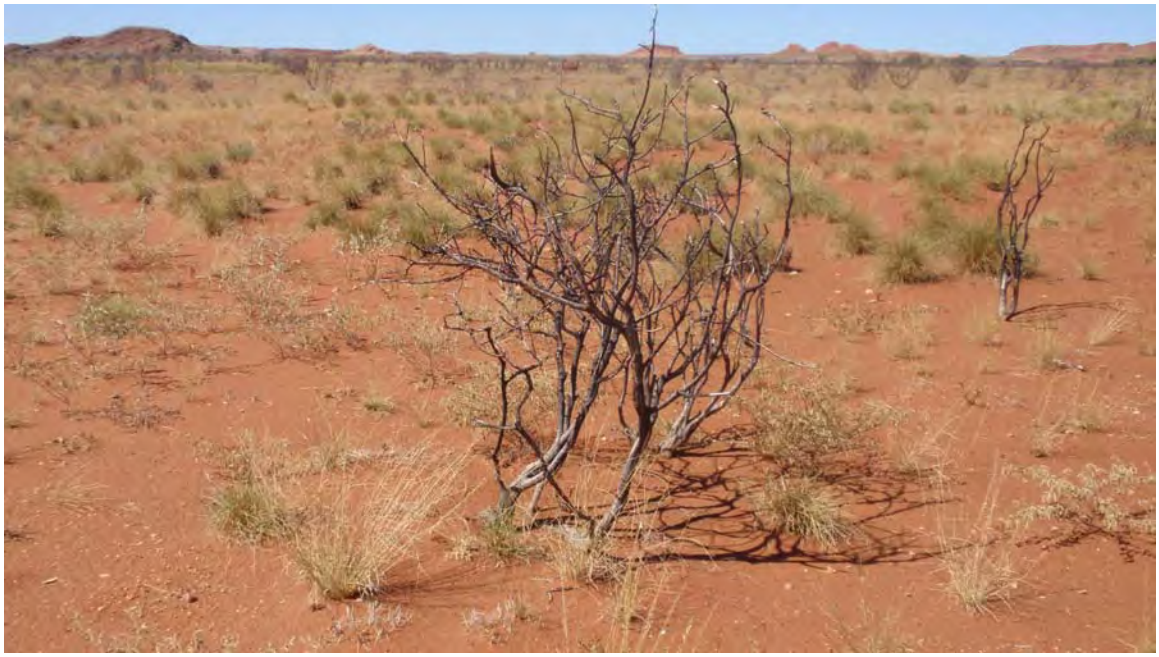


TAXON	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	70	1
Acacia ancistrocarpa	200	5
Acacia ligulata	200	3
Aristida contorta	25	5
Aristida inaequiglumis	60	2
Blumea tenella	30	<1
Boerhavia gardneri	40	1
Cleome viscosa	90	1
Dactyloctenium radulans	10	<1
Dysphania rhadinostachya subsp. rhadinostachya	20	5
Enneapogon polyphyllus	50	2
Eragrostis cumingii	70	<1
Eremophila forrestii subsp. *forrestii*	80	5
Eremophila latrobei subsp. *latrobei*	100	<1
Euphorbia boophthona	25	<1
Evolvulus alsinoides subsp. *villosicalyx*	30	<1
Gomphrena canescens	15	<1
Goodenia vilmoriniae	20	<1
Gossypium australe	70	<1

TAXON	HEIGHT (cm)	% COVER
Heliotropium diversifolium	15	<1
Hibiscus burtonii	70	<1
Indigofera colutea	30	<1
Ipomoea muelleri	Twiner	1
Maireana tomentosa	40	2
Perotis rara	30	3
Polycarpaea corymbosa	15	<1
Portulaca pilosa	30	<1
Ptilotus obovatus	70	3
Ptilotus polystachyus var. *polystachyus*	70	<1
Rhagodia eremaea	70	<1
Sclerolaena crenata	15	<1
Senna artemisioides subsp. *helmsii*	90	5
Senna artemisioides subsp. *oligophylla*	60	3
Senna notabilis	5	<1
Sida platycalyx	5	Many seedlings
Solanum lasiophyllum	60	5
Tephrosia arenicola	10	<1
Tephrosia supina	30	<1
Tribulus macrocarpus	15	2
Triodia epactia	120	40
Abutilon oxycarpum subsp. *prostratum*	opportunistic	
Dichanthium foecundum	Opportunistic	
Fimbristylis dichotoma	opportunistic	
Indigofera monophylla	opportunistic	
Ipomoea muelleri	opportunistic	
Senna notabilis	opportunistic	
Tephrosia sp. Bungaroo Creek	opportunistic	
Trianthema pilosa	opportunistic	

QUADRAT 49

Approximate Location:
Datum (WGS84): 402970E; 7528716N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia* ? *inaequilatera* over Low Shrubland of *Abutilon otocarpum, Corchorus sidoides* subsp. *sidoides, Senna artemisioides* subsp. *oligophylla and Senna artemisioides* subsp. *helmsii* over Grassland dominated by *Triodia pungens*
Vegetation Condition: 3
Notes: Burnt 1-2 years



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	50	5
Acacia ? *inaequilatera*	150	3
Aristida contorta	30	2
Aristida inaequiglumis	50	5
Bonamia rosea	30	1
Cleome viscosa	70	1
Corchorus sidoides subsp. *sidoides*	50	5
Eragrostis eriopoda	75	2
Eriachne aristidea	10	<1
Goodenia vilmoriniae	60	<1
Gossypium australe	50	5
Heliotropium ovalifolium	30	<1
Indigofera monophylla	30	2
Paraneurachne muelleri	70	<1
Paspalidium rarum	15	<1
Ptilotus exaltatus	20	<1
Senna artemisioides subsp. *helmsii*	50	<1
Senna artemisioides subsp. *oligophylla*	50	4
Solanum lasiophyllum	70	<1

TAXON	HEIGHT (cm)	% COVER
Tribulus hirsutus	20	5
Tribulus macrocarpus	20	2
Triodia pungens	80	25
Tephrosia densa	opportunistic	

QUADRAT 50

Approximate Location:
Datum (WGS84): 403678E; 7532584N
50B: 403757E; 7532872N
Soil: Red sand
Rocks: N/A
Topography: Flat below hills
Field Vegetation Description: High Open Shrubland of *Grevillea wickhamii* subsp. *aprica* and *Acacia inaequilatera* over Low Shrubland of *Bonamia rosea* over Open Grassland dominated by *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes: Area burnt about 2 years



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	400	5 (10)
Aristida inaequiglumis	60	25
Aristida latifolia	60	5
Boerhavia gardneri	20	<1
Bonamia rosea	40	15
Cleome viscosa	70	1
Corchorus laniflorus	60	1
Dicrastylis georgei var. *georgei*	15	<1
Eragrostis laniflora	40	5
Eriachne aristidea	30	10
Euphorbia australis	20	1
Goodenia vilmoriniae	40	1
Gossypium australe	70	2
Grevillea wickhamii subsp. *aprica*	140	<1
Heliotropium tenuifolium	20	<1
Indigofera monophylla	40	2
Paraneurachne muelleri	15	5
Phyllanthus erwinii	30	<1

TAXON	HEIGHT (cm)	% COVER
Ptilotus obovatus	60	1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	70	1
Senna glutinosa subsp. *glutinosa*	70	1
Sida sp. ? spiciform panicles	60	1
Tephrosia rosea	50	<1
Trianthema pilosa	30	10
Tribulus hirsutus	20	10
Triodia pungens	50	5
Triodia schinzii	60	3
Acacia ancistrocarpa	opportunistic	
Eucalyptus brevifolia	opportunistic	
Hakea lorea subsp. *lorea*	opportunistic	
Solanum lasiophyllum	opportunistic	

QUADRAT 51

Approximate Location: Above creek
Datum (WGS84): 403674E; 7533034N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia ancistrocarpa*, *Grevillea wickhamii* subsp. apricaand *Hakea lorea* subsp. *lorea* over Low Open Heath of mixed shrubs over Grassland dominated by *Triodia schinzii*
Vegetation Condition: 2-3
Notes: bracket in data indicates percentage of taxon dead



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	40	<1
Acacia inaequilatera	70	1
Aristida holathera var. *holathera*	60	5
Aristida inaequiglumis	60	10
Aristida latifolia	70	1
Bonamia media	10	1
Bonamia rosea	50	10
Cleome viscosa	70	<1
Corchorus laniflorus	70	1
Eragrostis laniflora	70	<1
Eriachne aristidea	40	15
Euphorbia australis	20	1
Evolvulus alsinoides var. *villosicalyx*	30	1
Goodenia vilmoriniae	60	<1
Grevillea wickhamii subsp. *aprica*	500	1(5)
Hakea lorea subsp. *lorea*	100	1 (5)
Heliotropium tenuifolium	30	<1
Hibiscus coatesii	70	1
Indigofera monophylla	40	1

TAXON	HEIGHT (cm)	% COVER
Ipomoea muelleri	Twiner	<1
Newcastelia roseoazurea	50	5
Paraneurachne muelleri	50	2
Ptilotus polystachyus forma *polystachyus*	60	1
Scaevola parvifolia subsp. *pilbarae*	40	<1
Senna artemisioides subsp. *helmsii*	60	5
Senna artemisioides subsp. *oligophylla*	50	1
Sida cardiophylla	50	<1
Tephrosia rosea	50	4
Trianthema pilosa	20	3
Tribulopis angustifolia	50	2
Tribulus hirsutus	10	5
Trifolium angustifolium	60	1
Triodia basedowii	40	2
Triodia schinzii	100	30
Senna notabilis	opportunistic	
Stylobasium spathulatum	opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	opportunistic	

QUADRAT 52

Approximate Location:
Datum (WGS84): 403725E; 7433369N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia dictyophleba*, *Acacia inaequilatera* and *Acacia ancistrocarpa* over Closed Grassland dominated by *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	200	1
Acacia ancistrocarpa	300	1
Acacia dictyophleba	150	5
Acacia eriopoda	150	<1
Acacia inaequilatera	120	1
Acacia melleodora	175	<1
Aristida inaequiglumis	70	5
Aristida latifolia	80	5
**Cenchrus ciliaris*	70	1
Corchorus parviflorus	50	<1
Eragrostis eriopoda	70	5
Eriachne aristidea	50	2
Eriachne obtusa	70	2
Fimbristylis dichotoma	70	3
Heliotropium tenuifolium	15	<1
Newcastelia roseoazurea	60	5
Paraneurachne muelleri	70	1
Paspalidium rarum	20	1
Pterocaulon serrulatum	50	1
Ptilotus polystachyus var. *polystachyus*	50	3

TAXON	HEIGHT (cm)	% COVER
Rulingia loxophylla	50	1
Scaevola parvifolia subsp. *pilbarae*	25	5
Senna ferraria	150	5
Tephrosia rosea	50	2
Trianthema pilosa	20	5
Tribulopis angustifolia	10	1
Triodia basedowii	80	30
Triodia schinzii	110	50
Chrysocephalum eremaeum	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Ptilotus obovatus	opportunistic	
Solanum lasiophyllum	opportunistic	

QUADRAT 53

Approximate Location: Beside creek
Datum (WGS84): 403988E; 7533060N
53B: 402151E; 7531879N
53C: 404547E; 7533843N
53D: 405391E; 7533382N
53E: 405152E; 7533468N
Soil: Red sand
Rocks: N/A
Topography: Above creek
Field Vegetation Description: Low Woodland of *Corymbia opaca* over Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 4
Notes: At 53B large number of *Acacia* deaths due to fire



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	70	5
Acacia eriopoda	120	1
Aristida inaequiglumis	50	5
Boerhavia gardneri	20	<1
Bonamia media	15	<1
**Cenchrus ciliaris*	50	60
Cleome viscosa	70	10
Corymbia opaca	900	15
Eragrostis eriopoda	50	1
Gossypium australe	70	5
Hakea lorea subsp. *lorea*	250	1 (5)
Heliotropium diversifolium	15	<1
Indigofera colutea	50	1
Portulaca pilosa	40	10
Ptilotus obovatus	50	<1
Salsola tragus subsp. *tragus*	50	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *helmsii*	60	5
Solanum lasiophyllum	30	<1
Trianthema pilosa	20	20
Tribulopis angustifolia	20	2
Triodia basedowii	40	5
Triodia pungens	70	5
Triodia sp. Shovelanna Hill	70	3
Abutilon leucopetalum	opportunistic	
Bonamia pannosa	opportunistic	
Bonamia rosea	opportunistic	
**Cucumis melo* subsp. *agrestis*	opportunistic	
Euphorbia australis	opportunistic	
Euphorbia boophthona	opportunistic	
Evolvulus alsinoides var. *villosicalyx*	opportunistic	
Ipomoea muelleri	opportunistic	
Petalostylis cassioides	opportunistic	
Ptilotus polystachyus var. *polystachyus*	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Sida arenicola	opportunistic	
Sida echinocarpa	opportunistic	
Sorghum plumosum	opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	opportunistic	

QUADRAT 54

Approximate Location:
Datum (WGS84): 404525E; 7532617N
54B: 404709E; 7532162N
54C: 402054E; 7531890N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia inaequilatera* and *Acacia eriopoda* over Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	200	7 (5)
Acacia eriopoda	250	5 (3)
Acacia inaequilatera	200	2
Acacia validinervia	70	<1
Aristida inaequiglumis	50	25
Boerhavia gardneri	50	1
Bonamia rosea	50	1
**Cenchrus ciliaris*	50	50
Chrysocephalum apiculatum	10	2
Cleome viscosa	70	10
Corchorus laniflorus	50	3
Corchorus lasiocarpus	50	2
Eragrostis cumingii	70	5
Eragrostis eriopoda	40	5
Eragrostis laniflora	50	<1
Eriachne aristidea	30	5

QUADRAT 55

Approximate Location:
Datum (WGS84): 400532E; 7530557N
53B: 400977E; 7530557N
Soil: Red sand
Rocks: N/A
Topography: Flat bottom between hills
Field Vegetation Description: Open Shrubland of *Acacia dictyophleba* and *Hakea lorea* subsp. *lorea* over Herbs of *Trianthema pilosa* over Grassland of *Aristida inaequiglumis* and *Triodia basedowii*
Vegetation Condition: 3
Notes: Area burnt 1-2 years



TAXON	HEIGHT (cm)	% COVER
Eriachne obtusa	50	5
Euphorbia boophthona	50	<1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Fimbristylis dichotoma	70	1
Hakea lorea subsp. *lorea*	150	5
Heliotropium diversifolium	30	<1
Newcastelia roseoazurea	50	3
Paraneurachne muelleri	50	1
Paspalidium rarum	30	10
Portulaca pilosa	10	<1
Ptilotus obovatus	60	2
Ptilotus polystachyus var. *polystachyus*	50	<1
Rhagodia eremaea	70	1
Scaevola parvifolia subsp. *pilbarae*	50	2
Senna artemisioides subsp. *helmsii*	60	<1
Senna ferraria	60	5
Sida ? *arenicola*	60	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	70	<1

TAXON	HEIGHT (cm)	% COVER
Synaptantha tillaeacea	35	<1
Trianthema pilosa	50	50
Tribulopis angustifolia	5	<1
Tribulus hirsutus	20	1
Trichodesma zeylanicum var. *grandiflorum*	60	<1
Triodia basedowii	70	35
Triodia epactia	60	2
Triodia pungens	60	5
Triodia schinzii	100	15
Zornia albiflora	10	<1
Acacia retivenea subsp. *clandestina*	opportunistic	
Corymbia opaca	opportunistic	
Gossypium australe	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 56

Approximate Location:
Datum (WGS84): 401210E; 7531393N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Hakea lorea* subsp. *lorea* and *Eremophila longifolia* over Grassland dominate by *Aristida inaequiglumis* and *Triodia basedowii*
Vegetation Condition: 3
Notes: Area burnt 2-3 years



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	50	<1
Acacia ligulata	250	1
Ammannia baccifera	20	<1
Aristida inaequiglumis	50	20
Bonamia rosea	30	1
Corchorus laniflorus	60	5
Corymbia opaca	200	<1
Eragrostis laniflora	70	1
Eremophila longifolia	250	3(5)
Eriachne aristidea	20	5
Eulalia aurea	70	<1
Euphorbia australis	30	2
Euphorbia boophthona	50	<1
Evolvulus alsinoides var. *villosicalyx*	30	<1
Fimbristylis dichotoma	70	<1
Goodenia armitiana	20	<1
Gossypium australe	60	<1
Hakea lorea subsp. *lorea*	400	10
Heliotropium diversifolium	15	<1
Newcastelia roseoazurea	35	1

TAXON	HEIGHT (cm)	% COVER
Paraneurachne muelleri	50	1
Paspalidium rarum	20	5
Polymeria ambigua	30	<1
Portulaca pilosa	20	<1
Ptilotus polystachyus var. *polystachyus*	70	1
Scaevola parvifolia subsp. *pilbarae*	25	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Senna notabilis	20	1
Solanum lasiophyllum	50	<1
Streptoglossa decurrens	10	<1
Stylobasium spathulatum	250	3
Synaptantha tillaeacea	30	<1
Trianthema pilosa	40	2
Tribulopis angustifolia	5	1
Trichodesma zeylanicum var. *grandiflorum*	10	<1
Triodia basedowii	80	30
Whiteochloa cymbiformis	50	<1
Acacia inaequilatera	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Indigofera georgei	opportunistic	
Petalostylis cassioides	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	

QUADRAT 57

Approximate Location:
Datum (WGS84): 402067E; 7532048N
57B: 402220E; 7532673N
57C: 403120E; 7533569N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Hakea lorea* subsp. *lorea, Acacia ancistrocarpa, Acacia adsurgens* and *Acacia dictyophleba* over Closed Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Not burnt recently



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	500	5
Acacia ancistrocarpa	300	5-25
Acacia dictyophleba	400	20(10)
Aristida inaequiglumis	40	3
Aristida latifolia	60	<1
Bonamia rosea	30	<1
Calytrix carinata	50	1
Cassytha filiformis	twiner	<1
Eriachne aristidea	30	<1
Eriachne ciliata	70	<1
Hakea lorea subsp. *lorea*	300	2
Indigofera brevidens	50	<1
Senna artemisioides subsp. *oligophylla*	120	5
Senna glutinosa subsp. x *luerssenii*	200	1
Triodia basedowii	80	70
Acacia ligulata	opportunistic	
Corchorus laniflorus	opportunistic	
Eremophila latrobei subsp. *latrobei*	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Eucalyptus ? *kingsmillii*	opportunistic	
Gossypium australe	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Stylobasium spathulatum	opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	opportunistic	
Triodia schinzii	opportunistic	

QUADRAT 58

Approximate Location:
Datum (WGS84): 402067E; 7532048N
58B: 405780E; 7533404N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia dictyophleba* and *Acacia ligulata* over Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna glutinosa* subsp. x *luerssenii* over Closed Grassland of **Cenchrus ciliaris*
Vegetation Condition: 4
Notes: Very open. Grazed by donkeys?



TAXON	HEIGHT (cm)	% COVER
Acacia colei	175	<1
Acacia dictyophleba	350	2
Acacia ligulata	400	2
Aristida inaequiglumis	30	5
**Cenchrus ciliaris*	50	30
Cleome viscosa	50	<1
Corchorus laniflorus	50	<1
Eragrostis laniflora	60	1
Eremophila latrobei subsp. *latrobei*	50	<1
Eriachne ciliata	10	<1
Gossypium australe	60	<1
Hakea lorea subsp. *lorea*	200	5
Ptilotus polystachyus var. *polystachyus*	10	<1
Sclerolaena cornishiana	15	3
Senna artemisioides subsp. *helmsii*	120	10
Senna artemisioides subsp. *oligophylla*	70	10
Trianthema pilosa	10	<1
Tribulopis angustifolia	10	1

TAXON	HEIGHT (cm)	% COVER
Tribulus hirsutus	15	<1
Triodia schinzii	70	1
Acacia ancistrocarpa	opportunistic	
Corymbia opaca	opportunistic	

QUADRAT 59

Approximate Location: North eastern end of lease
Datum (WGS84): 404341E; 7534143N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Woodland dominated by *Acacia dictyophleba* over Grassland dominated by *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: 3
Notes: This community continued to the end of the lease. All burnt about 3 years



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	50	2
Acacia dictyophleba	60	35
Acacia ligulata	300	2
Aristida inaequiglumis	60	5
Aristida latifolia	80	2
Boerhavia gardneri	20	<1
**Cenchrus ciliaris*	70	8
Cleome viscosa	70	2
Corchorus laniflorus	60	2
Corymbia opaca	500	1
Eragrostis eriopoda	60	1
Gossypium australe	80	1
Hakea lorea subsp. *lorea*	200	3
Heliotropium diversifolium	30	<1
Portulaca pilosa	30	3
Ptilotus obovatus	50	1
Ptilotus polystachyus var. *polystachyus*	70	1
Senna artemisioides subsp. *oligophylla*	80	5
Trianthema pilosa	10	3
Tribulopis angustifolia	10	1

TAXON	HEIGHT (cm)	% COVER
Triodia basedowii	80	10
Triodia schinzii	120	15-50
Eremophila latrobei subsp. *latrobei*	opportunistic	
Indigofera georgei	opportunistic	
Senna artemisioides subsp. *helmsii*	opportunistic	
Solanum lasiophyllum	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 60

Approximate Location:
Datum (WGS84): 406099E; 7532426N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Closed Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Not burnt for some time but the shrubs were dead. Many seedlings recorded after rains



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	<1
Acacia dictyophleba	120	<1
Aristida inaequiglumis	30	2
Corymbia ? opaca	125	<1
Crotalaria medicaginea	10	<1
Dead shrub	50	2
Dichanthium foecundum	50	1
Dysphania rhadinostachya subsp. rhadinostachya	60	1
Euphorbia australis	30	<1
Evolvulus alsinoides var. villosicalyx	20	<1
Fimbristylis dichotoma	50	<1
Newcastelia roseoazurea	10	<1
Oldenlandia crouchiana	20	<1
Paspalidium basicladum	50	<1
Portulaca oleracea	2	<1
Scaevola parvifolia subsp. pilbarae	30	<1
Schizachyrium fragile	40	<1
Sida ? arsiniata	30	<1
Solanum centrale	50	<1
Triodia basedowii	100	75
Urochloa holosericea subsp. holosericea	50	<1

TAXON	HEIGHT (cm)	% COVER
Zornia albiflora	10	<1
Goodenia microptera	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Hakea lorea subsp. *lorea*	opportunistic	
Polycarpaea corymbosa	opportunistic	
Ptilotus calostachyus	opportunistic	
Ptilotus polystachyus var. *polystachyus*	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	
Stemodia grossa	opportunistic	

QUADRAT 61

Approximate Location:
Datum (WGS84): 406126E; 7533013N
Soil: Red sand
Rocks: N/A
Topography: Sand dune crest
Field Vegetation Description: Shrubland of *Stylobasium spathulatum* and *Sida* sp. sand dune over Low Shrubland of *Scaevola parvifolia* subsp*. pilbarae*
Vegetation Condition: 3
Notes: Did linear transect along sand dune. Very open. Burnt about 3 years



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	50	<1
Acacia ligulata	175	<1
Aristida inaequiglumis	30	<1
Cleome viscosa	20	<1
Crotalaria cunninghamii	50	2
Eragrostis laniflora	70	<1
Eriachne aristidea	15	<1
Eriachne sulcata	20	<1
Euphorbia australis	20	<1
Euphorbia boophthona	70	<1
Heliotropium diversifolium	25	<1
Newcastelia roseoazurea	50	1
Petalostylis cassioides	70	<1
Ptilotus aervoides	30	<1
Ptilotus astrolasius var. *astrolasius*	30	5
Ptilotus polystachyus var. *polystachyus*	20	<1
Scaevola parvifolia subsp. *pilbarae*	40	10
Sida ? *arenicola*	30	<1
Sida sp. *sand dune*	160	10
Stylobasium spathulatum	175	15

TAXON	HEIGHT (cm)	% COVER
Synaptantha tillaeacea	20	<1
Trianthema pilosa	15	<1
Trichodesma zeylanicum var. *grandiflorum*	30	<1
Triodia schinzii	70	15
Triraphis mollis	70	2

QUADRAT 62

Approximate Location: Near eastern side of lease
Datum (WGS84):
Soil: Red silty loam
Rocks: Quartzite and quartz rocks with 100% cover
Topography: Middle to upper slope
Field Vegetation Description: Low Woodland of *Eucalyptus leucophloia* subsp. *leucophloia* over Open Grassland of *Triodia pungens*
Vegetation Condition: 2
Notes: Linear quadrat



TAXON	HEIGHT (cm)	% COVER
Aristida inaequiglumis	50	5
Cleome viscosa	50	1
Eucalyptus leucophloia subsp.*leucophloia*	700	10
Euphorbia australis	25	<1
Paspalidium rarum	10	<1
Ptilotus exaltatus	50	2
Senna glutinosa subsp. *glutinosa*	50	<1
Senna sericea	40	<1
Trianthema pilosa	10	1
Tribulopis angustifolia	10	<1
Triodia pungens	90	10-20

QUADRAT 63

Approximate Location: Edge of lease
Datum (WGS84): 405956E; 7533379N
63B: 405432E; 7532122
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia inaequilatera* and *Acacia dictyophleba* over Grassland of *Triodia schinzii*
Vegetation Condition: 2-3
Notes: Very open. Burnt about 3 years. Very dry



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	50	10
Acacia inaequilatera	30	5
Acacia ligulata	60	<1
Aristida inaequiglumis	30	5
Boerhavia gardneri	10	<1
**Cenchrus ciliaris*	60	2
Cleome viscosa	30	<1
Eragrostis eriopoda	20	<1
Eriachne ciliata	15	<1
Euphorbia boophthona	70	<1
Fimbristylis dichotoma	50	<1
Heliotropium diversifolium	10	<1
Newcastelia roseoazurea	30	<1
Paspalidium rarum	20	<1
Portulaca pilosa	15	<1
Ptilotus obovatus	40	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	1
Senna artemisioides subsp. *helmsii*	50	<1

TAXON	HEIGHT (cm)	% COVER
Trianthema pilosa	10	2
Tribulopis angustifolia	5	2
Triodia schinzii	120	60

QUADRAT 64

Approximate Location:
Datum (WGS84): 405152E; 7533468N
Soil: Pink-red silty clay loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia ligulata* and *Acacia eriopoda* over Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 4
Notes: Fire about 1-2 years which has killed shrubs with only a few regrowing. *Corymbia opaca* all regrowing



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	50	<1
Acacia eriopoda	250	3
Acacia ligulata	200	3
Aristida inaequiglumis	40	2
**Cenchrus ciliaris*	60	50
Cleome viscosa	70	2
Corymbia opaca	150	<1
Hakea lorea subsp. *lorea*	150	<1
Polymeria ambigua	20	<1
Senna artemisioides subsp. *helmsii*	40	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Trianthema pilosa	10	2

QUADRAT 65

Approximate Location:
Datum (WGS84): 406976E; 7530474N
65B: 407067E; 7529675N
Soil: Red sand
Rocks: N/A
Topography: Sand dune crest
Field Vegetation Description: Scattered Tall Shrubs over Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes: Long linear sand dune did quadrat along dune. Vegetation very open. Burnt?



TAXON	HEIGHT (cm)	% COVER
Acacia ligulata	175	1
Acacia melleodora	200	3
Acacia robiniae	70	<1
Aristida inaequiglumis	50	1
Bonamia rosea	30	5
Calytrix carinata	50	<1
Cassytha capillaris	twiner	<1
Cassytha filiformis	twiner	<1
Corchorus laniflorus	50	<1
Dicrastylis doranii	20	<1
Dodonaea coriacea	70	<1
Eragrostis eriopoda	70	<1
Fimbristylis dichotoma	25	<1
Fimbristylis oxystachya	30	<1
Goodenia armitiana	30	<1
Grevillea wickhamii subsp. *aprica*	600	1
Hibiscus burtonii	50	<1
Hibiscus coatesii	60	<1
Hybanthus aurantiacus	50	<1

TAXON	HEIGHT (cm)	% COVER
Jacksonia aculeata	50	<1
Paraneurachne muelleri	70	<1
Paspalidium rarum	10	<1
Petalostylis cassioides	60	1
Scaevola parvifolia subsp. *pilbarae*	20	2
Senna sericea	70	<1
Sida arenicola	70	<1
Sida arenicola	200	1
Sida fibulifera	30	<1
Solanum centrale	50	<1
Stylobasium spathulatum	70	<1
Triodia basedowii	50	20
Triodia schinzii	70	10-30
Velleia connata	30	<1
Anthobolus leptomerioides	opportunistic	
Grevillea stenobotrya	opportunistic	
Ptilotus polystachyus	opportunistic	
Trianthema pilosa	opportunistic	

QUADRAT 66

Approximate Location:
Datum (WGS84): 406294E; 7528357N
66B: 406112E; 7528285N
66C: 406218E; 7527229N
66D: 406596E; 7527329N
Soil: Red silty sand
Rocks: N/A
Topography: Flat between hills
Field Vegetation Description: Open Scrub of *Acacia melleodora, Hakea lorea* subsp. *lorea* and *Grevillea eriostachya* over Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2-3
Notes: Area burnt. *Acacia* regrowing. In some areas *Triodia schinzii* was dominant and others it was *Triodia basedowii*



TAXON	HEIGHT (cm)	% COVER
Acacia melleodora	150	15
Dicrastylis doranii	50	<1
Grevillea eriostachya	120	5
Petalostylis cassioides	70	2
Scaevola parvifolia subsp. *pilbarae*	40	1
Stylobasium spathulatum	100	5
Triodia basedowii	90	20
Triodia schinzii	120	25
Triumfetta chaetocarpa	250	5
Hakea lorea subsp. lorea	Opportunistic	

QUADRAT 67

Approximate Location: Adjacent to KIN68 to show marked contrast in vegetation
Datum (WGS84): 406760E; 7529533N
67B: 406445E; 7529119N
67C: 406303E; 7528515N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Heath of *Acacia ancistrocarpa* over Hummock Grassland of *Triodia basedowii, Triodia schinzii* and *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes: Vegetation unit continues to river to the north and Rudall River Road to the east



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	150	30-50
Acacia synchronicia	50	<1
Aristida inaequiglumis	60	10
Bonamia rosea	50	1
Eragrostis eriopoda	60	<1
Euphorbia australis	15	<1
Fimbristylis dichotoma	70	<1
Grevillea wickhamii subsp. *aprica*	70	<1
Indigofera monophylla	40	<1
Newcastelia roseoazurea	10	<1
OIdenlandia crouchiana	15	<1
Paspalidium basicladum	5	<1
Petalostylis cassioides	60	<1
Scaevola parvifolia subsp. *pilbarae*	15	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Sida cardiophylla	40	<1
Tribulus hirsutus	10	<1
Triodia basedowii	100	40

TAXON	HEIGHT (cm)	% COVER
Triodia schinzii	120	20
Corymbia opaca	opportunistic	
Eremophila latrobei subsp. *latrobei*	opportunistic	
Goodenia vilmoriniae	opportunistic	
Hybanthus aurantiacus	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 68

Approximate Location:
Datum (WGS84): 406820E; 7529645N
Soil: Sandy mud
Rocks: N/A
Topography: Flat
Field Vegetation Description: Scattered Shrubs of *Senna glutinosa* subsp. *glutinosa* over bare ground
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Aristida contorta	40	<1
Chloris virgata	20	<1
Cleome viscosa	30	<1
Dactyloctenium radulans	15	<1
Dysphania rhadinostachya subsp. rhadinostachya	35	<1
Enneapogon caerulescens	15	<1
Eragrostis cumingii	40	<1
Euphorbia australis	5	<1
Heliotropium tenuifolia	15	<1
Lepidium phlebopetalum	20	<1
Polycarpaea corymbosa	15	<1
Portulaca oleracea	5	<1
Rhagodia eremaea	60	<1
Salsola tragus subsp. *tragus*	40	<1
Sclerolaena bicornis	30	<1
Sclerolaena eriacantha	40	<1
Sclerolaena lanicuspis	5	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Senna glutinosa subsp. *glutinosa*	150	1
Solanum lasiophyllum	30	<1
Streptoglossa decurrens	15	<1

TAXON	HEIGHT (cm)	% COVER
Streptoglossa liatroides	30	1
Trianthema triquetra	5	<1
Tribulus macrocarpus	5	<1
Triodia pungens	50	<1
Acacia synchronicia	opportunistic	
Cleome viscosa	opportunistic	
Paspalidium rarum	opportunistic	
Sclerolaena cornishiana	opportunistic	

QUADRAT 69

Approximate Location:
Datum (WGS84): 405944E; 7528248N
Soil: Red loam
Rocks: Quartzite and schist small rocks dense on surface
Topography: Middle to upper slope
Field Vegetation Description: Scattered shrubs over Hummock Grassland of *Triodia epactia*
Vegetation Condition: 2-3
Notes: Hillslope



TAXON	HEIGHT (cm)	% COVER
Acacia pyrifolia	120	
Acacia retivenea subsp. *clandestina*	150	
Acacia robeorum	60	
Eremophila tietkensii	50	
Eucalyptus leucophloia subsp.*leucophloia*	450	
Maireana georgei	40	
Senna sericea	70	
Triodia epactia	40	
Acacia synchronicia	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Pluchea tetranthera	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	

QUADRAT 70

Approximate Location:
Datum (WGS84): 405895E; 7528340N
70B: 405581E; 7528340N
Soil: Red silty loam
Rocks: Numerous quartz and schist rocks ca, 10cm
Topography: Lower slope
Field Vegetation Description: Open Heath of *Grevillea wickhamii* subsp. *aprica* and *Acacia retivenea* subsp. *clandestina* over Hummock Grassland of Triodia epactia
Vegetation Condition: 2-3
Notes: Mapped correctly with KIN67 between



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	<1
Acacia retivenea subsp. *clandestina*	150	30
Grevillea wickhamii subsp. *aprica*	200	15
Keraudrenia velutina subsp. *velutina*	60	<1
Senna artemisioides subsp. *helmsii*	50	<1
Senna glutinosa subsp. *glutinosa*	80	<1
Tribulus suberosus	30	<1
Triodia epactia	100	75

QUADRAT 71

Approximate Location:
Datum (WGS84): 405395E; 7527311N
Soil: Red sandy loam with a small amount of clay
Rocks: Few scattered rocks on surface
Topography: Flat
Field Vegetation Description: Open Shrubland dominated by *Acacia eriopoda* over Hummock Grassland of *Triodia epactia* and *Triodia basedowii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	120	2
Acacia eriopoda	170	5
Acacia ligulata	200	2
Grevillea wickhamii subsp. *aprica*	300	1
Hakea lorea subsp. *lorea*	50	<1
Ptilotus astrolasius var. *astrolasius*	15	3
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	70	2
Senna glutinosa subsp. *glutinosa*	200	5
Triodia basedowii	90	40
Triodia epactia	70	10
Portulaca pilosa	opportunistic	
Solanum lasiophyllum	opportunistic	
Streptoglossa decurrens	opportunistic	

QUADRAT 72

Approximate Location:
Datum (WGS84): 405288E; 7527320N
72B: 405659E; 7526782N
Soil: Red sand
Rocks: N/A
Topography: Flat along creek
Field Vegetation Description: Open Scrub of *Acacia adsurgens* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 3
Notes: Drainage line



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	300	30-60
Acacia ancistrocarpa	100	5
Acacia ligulata	70	<1
Aristida inaequiglumis	50	10
Bonamia pannosa	30	2
Bonamia rosea	50	<1
**Cenchrus ciliaris*	60	10
Cleome viscosa	60	<1
Corchorus laniflorus	60	<1
Corchorus walcottii	50	<1
Eragrostis eriopoda	70	1
Eremophila longifolia	150	5
Eucalyptus camaldulensis	800	2
Gossypium australe	70	3
Hybanthus aurantiacus	40	3
Ptilotus obovatus	70	<1
Ptilotus polystachyus var. *polystachyus*	60	<1
Scaevola parvifolia subsp. *pilbarae*	30	1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *oligophylla*	70	<1
Senna notabilis	20	<1
Sorghum plumosum	70	5
Tribulopis angustifolia	twiner	<1
Trichodesma zeylanicum var. *grandiflorum*	50	1
Triodia pungens	120	20-40
Whiteochloa cymbiformis	80	<1
Acacia eriopoda	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	

QUADRAT 73

Approximate Location:
Datum (WGS84): 405650E; 7526517N
Soil: Red sand
Rocks: N/A
Topography: Lower slope above creek
Field Vegetation Description: Low Open Forest of *Acacia aneura* var . ? *macrocarpa* over Hummock Grassland of *Triodia basedowii* and *Aristida inaequiglumis*
Vegetation Condition: 3
Notes: In cut away from area . Playa running into creek



TAXON	HEIGHT (cm)	% COVER
Acacia aneura var. ? *macrocarpa*	500	25
Acacia affin. *eriopoda*	120	<1
Acacia ancistrocarpa	150	3
Acacia eriopoda	150	5
Acacia melleodora	120	2
Anthobolus leptomerioides	90	<1
Aristida inaequiglumis	50	20
**Cenchrus ciliaris*	50	5
Corchorus laniflorus	70	<1
Dactyloctenium radulans	15	<1
Eragrostis laniflora	70	2
Eriachne aristidea	15	<1
Euphorbia australis	20	2
Grevillea wickhamii subsp. *aprica*	150	<1
Heliotropium diversifolium	30	<1
Ipomoea muelleri	twiner	2
Polymeria ambigua	twiner	5
Rhagodia eremaea	70	<1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	80	3

TAXON	HEIGHT (cm)	% COVER
Senna glutinosa subsp. *glutinosa*	60	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	70	5
Stenopetalum decipiens	20	<1
Tephrosia rosea	50	1
Trianthema pilosa	20	<1
Tribulopis angustifolia	twiner	2
Tribulus hirsutus	10	1
Trichodesma zeylanicum var. *grandiflorum*	70	<1
Triodia basedowii	80	20
Triodia pungens	120	5
Whiteochloa cymbiformis	80	3
Aristida inaequiglumis	opportunistic	
Cleome viscosa	opportunistic	
Ptilotus obovatus	opportunistic	

QUADRAT 74

Approximate Location:
Datum (WGS84): 405568E; 7526337N
Soil: Red silty sand
Rocks: N/A
Topography: Lower slope facing west
Field Vegetation Description: Low Open Woodland of *Eucalyptus odontocarpa* over Low Open Shrubland of *Senna glutinosa* subsp. *glutinosa* over Hummock Grassland of *Triodia basedowii* and *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes: Eucalyptus odontocarpa occurs as small clumps through this area



TAXON	HEIGHT (cm)	% COVER
Acacia affin. *eriopoda*	60	<1
Acacia ancistrocarpa	120	<1
Aristida inaequiglumis	60	15
Eragrostis eriopoda	60	1
Eucalyptus odontocarpa	400	10
Heliotropium ovalifolium	25	<1
Indigofera boviperda subsp. *boviperda*	30	<1
Senna artemisioides subsp. *helmsii*	60	5
Senna artemisioides subsp. *oligophylla*	100	10
Senna glutinosa subsp. *glutinosa*	70	10
Solanum lasiophyllum	50	<1
Trianthema turgidifolia	5	<1
Triodia basedowii	90	40
Triodia schinzii	90	<1
Gossypium australe	opportunistic	
Trianthema pilosa	opportunistic	

QUADRAT 75

Approximate Location:
Datum (WGS84): 406678E; 7527497N
75B: 407312E; 7528587N
75C: 407611E; 7529349N
75D: 408657E;7530011N
75E: 407707E; 7529795N
75F: 407575E; 7530014N
75G: 408937E; 7536101N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia ancistrocarpa* over Grassland of *Triodia schinzii*
Vegetation Condition: 3
Notes: At 75C dominated by *Triodia basedowii*; 75E dominated by *Triodia schinzii*; 75F dominated by *Acacia melleodora*



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	350	10
Acacia melleodora	100	1
Aristida inaequiglumis	40	1
Bonamia rosea	60	5
Corchorus walcottii	70	<1
Heliotropium ovalifolium	50	<1
Petalostylis cassioides	70	<1
Tribulus hirsutus	30	<1
Trichodesma zeylanicum var. *grandiflorum*	50	<1
Triodia basedowii	120	2
Triodia schinzii	140	60
Grevillea wickhamii subsp. *aprica*	opportunistic	
Grevillea eriostachya	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Hakea lorea subsp. *lorea*	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Stylobasium spathulatum	opportunistic	

QUADRAT 76

Approximate Location:
Datum (WGS84): 402875E; 7531400N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Shrubland dominated by *Tephrosia brevidens* over Very Open Herbs dominated by *Heliotropium tenuifolium* over Tussock Grassland dominated by *Chrysopogon fallax*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia colei	30	<1
Acacia inaequilatera	200	<1
Acacia ligulata	175	1
Aristida contorta	40	2
Chrysopogon fallax	90	40
Cleome viscosa	70	5-15
Corchorus lasiocarpus	30	<1
Corymbia opaca	150	1
Dactyloctenium radulans	20	<1
Eremophila latrobei subsp. *latrobei*	50	<1
Eulalia aurea	70	<1
Gossypium australe	70	1
Heliotropium tenuifolium	20	10
Indigofera brevidens	50	15
Maireana georgei	30	<1
Phyllanthus erwinii	50	<1
Polymeria ambigua	5	2
Ptilotus obovatus	50	2
Ptilotus polystachyus var. *polystachyus*	70	1
Senna artemisioides subsp. *oligophylla*	50	2-20

TAXON	HEIGHT (cm)	% COVER
Senna glutinosa subsp. *glutinosa*	60	<1
Solanum lasiophyllum	50	<1
Trianthema turgidifolia	5	<1
Tribulus macrocarpus	10	3
Triodia pungens	70	2
Xerochloa laniflora	25	1
Acacia eriopoda	opportunistic	
Bonamia rosea	opportunistic	
Enneapogon polyphyllus	opportunistic	
Senna artemisioides subsp. *helmsii*	opportunistic	
Tephrosia brevidens		

QUADRAT 77

Approximate Location:
Datum (WGS84): 402774E; 7530813N
Soil: Clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Grassland of *Xerochloa laniflora* and *Dactyloctenium radulans*
Vegetation Condition: 2-3
Notes: Visible salt in areas. Large area of bare ground. In 2011 some claypans with dense cover of *Marsilea hirsuta*



TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia	30	<1
Aristida contorta	30	5 (25)
Atriplex semilunaris	40	<1
Cenchrus ciliaris	20	<1
Chrysopogon fallax	120	<1 (5)
Cleome viscosa	30	<1
Dactyloctenium radulans	10	10
Digitaria ctenantha	50	<1
Enneapogon polyphyllus	60	20
Eragrostis eriopoda	50	3
Eremophila gilesii subsp. *variabilis*	50	12
Fimbristylis dichotoma	25	25
Ipomoea muelleri	twiner	<1
Maireana georgei	15	<1
Salsola tragus subsp. *tragus*	50	1
Sclerolaena crenata	20	5
Sclerolaena cuneata	10	1 (5)
Sclerolaena lanicuspis	20	1 (5)
Senna artemisioides subsp. *helmsii*	60	1
Senna artemisioides subsp. *oligophylla*	60	2
Sida fibulifera	30	<1

TAXON	HEIGHT (cm)	% COVER
Solanum lasiophyllum	50	<1
Trianthema triquetra	15	<1
Tribulus hirsutus	15	5
Xerochloa laniflora	40	15
Ammannia multiflora	Opportunistic	
Boerhavia gardneri	Opportunistic	
Chloris pumilio	Opportunistic	
Enneapogon dielsii	Opportunistic	
Maireana villosa	opportunistic	
Marsilea hirsuta	Opportunistic	
Peplidium aithocheilum	Opportunistic	
Ptilotus macrocephalus	Opportunistic	

QUADRAT 78

Approximate Location:
Datum (WGS84): 402603E; 7530486N
78B: 400372E; 7529604N
Soil: Pink clay
Rocks: N/A
Topography: Clay pan
Field Vegetation Description: Scattered herbs and grasses
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Abutilon oxycarpum	30	<1
Aristida contorta	30	1
Boerhavia gardneri	twiner	<1
Chloris pumilio	50	1
Chrysopogon fallax	50	<1
Dactyloctenium radulans	20	1
Dysphania rhadinostachya subsp. rhadinostachya	20	40
Enneapogon purpurascens	15	<1
Eragrostis dielsii	10	<1
Eremophila gilesii subsp. variabilis	30	1
Heliotropium tenuifolium	10	<1
Indigofera linnaei	20	<1
Lepidium phlebopetalum	15	<1
Maireana georgei	10	<1
Portulaca oleracea	10	<1
Portulaca pilosa	10	<1
Ptilotus macrocephalus	50	<1
Salsola tragus subsp. *tragus*	20	<1
Sclerolaena cornishiana	40	1
Sclerolaena cuneata	30	<1
Sclerolaena cuneata	40	3

TAXON	HEIGHT (cm)	% COVER
Sclerolaena lanicuspis	40	3
Senna artemisioides subsp. *oligophylla*	50	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	25	<1
Trianthema triquetra	10	4
Tripogon loliiformis	15	10
Wahlenbergia tumidifructa	10	<1
Xerochloa laniflora	30	1
**Cenchrus ciliaris*	Opportunistic	
Cleome viscosa	Opportunistic	
Pterocaulon sphacelatum	opportunistic	

QUADRAT 79

Approximate Location:
Datum (WGS84): 402364E; 7530259N
Soil: Clay
Rocks: N/A
Topography: Flat clay pan
Field Vegetation Description: Shrubland of *Eremophila forrestii* subsp. *forrestii* over Low Open Shrubland dominated by *Sclerolaena* species over Annual Tussock Grassland of *Aristida contorta*
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia	200	3
Aristida contorta	30	10 (40)
Aristida holathera	60	10
Boerhavia gardneri	7	2
**Cenchrus ciliaris*	60	<1
Chloris pumilio	70	<1
Chrysopogon fallax	70	<1
Cleome viscosa	70	2
Dactyloctenium radulans	20	3
Dysphania rhadinostachya subsp. *rhadinostachya*	30	5
Enneapogon purpurascens	30	<1 (5)
Eragrostis dielsii	10	<1
Eragrostis falcata	60	10
Eremophila forrestii subsp. *forrestii*	100	5
Eremophila gilesii subsp. *variabilis*	50	1 (5)
Euphorbia australis	25	<1
Euphorbia tannensis subsp. *eremophila*	60	<1
Fimbristylis dichotoma	70	<1
Gomphrena canescens	10	<1
Hakea lorea subsp. *lorea*	100	<1

TAXON	HEIGHT (cm)	% COVER
Heliotropium tenuifolia	10	<1
Hibiscus burtonii	70	<1
Indigofera monophylla	70	<1
Indigofera colutea	30	<1
Ipomoea muelleri	30	5
Maireana villosa	60	5
Paraneurachne muelleri	50	2
Perotis rara	20	5
Polycarpaea corymbosa	20	2
Portulaca pilosa	15	<1
Ptilotus helipteroides	30	1
Ptilotus macrocephalus	50	<1
Rhagodia eremaea	70	<1
Salsola australis	50	5
Sclerolaena crenata	30	2 (10)
Sclerolaena diacantha	60	3 (10)
Senna artemisioides subsp. *helmsii*	30	<1
Senna artemisioides subsp. *oligophylla*	50	1
Senna glutinosa subsp. *glutinosa*	120	<1
Senna notabilis	10	<1
Sida macrocalyx	40	15
Solanum lasiophyllum	50	2
Trianthema hirsuta	10	<1
Trianthema triquetra	10	<1 (3)
Tribulus macrocarpus	15	2
Triodia pungens	70	2
Tripogon loliiformis	10	15
Triraphis mollis	70	<1

QUADRAT 80

Approximate Location:
Datum (WGS84): 402091E; 7530205N
80B: 401415E; 7530285N
80C: 400658E; 7530041N
Soil: Clay
Rocks: N/A
Topography: Flat claypan
Field Vegetation Description: Open Shrubland of *Acacia inaequilatera* over Low Open Shrubland of *Eremophila forrestii* subsp. *forrestii* Tussock Grassland of **Cenchrus ciliaris* and Hummock Grassland of mixed taxa
Vegetation Condition: 3
Notes:



TAXON	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	50	15
Acacia bivenosa	120	1
Acacia inaequilatera	200	10
Aristida contorta	30	10
Aristida inaequiglumis	50	10
Blumea tenella	30	<1
Boerhavia gardneri	10	<1
Cleome viscosa	70	5
Dactyloctenium radulans	30	2
Dysphania rhadinostachya subsp. rhadinostachya	25	5
Enneapogon polyphyllus	30	2
Eragrostis eriopoda	70	<1
Eragrostis falcata	60	<1
Eremophila forrestii subsp. *forrestii*	70	5
Eremophila gilesii subsp. variabilis	70	1
Euphorbia australis	10	3
Fimbristylis dichotoma	20	<1
Fimbristylis oxystachya	20	<1

TAXON	HEIGHT (cm)	% COVER
Gomphrena canescens	10	<1
Indigofera colutea	30	<1
Indigofera monophylla	50	1
Ipomoea muelleri	twiner	<1
Paraneurachne muelleri	60	<1
Perotis rara	30	2
Polycarpaea corymbosa	15	3
Portulaca oleracea	10	5
Ptilotus macrocephalus	60	3
Ptilotus obovatus	70	1
Rhagodia eremaea	90	<1
Rutidosis helichrysoides	20	<1
Salsola australis	60	5
Scaevola eriacantha	30	3
Sclerolaena cuneata	20	<1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	70	1
Sida macrocalyx	50	5
Sida sp.	50	<1
Solanum lasiophyllum	70	3
Trianthema triquetra	10	<1
Tribulus macrocarpus	20	5
Triodia pungens	90	10
Triodia schinzii	150	8
Vigna lanceolata	Twiner	<1
Calotis plumulifera	Opportunistic	
Eriachne aristidea	opportunistic	

QUADRAT 81

Approximate Location:
Datum (WGS84): 400384E; 7529417N
Soil: Clay
Rocks: N/A
Topography: Flat claypan
Field Vegetation Description: Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* and *Senna artemisioides* subsp. *helmsii* over Tussock Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	30	<1
Aristida contorta	30	5
Aristida inaequiglumis	70	5
Boerhavia gardneri	10	<1
**Cenchrus ciliaris*	60	10
Cleome viscosa	90	2
Dactyloctenium radulans	10	<1
Eragrostis eriopoda	70	5
Hakea lorea subsp. *lorea*	70	1
Portulaca oleracea	10	<1
Sclerolaena cuneata	10	<1
Senna artemisioides subsp. *helmsii*	60	3
Senna artemisioides subsp. *oligophylla*	80	5
Solanum lasiophyllum	70	<1
Tephrosia rosea var. *rosea*	50	1
Trianthema pilosa	10	<1
Tribulus macrocarpus	10	<1
Xerochloa laniflora	15	5
Acacia inaequilatera	opportunistic	

QUADRAT 82

Approximate Location:
Datum (WGS84): 401017E; 7530319N
82B: 400235E; 7529820N
Soil: Red silty sand
Rocks: Few quartz and schist pebbles
Topography: Flat
Field Vegetation Description: Low Shrubland of *Acacia* and *Senna* species over Hummock Grassland dominated by *Triodia basedowii*
Vegetation Condition: 2
Notes: Burnt about 2 years. Continues to creek. Very severe burn killed many *Acacia* shrubs

No photograph taken

TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia ancistrocarpa	60	<1 (5)
Acacia colei	150	(2)
Acacia inaequilatera	400	1
Acacia ligulata	40	<1(10)
Aristida inaequiglumis	50	10
Cleome viscosa	70	1
Eragrostis eriopoda	80	1
Eragrostis laniflora	70	<1
Eriachne aristidea	10	<1
Eulalia aurea	80	<1
Euphorbia australis	25	5
Evolvulus alsinoides var. *villosicalyx*	20	2
Fimbristylis dichotoma	60	<1
Goodenia armitiana	25	<1
Hakea lorea subsp. *lorea*	90	1
Heliotropium diversifolium	400	<1
Hybanthus aurantiacus	40	<1
Indigofera colutea	20	<1
Newcastelia roseoazurea	50	<1
Paraneurachne muelleri	70	2
Paspalidium rarum	10	<1
Polymeria ambigua	5	2
Ptilotus obovatus	70	1
Ptilotus polystachyus var. *polystachyus*	70	<1
Sarcostemma viminale subsp. *australe*	60	<1
Scaevola parvifolia subsp. *pilbarae*	20	<1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	70	2
Senna notabilis	30	<1
Sida arenicola	80	<1
Streptoglossa decurrens	50	<1
Stylobasium spathulatum	60	2 (5)
Trianthema pilosa	20	<1
Tribulus macrocarpus	10	<1
Triodia basedowii	90	5
Triodia pungens	70	10
Solanum lasiophyllum	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Gossypium australe	opportunistic	
Trichodesma zeylanicum var. *grandiflorum*	opportunistic	

QUADRAT 83

Approximate Location:
Datum (WGS84): 400664E; 7529203N
Soil: Red clay loam
Rocks: Many quartz and schist rocks about 10cm
Topography: Lower slope facing SE
Field Vegetation Description: Open Grassland dominated by *Triodia pungens*
Vegetation Condition: 2-3
Notes: Bare ground. Scree slope



TAXON	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	50	5
Portulaca oleracea	10	<1
Sarcostemma viminale subsp. *australe*	30	<1
Sclerolaena crenata	10	<1
Solanum lasiophyllum	50	<1
Sporobolus actinocladus	20	<1
Trianthema turgidifolia	30	<1
Triodia pungens	50	15
Xerochloa laniflora	10	2

QUADRAT 84

Approximate Location:
Datum (WGS84): 400828E; 7529075N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Tussock Grassland of **Cenchrus ciliaris, Aristida inaequiglumis, Xerochloa laniflora* and *Eragrostis eriopoda*
Vegetation Condition: 4
Notes: Very degraded site. Surrounded by hills



TAXON	HEIGHT (cm)	% COVER
Aristida inaequiglumis	60	15
**Cenchrus ciliaris*	60	30
Cleome viscosa	70	<1
Eragrostis dielsii	10	<1
Eragrostis eriopoda	70	10
Eriachne obtusa	20	1
Fimbristylis dichotoma	70	<1
Indigofera colutea	30	5
Pluchea rubelliflora	20	<1
Trianthema turgidifolia	10	1
Tribulus hirsutus	30	<1
Triodia pungens	80	<1
Xerochloa laniflora	30	15
Acacia inaequilatera	opportunistic	

QUADRAT 85

Approximate Location:
Datum (WGS84): 400495E; 7528894N
85B: 401516E; 7528412N
85C: 403567E; 7532837N
85D: 403370E; 7535726N
85E: 400639E; 7530771N
Soil: Red sandy loam
Rocks: Rock face with few soil patches
Topography: Middle to upper slope
Field Vegetation Description: Low Open Shrubland of *Indigofera monophylla* and *Senna glutinosa* subsp. *glutinosa* over Open Herbs dominated by *Cleome viscosa* and *Boerhavia gardneri* over Grassland dominated by *Triodia pungens*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia pyrifolia	120	<1
Aristida contorta	40	5
Boerhavia gardneri	15	5
**Cenchrus ciliaris*	30	<1
Cleome viscosa	70	5
Enneapogon purpurascens	20	2
Euphorbia australis	20	1
Evolvulus alsinoides var. *villosicalyx*	10	<1
Gomphrena canescens subsp. *canescens*	10	2
Heliotropium tenuifolium	20	<1
Indigofera monophylla	30	5
Ptilotus macrocephalus	60	2
Salsola tragus subsp. *tragus*	30	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *helmsii*	40	1
Senna artemisioides subsp. *oligophylla*	60	1
Senna glutinosa subsp. *glutinosa*	70	3
Sida platycalyx	40	3
Tephrosia densa	70	1
Tephrosia rosea var. *glabrior*	20	<1
Tribulus suberosus	50	<1
Triodia pungens	20	15
Acacia inaequilatera	opportunistic	
Eucalyptus brevifolia	opportunistic	
Euphorbia alsiniflora	opportunistic	
Ficus brachypoda	opportunistic	
Fimbristylis dichotoma	opportunistic	
Hakea lorea subsp. *lorea*	opportunistic	
Hibiscus coatesii	opportunistic	
Senna glutinosa subsp. *pruinosa*	opportunistic	
Sida cardiophylla	opportunistic	
Solanum lasiophyllum	opportunistic	
Stenopetalum decipiens	opportunistic	

QUADRAT 86

Approximate Location: Near southern end of lease
Datum (WGS84): 400790E; 7529319
Soil: Clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Open Woodland of *Acacia inaequilatera* over Tussock Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	400	5
**Cenchrus ciliaris*	70	50
Cleome viscosa	80	3
Crotalaria crispata	40	2
Cullen pogonocarpum	70	1
Eragrostis eriopoda	80	10
Eriachne aristidea	50	<1
Euphorbia australis	20	<1
Fimbristylis dichotoma	70	<1
Hakea lorea subsp. *lorea*	300	<1
Indigofera linifolia	40	<1
Phyllanthus erwinii	50	<1
Polymeria ambigua	10	<1
Ptilotus obovatus	50	1
Senna artemisioides subsp. *helmsii*	175	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Solanum lasiophyllum	60	<1
Tephrosia rosea var. *rosea*	30	<1
Tribulus hirsutus	20	<1

TAXON	HEIGHT (cm)	% COVER
Triodia pungens	100	5
Acacia ancistrocarpa	opportunistic	

QUADRAT 87

Approximate Location:
Datum (WGS84): 401064E; 7529482N
87B: 400923E; 7529288N
87C: 401953E; 7528972N
87D: 402162E; 7527840N
Soil: Red sandy clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Senna artemisioides* subsp. *helmsii* over Grassland of **Cenchrus ciliaris* and *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia eriopoda	400	3
Acacia inaequilatera	200	1
Aristida inaequiglumis	40	15
Boerhavia gardneri	25	<1
**Cenchrus ciliaris*	50	25
Cleome viscosa	70	5
Crotalaria crispata	15	<1
Eragrostis eriopoda	40	<1
Eriachne aristidea	30	<1
Evolvulus alsinoides var. *villosicalyx*	30	<1
Fimbristylis dichotoma	50	<1
Hibiscus leptocladus	60	<1
Indigofera boviperda subsp. *boviperda*	40	1
Indigofera colutea	30	<1
Phyllanthus erwinii	30	<1
Sclerolaena cornishiana	30	<1
Senna artemisioides subsp. *helmsii*	150	15-20

TAXON	HEIGHT (cm)	% COVER
Solanum lasiophyllum	50	<1
Tephrosia rosea subsp. *rosea*	50	1
Tribulopis angustifolia	twiner	<1
Tribulus hirsutus	10	<1
Tribulus macrocarpus	10	<1
Triodia pungens	120	1

QUADRAT 88

Approximate Location:
Datum (WGS84): 401623E; 7529370N
88B: 401801E; 7529398N
88C: 402428E; 7529354N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia* species over Hummock Grassland dominated by *Triodia pungens*
Vegetation Condition: 3
Notes:

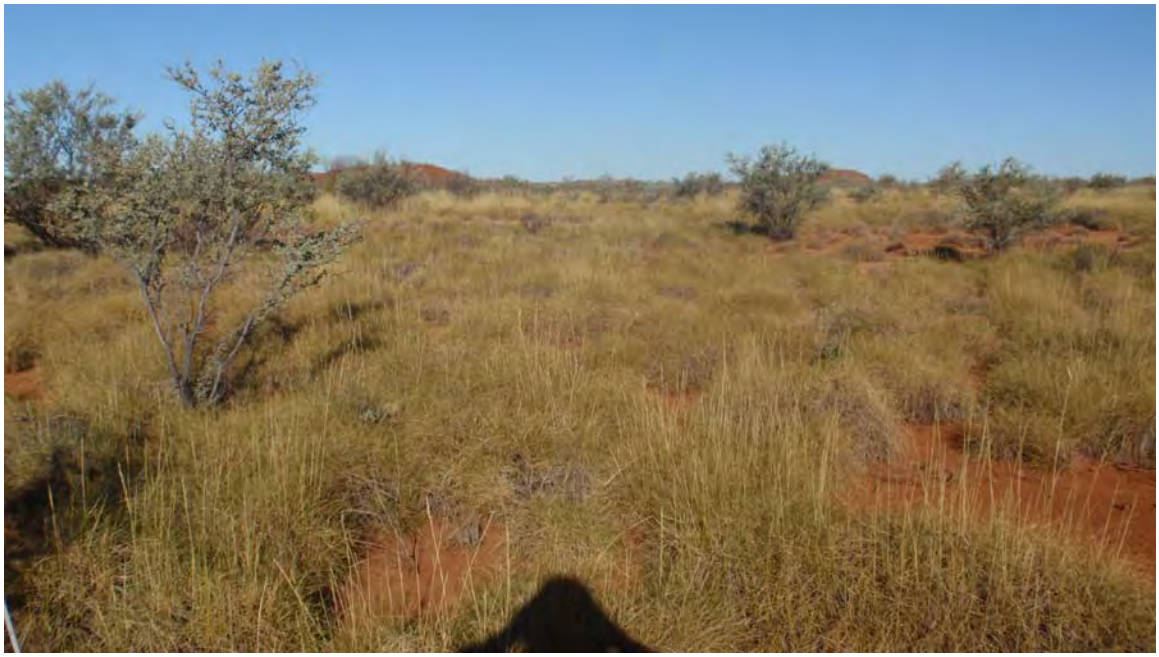


TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	5
Acacia inaequilatera	300	3
Acacia ligulata	200	1
Aristida inaequiglumis	70	15
**Cenchrus ciliaris*	60	5
Cleome viscosa	70	2
Corchorus sidoides subsp. *sidoides*	60	2
Crotalaria medicaginea	40	<1
Dactyloctenium radulans	20	1
Eragrostis eriopoda	70	2
Eriachne aristidea	30	1
Eriachne mucronata	50	<1
Indigofera colutea	30	<1
Indigofera linifolia	40	<1
Ptilotus calostachyus	60	<1
Ptilotus obovatus	50	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
TAXON	**HEIGHT (cm)**	**% COVER**

Rhagodia eremaea	50	1
Sclerolaena cornishiana	20	2
Senna artemisioides subsp. *helmsii*	70	3
Senna artemisioides subsp. *oligophylla*	50	<1
Senna notabilis	30	<1
Solanum lasiophyllum	50	1
Tephrosia rosea var. *rosea*	50	<1
Trianthema pilosa	30	<1
Tribulus macrocarpus	10	2
Triodia pungens	150	10-50
Triodia schinzii	120	5
Bonamia rosea	opportunistic	
Sida arenicola	opportunistic	

QUADRAT 89

Approximate Location: Drill area 2
Datum (WGS84): 402590E; 7529294N
89B: 402786E; 7529488N
89C: 400919E; 7529671N
89D: 401825E; 7528756N
89E: 402412E; 7528899N
89F: 402302E; 7528105N
Soil: Red silty sandy loam
Rocks: Quartz rocks up to 15cm on ground
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia inaequilatera* over Hummock Grassland dominated by *Triodia pungens*
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	400	5
Cleome viscosa	90	<1
Dactyloctenium radulans	10	<1
Gomphrena canescens subsp. *canescens*	20	<1
Portulaca oleracea	10	<1
Rhagodia eremaea	70	<1
Sclerolaena cornishiana	20	<1 **(5)**
Sclerolaena cuneata	20	<1 **(15)**
Senna artemisioides subsp. *helmsii*	50	<1
Senna artemisioides subsp. *oligophylla*	100	<1 **(15)**
Senna glutinosa subsp. *glutinosa*	100	<1
Triodia epactia	100	75
Acacia ancistrocarpa	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Boerhavia gardneri	Opportunistic	
Brachyachne prostrata	opportunistic	
^Cenchrus ciliaris	Opportunistic	
Corchorus sidoides subsp. *sidoides*	Opportunistic	
Enneapogon polyphyllus	Opportunistic	
Eremophila forrestii	opportunistic	
Fimbristylis dichotoma	Opportunistic	
Gossypium australe	opportunistic	
Salsola australis	Opportunistic	
Solanum lasiophyllum	Opportunistic	
Trianthema triquetra	Opportunistic	

QUADRAT 90

Approximate Location:
Datum (WGS84): 400321E; 7528886N
90B: 400182E; 7528703N
90C: 401105E; 7528920N
Soil: Red silty sand clay
Rocks: Occasional quartz rocks on surface
Topography: Flat
Field Vegetation Description: Open Shrubland of *Acacia inaequilatera* over Tussock Grassland dominated by *Aristida inaequiglumis* and *Triodia pungens*
Vegetation Condition: 3
Notes:



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia inaequilatera	250	2
Aristida inaequiglumis	60	20
Boerhavia gardneri	15	5
**Cenchrus ciliaris*	50	10
Cleome viscosa	70	1
Eragrostis eriopoda	80	5
Eriachne aristidea	15	<1
Euphorbia australis	25	<1
Gomphrena canescens subsp. *canescens*	30	<1
Hakea lorea subsp. *lorea*	160	<1
Heliotropium tenuifolium	10	<1
Indigofera brevidens	15	3
Indigofera colutea	20	2
Indigofera linifolia	50	2
Indigofera monophylla	50	<1
Paspalidium rarum	15	<1
Polymeria ambigua	10	<1

TAXON	HEIGHT (cm)	% COVER
Portulaca oleracea	10	<1
Ptilotus polystachyus var. *polystachyus*	50	<1
Rhagodia eremaea	60	<1
Senna artemisioides subsp. *oligophylla*	40	<1
Solanum lasiophyllum	60	1
Tephrosia rosea var. *rosea*	50	<1
Triodia pungens	120	15
Ptilotus exaltatus	opportunistic	
Gossypium australe	opportunistic	
Senna artemisioides subsp. *helmsii*	opportunistic	

QUADRAT 91

Approximate Location:
Datum (WGS84): 400695E; 7528263N
91B: 401460E; 7528667N
91C: 401257E; 7528440N
Soil: Red silty sandy loam
Rocks: Few quartz ca. 5cm
Topography: Drainage line
Field Vegetation Description: Open Woodland of *Corymbia opaca* over Tussock Grassland dominated by **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia colei	50	<1
Aristida contorta	40	5
Boerhavia gardneri	50	2
**Cenchrus ciliaris*	60	40
Chrysopogon fallax	70	<1
Cleome viscosa	90	2
Corymbia opaca	1000	3
Enneapogon polyphyllus	20	<1
Hakea lorea subsp. *lorea*	90	<1
Senna artemisioides subsp. *helmsii*	70	<1
Solanum lasiophyllum	50	<1
Tephrosia rosea var. *rosea*	40	<1
Tribulus hirsutus	10	<1
Triodia pungens	70	<1

QUADRAT 92

Approximate Location:
Datum (WGS84): 401705E; 7528487N
92B: 402121E; 7528991N
Soil: Coarse red sand
Rocks: Quartz up to 30cm
Topography: Drainage line
Field Vegetation Description: Open Shrubland dominated by *Acacia retivenea* subsp. *clandestina* over Low Open Heath of *Tephrosea rosea* var. *rosea* over Open Grassland of mixed taxa
Vegetation Condition: 2-3
Notes: Relevee walked along drainage line. 92B no *Acacia retivenea* subsp. *clandestina* but *Acacia eriopoda*



TAXON	HEIGHT (cm)	% COVER
**Cenchrus ciliaris*	50	3
Acacia adoxa var. *adoxa*	40	<1
Acacia ancistrocarpa	60	<1
Acacia retivenea subsp. *clandestina*	120	5
Bonamia pannosa	10	<1
Cleome viscosa	8-	<1
Corchorus sidoides subsp. *sidoides*	60	5
Enneapogon polyphyllus	25	<1
Eriachne mucronata	50	<1
Gossypium australe	60	<1
Heliotropium tenuifolium	25	<1
Indigofera monophylla	30	<1

TAXON	HEIGHT (cm)	% COVER
Paraneurachne muelleri	40	<1
Paspalidium rarum	10	<1
Ptilotus auriculifolius	50	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Senna notabilis	40	<1
Senna venusta	100	<1
Solanum lasiophyllum	60	<1
Sorghum plumosum	90	5
Tephrosia rosea var. *rosea*	60	70
Themeda triandra	70	3
Tribulus hirsutus	10	<1
Triodia epactia	120	3
Acacia eriopoda	opportunistic	

QUADRAT 93

Approximate Location:
Datum (WGS84): 402460E; 7528556N
Soil: Red silty sand
Rocks: Scattered quartz pebbles <5cm
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia ancistrocarpa* and *Acacia inaequilatera* over Open Shrubland of *Senna artemisioides* subsp. *helmsii* over Hummock Grassland of *Triodia pungens* and **Cenchrus ciliaris*
Vegetation Condition: 3-4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	350	10
Acacia inaequilatera	250	5
Aristida inaequiglumis	50	1
Boerhavia gardneri	10	<1
**Cenchrus ciliaris*	60	15
Chrysopogon fallax	80	5
Cleome viscosa	70	5
Gossypium australe	15	<1
Heliotropium tenuifolium	120	<1
Hibiscus coatesii	70	<1
Indigofera colutea	30	<1
Indigofera linifolia	30	<1
Indigofera monophylla	40	<1
Paspalidium rarum	10	<1
Ptilotus obovatus	70	<1
Senna artemisioides subsp. *helmsii*	150	5
Tephrosia rosea var. *rosea*	70	<1
Tribulus macrocarpus	10	<1
Triodia pungens	100	30
Triodia wiseana	20	<1

QUADRAT 94

Approximate Location:
Datum (WGS84): 402376E; 7528343N
94B: 403416E; 7528346N
Soil: Red silty sand
Rocks: Occasional quartz pebbles
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia ancistrocarpa* over Low Open Shrubland of *Eremophila forrestii* subsp. *forrestii* over Hummock Grassland of *Triodia schinzii* and *Triodia epactia*
Vegetation Condition: 2
Notes: 94B has been severely burnt *but Acacia ancistrocarpa* still alive



TAXON	HEIGHT (cm)	% COVER
Acacia adoxa var. *adoxa*	50	<1
Acacia ancistrocarpa	250	20
Acacia inaequilatera	300	1
Aristida inaequiglumis	50	10
Boerhavia gardneri	30	<1
Bonamia rosea	30	5
Cleome viscosa	70	<1
Corchorus sidoides subsp. *sidoides*	70	<1
Corymbia opaca	150	<1
Eremophila forrestii subsp. *forrestii*	70	5
Eriachne sulcata	40	<1
Euphorbia australis	30	<1
Goodenia vilmoriniae	30	<1
Grevillea wickhamii subsp. *aprica*	250	<1
Heliotropium diversifolium	30	<1
Indigofera monophylla	70	<1
Ptilotus obovatus	50	1
Sarcostemma viminale subsp. *australe*	60	<1
Senna artemisioides subsp. *oligophylla*	70	<1

TAXON	HEIGHT (cm)	% COVER
Sida arenicola	90	<1
Tribulus hirsutus	10	2
Triodia epactia	90	10
Triodia schinzii	150	25
Corchorus sidoides subsp. *sidoides*	opportunistic	
Enneapogon polyphyllus	Opportunistic	
Euphorbia australis	Opportunistic	
Goodenia vilmoriniae	Opportunistic	
Indigofera monophylla	opportunistic	
Paraneurachne muelleri	Opportunistic	
Portulaca oleracea	Opportunistic	
Portulaca pilosa	Opportunistic	
Ptilotus helipteroides	Opportunistic	
Scaevola parvifolia subsp. pilbarae	Opportunistic	
Sclerolaena cuneata	Opportunistic	
Sida echinocarpa	Opportunistic	
Trianthema hirsuta	Opportunistic	
Tribulus macrocarpus	Opportunistic	

QUADRAT 95

Approximate Location:
Datum (WGS84): 402625E; 7527592N
95B: 403022E; 7527610N
95C: 403332E; 7528168N
95D: 404002E; 7528012N
Soil: Red silty loam
Rocks: Scattered quartz to 10cm on surface
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia inaequilatera* over Low Open Shrubland of *Senna artemisioides* subsp. *helmsii* and *Boerhavia gardneri* over Tussock Grassland dominated by *Aristida inaequiglumis*
Vegetation Condition: 3
Notes: Very dry, young Triodia dead



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	250	<1-5
Aristida contorta	20	2
Aristida inaequiglumis	50	10
Boerhavia gardneri	10	10
**Cenchrus ciliaris*	50	3
Cleome viscosa	70	<1
Eragrostis eriopoda	60	1
Eremophila forrestii subsp. *forrestii*	100	<1
Eriachne aristidea	20	<1
Gossypium australe	50	<1
Heliotropium tenuifolium	25	1
Indigofera linifolia	15	3
Ptilotus exaltatus	20	<1
Ptilotus obovatus	30	<1
Senna artemisioides subsp. *helmsii*	90	5-10
Solanum lasiophyllum	60	1

TAXON	HEIGHT (cm)	% COVER
Tephrosia rosea	60	1
Tribulus macrocarpus	10	<1
Triodia pungens	70	1
Acacia ancistrocarpa	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	

QUADRAT 96

Approximate Location:
Datum (WGS84): 403149E; 7527502N
96B: 403186E; 7528080N
96C: 403332E; 7528168N
Soil: Brownish red silty loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Low Woodland of *Corymbia opaca* over Annual Tussock Grassland of *Sorghum plumosum* and *Themeda triandra*
Vegetation Condition: 3
Notes: Area burnt and dry



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia affin. *eriopoda*	70	<1
Acacia ancistrocarpa	20	<1
Acacia colei	70	<1
Acacia inaequilatera	130	<1
Boerhavia gardneri	30	10
Bonamia rosea	50	1
**Cenchrus ciliaris*	70	5
Chrysocephalum eremaeum	50	<1
Chrysopogon fallax	80	5
Cleome viscosa	70	2
Corchorus sidoides subsp. *sidoides*	60	5
Corymbia opaca	1400	5-30
Enneapogon polyphyllus	60	2
Eragrostis eriopoda	60	5
Euphorbia australis	30	<1
Euphorbia boophthona	50	<1
Evolvulus alsinoides var. *villosicalyx*	15	<1

TAXON	HEIGHT (cm)	% COVER
Indigofera brevidens	60	3
Phyllanthus erwinii	50	<1
Pterocaulon sphacelatum	50	1
Senna artemisioides subsp. *helmsii*	50	<1
Senna artemisioides subsp. *oligophylla*	50	1
Sida sp.	60	<1
Solanum diversiflorum	50	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	170	20
Sporobolus australasicus	40	1
Stylobasium spathulatum	15	<1
Synaptantha tillaeacea	10	<1
Tephrosia rosea	50	1
Themeda triandra	90	5
Tribulus macrocarpus	20	2
Triodia pungens	100	10
Vigna lanceolata	twiner	<1
Aristidea holathera	opportunistic	
Dysphania rhadinostachya subsp. rhadinostachya	opportunistic	
Fimbristylis dichotoma	opportunistic	
Paraneurachne muelleri	opportunistic	
**Malvastrum americanum*	Opportunistic	
Paspalidium rarum	opportunistic	
Perotis rara	opportunistic	
Ptilotus polystachyus	opportunistic	
Rutidosis helichrysoides	opportunistic	

QUADRAT 97

Approximate Location:
Datum (WGS84): 403010E; 7526985N
Soil: Red silty loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia ancistrocarpa* over Closed Hummock Grassland of *Triodia epactia*
Vegetation Condition: 2-3
Notes: Only a small area unburnt bush in this southern section. All was a hot burn with Acacia dead and unrecognizable. Applies to the whole of this area



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	30
Acacia ligulata	175	1
Aristida contorta	50	5
Aristida inaequiglumis	60	<1
Aristida latifolia	120	5
Boerhavia gardneri	twiner	3
Bonamia rosea	50	5
Chrysopogon pallidus	90	2
Cleome viscosa	80	5
Corchorus sidoides subsp. *sidoides*	40	<1
Dysphania rhadinostachya subsp. *rhadinostachya*	30	5
Enneapogon polyphyllus	60	3
Eragrostis eriopoda	50	<1
Eriachne sulcata	15	<1
Euphorbia australis	20	<1
Fimbristylis dichotoma	20	<1
Goodenia vilmoriniae	30	<1
Gossypium australe	70	<1
Indigofera brevidens	50	<1

TAXON	HEIGHT (cm)	% COVER
Indigofera monophylla	50	<1
Newcastelia roseoazurea	30	<1
Paraneurachne muelleri	50	5
Paspalidium rarum	10	<1
Perotis rara	30	1
Polycarpaea corymbosa	20	<1
Portulaca oleracea	5	<1
Ptilotus obovatus	60	5
Senna artemisioides subsp. *helmsii*	60	<1
Senna artemisioides subsp. *oligophylla*	40	<1
Senna notabilis	10	<1
Sida echinocarpa	100	1
Sida platycalyx	50	1
Solanum diversiflorum	50	<1
Synaptantha tillaeacea	5	<1
Tribulus hirsutus	5	5
Tribulus macrocarpus	10	2
Triodia epactia	100	70
Triodia pungens	90	2
Triumfetta chaetocarpa	opportunistic	
Urochloa holosericea subsp. *holosericea*	opportunistic	

QUADRAT 98

Approximate Location:
Datum (WGS84): 403083E; 7526884N
Soil: Red sandy clay
Rocks: N/A
Topography: 3-4
Field Vegetation Description: Low Open Shrubland of *Acacia* species over Open Annual Tussock Grassland of *Aristida inaequiglumis*
Vegetation Condition: 4
Notes: Area burnt. *Acacia* species unrecognizable



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	30	<1
Acacia sp dead	dead	10
Aristida inaequiglumis	50	25
Bonamia rosea	60	2
Cleome viscosa	70	2
Eragrostis eriopoda	80	5
Eriachne aristidea	30	1
Hibiscus sturtii var. *platychlamys*	80	5
Indigofera linifolia	30	<1
Indigofera monophylla	30	<1
Paspalidium rarum	10	2
Senna artemisioides subsp. *helmsii*	40	<1
Senna artemisioides subsp. *oligophylla*	70	<1
Tephrosia rosea	50	<1
Tribulus hirsutus	30	3
Tribulus macrocarpus	30	1
Triodia epactia	30	1

QUADRAT 99

Approximate Location:
Datum (WGS84): 403340E; 7526475N
Soil: Red sandy loam
Rocks: Numerous quartz rocks on surface
Topography: Lower slope facing NW
Field Vegetation Description: High Shrubland of *Acacia wanyu* over Shrubland dominated by *Eremophila tietkensii*
Vegetation Condition: 2
Notes: Restricted to the lower slopes in this area



TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	150	<1
Acacia pyrifolia	300	<1
Acacia wanyu	250	15 (10)
Anthobolus leptomerioides	80	<1
Corchorus sidoides subsp. *sidoides*	70	<1
Eremophila forrestii subsp. *forrestii*	70	<1
Eremophila tietkensii	70	25
Maireana georgei	10	<1
Maireana melanocoma	30	<1
Senna glutinosa subsp. *glutinosa*	120	1
Sida arenicola	50	<1
Solanum lasiophyllum	50	<1
Tribulus suberosus	100	<1
Triodia epactia	100	15
Triodia wiseana	50	3
Acacia ancistrocarpa	opportunistic	
Aristida contorta	opportunistic	
Gossypium australe	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Senna artemisioides subsp. *helmsii*	opportunistic	
Senna artemisioides subsp. *oligophylla*	opportunistic	

QUADRAT 100

Approximate Location:
Datum (WGS84): 403274E; 7529686N
Soil: Yellow red silty sand
Rocks: Numerous rocks of various sorts dense on surface
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia synchonychia* over Low Open Shrubland dominated by *Eremophila tietkensii* over Grassland of *Triodia wiseana*
Vegetation Condition: 2
Notes: Below slope. Not burnt recently. Slight rise above sandy soils in landscape



TAXON	HEIGHT (cm)	% COVER
Acacia synchronicia	200	10
Acacia synchronicia (green)	200	1
Boerhavia gardneri	5	<1
Cleome viscosa	60	<1
Eremophila tietkensii	70	1-10
Heliotropium ovalifolium	50	<1
Ptilotus obovatus	70	1
Rhagodia eremaea	100	1
Senna artemisioides subsp. *oligophylla*	60	<1
Solanum lasiophyllum	50	<1
Sporobolus australasicus	20	<1
Tribulus macrocarpus	10	<1
Tribulus suberosus	90	<1
Triodia wiseana	100	65
Acacia ancistrocarpa	opportunistic	
Aristida contorta	opportunistic	
Corchorus sidoides subsp. *sidoides*	opportunistic	
Enneapogon purpurascens	opportunistic	
Enneapogon purpurascens	opportunistic	
Eragrostis eriopoda	opportunistic	

TAXON	HEIGHT (cm)	% COVER
Eragrostis eriopoda	opportunistic	
Gomphrena canescens	opportunistic	
Heliotropium tenuifolium	opportunistic	
Portulaca oleracea	opportunistic	
Ptilotus helipteroides	opportunistic	
Ptilotus polystachyus forma *polystachyus*	opportunistic	
Salsola tragus subsp. *tragus*	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Senna glutinosa subsp. *pruinosa*	opportunistic	
Synaptantha tillaeacea	opportunistic	
Tribulus hirsutus	opportunistic	

QUADRAT 101

Approximate Location: Near mud flats
Datum (WGS84): 402758E; 7530086N
101B: 402430E; 7529749N
Soil: Red sandy clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* and *Acacia inaequilatera* over Low Shrubland of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Tussock Grassland dominated by **Cenchrus ciliaris* and *Aristida contorta*
Vegetation Condition: 3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	200	30
Acacia inaequilatera	300	5
Aristida contorta	30	10
Aristida inaequiglumis	70	5
Boerhavia gardneri	40	<1
**Cenchrus ciliaris*	60	25
Chrysopogon pallidus	90	5
Cleome viscosa	70	10
Eremophila forrestii subsp. *forrestii*	120	5
Eremophila latrobei subsp. *latrobei*	120	<1
Heliotropium diversifolium	30	<1
Hybanthus aurantiacus	50	<1
Ptilotus obovatus	50	5
Ptilotus polystachyus var. *polystachyus*	70	2
Senna artemisioides subsp. *helmsii*	60	1
Senna artemisioides subsp. *oligophylla*	90	10
Sida platycalyx	10	2 (10)
Solanum lasiophyllum	60	1

TAXON	HEIGHT (cm)	% COVER
Tribulus hirsutus	30	5
Tribulus macrocarpus	30	10
Triodia epactia	110	5
Abutilon otocarpum	opportunistic	
Bonamia media	opportunistic	
Corchorus sidoides subsp. *sidoides*	opportunistic	
Eragrostis eriopoda	opportunistic	
Euphorbia australis	opportunistic	
Heliotropium ovalifolium	opportunistic	
Indigofera monophylla	opportunistic	
Paspalidium rarum	opportunistic	
Salsola tragus subsp. *tragus*	opportunistic	

QUADRAT 102

Approximate Location:
Datum (WGS84): 401301E; 7529654N
Soil: Coarse sand
Rocks: Pebbles to ca. 5cm
Topography: Minor creek
Field Vegetation Description: Open Shrubland of *Acacia* species over Low Shrubland of *Tephrosia rosea* subsp. *rosea* over Grassland of **Cenchrus ciliaris*
Vegetation Condition: 4
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia sp all dead	180	5
**Cenchrus ciliaris*	70	50
Cleome viscosa	60	10
Corchorus sidoides subsp. *sidoides*	70	<1
Cullen stipulaceum	70	1
Euphorbia australis	5	<1
Euphorbia alsiniflora	30	<1
Evolvulus alsinoides var. *villosicalyx*	80	<1
Indigofera brevidens	20	<1
Ipomoea muelleri	twiner	3
Pterocaulon serrulatum	30	<1
Tephrosia rosea var. *rosea*	70	20
Trianthema pilosa	10	<1
Trichodesma zeylanicum var. *grandiflorum*	80	<1

QUADRAT 103

Approximate Location: Off road to north bore
Datum (WGS84): 402665E; 7532304N
103B: 403011E; 7532128N
Soil: Red loam
Rocks: Numerous quartz rocks and stones on surface
Topography: Lower slope
Field Vegetation Description: Open Shrubland of *Acacia robeorum* over Very Open Tussock Grassland of *Triodia angusta*
Vegetation Condition: 2
Notes: Scree slope at the bottom of a hill



TAXON	HEIGHT (cm)	% COVER
Acacia robeorum	175	5
Cassytha filiformis	twiner	1
Cheilanthes sieberi	20	<1
Eulalia fulva	70	<1
Paspalidium rarum	5	3
Sarcostemma viminale subsp. *australe*	100	1
Sclerolaena cornishiana	15	<1
Senna glutinosa subsp. *glutinosa*	120	<1
Sporobolus australasicus	60	1
Synaptantha tillaeacea	30	5
Triodia angusta	100	45
Triodia pungens	80	5
Abutilon lepidum	opportunistic	
Acacia synchronicia	opportunistic	
Goodenia vilmoriniae	opportunistic	
Gossypium australe	opportunistic	
Hibiscus burtonii	opportunistic	
Ptilotus polystachyus forma *polystachyus*	opportunistic	
Solanum lasiophyllum	Opportunistic	

QUADRAT 104

Approximate Location: On road to north bore
Datum (WGS84): 402588E; 752730N
Soil: Red silty clay
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia ancistrocarpa, Acacia dictyophleba, Acacia ligulata* and *Acacia eriopoda* over Low Open Shrubland of *Senna artemisioides* subsp. *oligophylla* over Hummock Grassland of *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Not burnt recently



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	250	5
Acacia dictyophleba	200	<1
Acacia eriopoda	200	3
Acacia ligulata	250	3
Aristida inaequiglumis	60	3
Aristida latifolia	70	1
Boerhavia gardneri	30	<1
Bonamia pannosa	15	<1
Bonamia rosea	50	1
Cassytha filiformis	twiner	1
**Cenchrus ciliaris*	50	1
Chrysopogon pallidus	70	<1
Cleome viscosa	70	<1
Eragrostis eriopoda	70	1
Eremophila latrobei subsp. *latrobei*	200	2
Eriachne aristidea	20	<1
Eulalia fulva	70	<1
Evolvulus alsinoides var. *villosicalyx*	20	<1

TAXON	HEIGHT (cm)	% COVER
Fimbristylis dichotoma	50	<1
Gomphrena canescens subsp. *canescens*	10	<1
Gossypium australe	100	<1
Hakea lorea subsp. *lorea*	300	1
Heliotropium cunninghamii	30	<1
Heliotropium diversifolium	30	<1
Hibiscus burtonii	60	<1
Hybanthus aurantiacus	50	2
Indigofera monophylla	25	<1
Paraneurachne muelleri	50	<1
Paspalidium rarum	10	<1
Ptilotus polystachyus var. *polystachyus*	30	<1
Rhagodia eremaea	100	<1
Scaevola parvifolia subsp. *pilbarae*	50	3
Senna artemisioides subsp. *helmsii*	60	<1
Senna artemisioides subsp. *oligophylla*	80	5-10
Senna glutinosa subsp. *glutinosa*	80	<1
Sida arenicola	70	<1
Solanum lasiophyllum	50	<1
Streptoglossa decurrens	40	<1
Stylobasium spathulatum	60	<1
Tribulopis angustifolia	twiner	<1
Tribulus macrocarpus	30	<1
Trichodesma zeylanicum var. *grandiflorum*	30	<1
Triodia basedowii	90	40
Triodia epactia	120	1
Triodia schinzii	120	<1-20
Zornia albiflora	15	<1
Corchorus sidoides subsp. *sidoides*	opportunistic	
Trianthema pilosa	opportunistic	
Salsola tragus subsp. *tragus*	opportunistic	

QUADRAT 105

Approximate Location:
Datum (WGS84): 402857E; 7532283N
Soil: Pale yellow mud
Rocks: N/A
Topography: Drainage flat
Field Vegetation Description: Open Heath of *Acacia colei* over Annual Tussock Grassland
Vegetation Condition: 2-3
Notes: Regrowth after burn



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	70	<1
Acacia colei	175	60
Acacia ligulata	60	1
Acacia synchronicia	20	1
Bergia perennis subsp. *exigua*	10	<1
Chloris pectinata	30	1

TAXON	HEIGHT (cm)	% COVER
Bulbostylis barbata	15	<1
**Cenchrus ciliaris*	40	5
Centipeda minima subsp. *macrocephala*	20	3
Chrysopogon fallax	80	<1
Cleome viscosa	80	1
Corchorus sidoides subsp. *sidoides*	70	3
Corchorus sidoides subsp. *sidoides*	70	<1
Dactyloctenium radulans	10	1
Eragrostis tenellula	30	<1
Eriachne benthamii	25	5
Eriachne obtusa	60	5
Eulalia aurea	90	30
Euphorbia alsiniflora	60	<1
Gossypium australe	70	<1
Marsilea hirsuta	10	3
Mukia maderaspatana	twiner	<1
Paspalidium basicladum	30	5
Polycarpaea corymbosa	15	<1
Pterocaulon serrulatum	30	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Salsola australis 'strobilifera'	60	1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	50	2
Sida fibulifera	30	3
Solanum lasiophyllum	50	<1
Sporobolus australasicus	30	<1
Synaptantha tillaeacea var. *tillaeacea*	5	<1
Tephrosia rosea var. *rosea*	80	3
Triodia pungens	120	<1
Xerochloa laniflora	60	<1
Acacia inaequilatera	opportunistic	
Alternanthera nodiflora	opportunistic	
Ammannia multiflora	opportunistic	
Aristida inaequiglumis	opportunistic	
Atriplex semilunaris	opportunistic	
Corchorus tridens	opportunistic	
Eriachne flaccida	opportunistic	
Eucalyptus kingsmillii subsp. *kingsmillii*	opportunistic	
Goodenia vilmoriniae	opportunistic	
Indigofera georgei	opportunistic	
Phyllanthus lacunellus	opportunistic	
Portulaca oleracea	opportunistic	
Rutidosis helichrysoides	opportunistic	
Salsola tragus subsp. *tragus*	opportunistic	
Sclerolaena cornishiana	opportunistic	
Sclerolaena eriacantha	opportunistic	
Streptoglossa decurrens	opportunistic	
Tephrosia rosea var. *clementii*	opportunistic	
Whiteochloa cymbiformis	opportunistic	

QUADRAT 106

Approximate Location: Along road to north bore
Datum (WGS84): 4030144E; 7532335N
Soil: Red sandy loam
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland dominated by *Acacia ancistrocarpa* over Hummock Grassland of *Triodia schinzii* and *Triodia epactia*
Vegetation Condition: 3
Notes: Several *Acacia* species in area, now dead due to fire



TAXON	HEIGHT (cm)	% COVER
Abutilon otocarpum	60	<1
Acacia ancistrocarpa	250	10
Acacia colei	70	<1
Acacia inaequilatera	250	<1
Acacia ligulata	120	1
Aristida inaequiglumis	50	3
Bonamia rosea	40	3
**Cenchrus ciliaris*	50	<1
Corchorus sidoides subsp. *sidoides*	50	1
Eragrostis eriopoda	60	5
Eriachne obtusa	50	10
Gossypium australe	50	<1
Grevillea stenobotrya	120	<1
Hakea lorea subsp. *lorea*	70	<1
Hybanthus aurantiacus	60	<1
Indigofera monophylla	40	1
Newcastelia roseoazurea	50	<1
Paraneurachne muelleri	50	<1
Petalostylis cassioides	60	3
Ptilotus obovatus	50	<1

TAXON	HEIGHT (cm)	% COVER
Rhagodia eremaea	70	<1
Scaevola parvifolia subsp. *pilbarae*	50	1
Senna artemisioides subsp. *helmsii*	120	<1
Senna artemisioides subsp. *oligophylla*	50	2
Sida ? *arsiniata*	20	<1
Sida arenicola	70	<1
Solanum lasiophyllum	50	<1
Stylobasium spathulatum	150	1
Trianthema pilosa	10	1
Tribulopis angustifolia	twiner	2
Tribulus hirsutus	20	15
Triodia basedowii	50	3
Triodia epactia	70	5
Triodia schinzii	130	25-40
Corymbia opaca	opportunistic	
Evolvulus alsinoides var. *villosicalyx*	opportunistic	
Grevillea wickhamii subsp. *aprica*	opportunistic	
Paspalidium rarum	opportunistic	

QUADRAT 107

Approximate Location:
Datum (WGS84): 403526E; 7531528N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Open Shrubland of *Acacia ancistrocarpa*, *Acacia ligulata* and *Hakea lorea* over Hummock Grassland of *Triodia basedowii* and *Triodia schinzii*
Vegetation Condition: 2
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	5
Acacia dictyophleba	250	<1
Acacia ligulata	200	3
Aristida inaequiglumis	50	5
Bonamia rosea	30	3
Eragrostis eriopoda	70	3
Eriachne aristidea	30	<1
Hakea lorea subsp. *lorea*	400	1
Heliotropium tenuifolium	15	<1
Paspalidium rarum	10	<1
Petalostylis cassioides	70	3
Salsola tragus subsp. *tragus*	40	<1
Scaevola parvifolia subsp. *pilbarae*	20	<1
Senna artemisioides subsp. *oligophylla*	50	<1
Senna notabilis	40	<1
Solanum lasiophyllum	50	<1
Trianthema pilosa	30	3
Tribulus hirsutus	20	5
Triodia basedowii	100	40
Triodia schinzii	120	20

TAXON	HEIGHT (cm)	% COVER
Acacia inaequilatera	opportunistic	
Calytrix carinata	opportunistic	
Corymbia opaca	opportunistic	
Newcastelia roseoazurea	opportunistic	
Senna glutinosa subsp. *glutinosa*	opportunistic	
Tephrosia flammea	opportunistic	

QUADRAT 108

Approximate Location:
Datum (WGS84): 405523E; 7531802N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Shrubland of *Acacia dictyophleba* and *Acacia ligulata* over Open Grassland dominated by *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: 3
Notes: Area burnt regenerating



TAXON	HEIGHT (cm)	% COVER
Acacia dictyophleba	100	10
Acacia ligulata	120	1
Aristida inaequiglumis	50	10
Aristida latifolia	50	<1
Bonamia media	20	<1
Bonamia rosea	30	<1
Cleome viscosa	70	<1
Corymbia opaca	300	<1
Eriachne ciliata	30	<1
Euphorbia boophthona	20	<1
Evolvulus alsinoides var. *villosicalyx*	20	3
Fimbristylis dichotoma	70	<1
Gossypium australe	50	<1
Heliotropium diversifolium	30	5
Newcastelia roseoazurea	20	<1
Paraneurachne muelleri	40	<1
Paspalidium rarum	10	<1
Ptilotus polystachyus var. *polystachyus*	70	<1
Scaevola parvifolia subsp. *pilbarae*	30	<1
Senna artemisioides subsp. *helmsii*	30	<1

TAXON	HEIGHT (cm)	% COVER
Senna artemisioides subsp. *oligophylla*	50	<1
Trianthema pilosa	50	5
Tribulopis angustifolia	10	2
Triodia basedowii	40	10
Triodia schinzii	60	20
Boerhavia gardneri	opportunistic	
Euphorbia australis	opportunistic	
Pterocaulon serrulatum	opportunistic	
Ptilotus obovatus	opportunistic	
Sida echinocarpa	opportunistic	
Solanum lasiophyllum	opportunistic	

QUADRAT 109

Approximate Location: Creek crossing
Datum (WGS84): 405393E; 7531214N
Soil: Coarse sand
Rocks: Small stones
Topography: River
Field Vegetation Description: High Open Woodland of *Eucalyptus camaldulensis* over Annual Tussock Grassland of several taxa
Vegetation Condition: 4
Notes: Wide section along the river. Occasional small trees in river bed as well as on sides



TAXON	HEIGHT (cm)	% COVER
Acacia adsurgens	150	<1
Blumea tenella	30	<1
Bonamia media	10	<1
**Cenchrus ciliaris*	40	dense on bank
Cleome viscosa	90	<1
Corchorus laniflorus	70	<1
Eucalyptus camaldulensis	1200	5-20
Eulalia aurea	100	<1
Gossypium australe	50	<1
Portulaca pilosa	10	<1
Sorghum plumosum	120	<1
Tephrosia rosea var. *rosea*	50	<1
Themeda triandra	70	<1
Tribulopis angustifolia	10	<1
Trichodesma zeylanicum var. *grandiflorum*	90	<1
Alternanthera nodiflora	opportunistic	
Eragrostis tenellula	opportunistic	
Ipomoea muelleri	opportunistic	

QUADRAT 110

Approximate Location:
Datum (WGS84): 406112E; 7531260N
Soil: Red silty sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: Open Scrub of *Acacia ancistrocarpa* over Grassland of *Triodia basedowii*
Vegetation Condition: 3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	300	40
Acacia dictyophleba	70	1
Aristida inaequiglumis	50	3
Eriachne aristidea	30	2
Hakea lorea subsp. *lorea*	200	1
Heliotropium ovalifolium	10	<1
Ptilotus polystachyus var. *polystachyus*	30	<1
Sarcostemma viminale subsp. *australe*	50	<1
Senna artemisioides subsp. *helmsii*	100	2
Senna glutinosa subsp. x *luerssenii*	120	3
Senna sericea	50	<1
Triodia angusta	80	<1
Triodia basedowii	100	65

QUADRAT 111

Approximate Location: South bore area
Datum (WGS84): 406029E; 7528580N
Soil: Sand dune
Rocks: N/A
Topography: Crest of sand dune
Field Vegetation Description: Shrubland of *Acacia melliodora* and *Acacia eriopoda* over Low Shrubland dominated by *Dicrastylis doranii* over Grassland of *Triodia schinzii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia ancistrocarpa	120	1
Acacia eriopoda	200	5
Acacia melleodora	110	10
Aristida inaequiglumis	50	2
Bonamia rosea	30	<1
Calytrix carinata	80	<1
Dicrastylis doranii	40	10
Grevillea stenobotrya	200	<1
Gyrostemon tepperi	80	<1
Otion simplicifolium	50	<1
Paractaenum refractum	40	<1

TAXON	HEIGHT (cm)	% COVER
Paspalidium rarum	15	<1
Petalostylis cassioides	80	1
Scaevola parvifolia subsp. *pilbarae*	30	3
Stylobasium spathulatum	175	5
Trianthema pilosa	10	<1
Triodia schinzii	120	50
Triraphis mollis	60	<1
Wahlenbergia tumidifructa	20	<1

QUADRAT 112

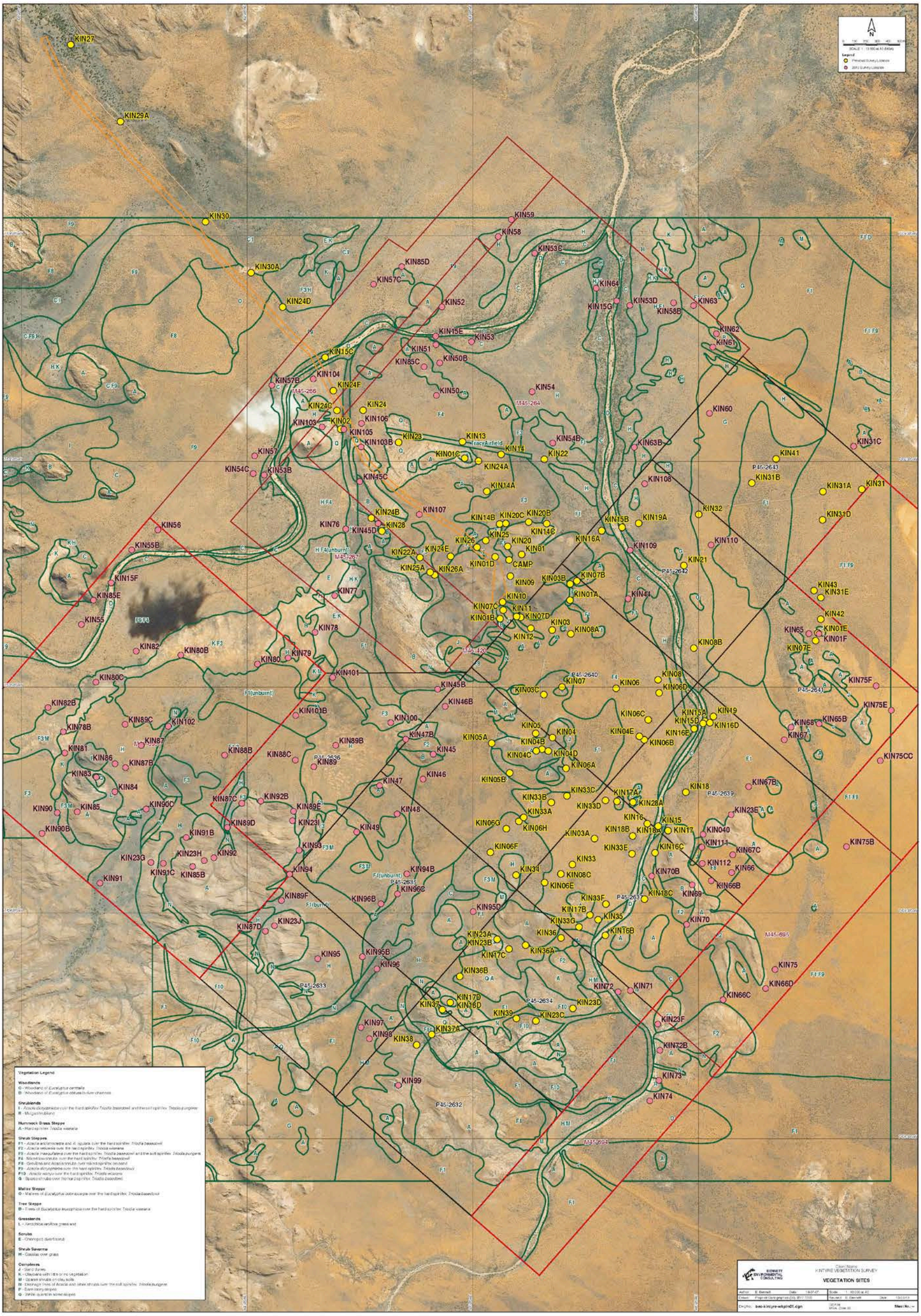
Approximate Location: South bore area
Datum (WGS84): 406035E; 7528437N
Soil: Red sand
Rocks: N/A
Topography: Flat
Field Vegetation Description: High Shrubland of *Acacia melleodora* over Low Open Heath of *Dicrastylis doranii* and *Scaevola parvifolia* subsp. *pilbarae* over Hummock Grassland of *Triodia schinzii*
Vegetation Condition: 2-3
Notes:



TAXON	HEIGHT (cm)	% COVER
Acacia melleodora	200	25
Aristida contorta	30	<1
Calytrix carinata	70	<1
Dicrastylis doranii	40	10(5)
Enneapogon polyphyllus	90	<1
Eriachne helmsii	65	1
Grevillea stenobotrya	100	1
Gyrostemon tepperi	60	<1
Petalostylis cassioides	80	<1
Scaevola parvifolia subsp. *pilbarae*	30	5(5)
Stylobasium spathulatum	175	3
Triodia basedowii	60	2
Triodia schinzii	120	40
Dampiera cinerea	opportunistic	
Ptilotus aphyllus	opportunistic	
Triodia basedowii	opportunistic	

APPENDIX C

Location of Quadrats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KIN85C
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KIN104
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KIN02
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KIN103B
KIN23
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Tracy Airfield
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Vegetation Legend
Woodlands
C - Woodland of Eucalyptus centrallis
D - Woodland of Eucalyptus odorata in river channels
Shrublands
I - Acacia ditrypetala over the hard spinifex Triodia basedowii and the soft spinifex Triodia pungens
R - Mulga shrubland
Hummock Grass Steppe
A - Hard spinifex Triodia wiseana
Shrub Steppes
F1 - Acacia aptaneura and A. aguata over the hard spinifex Triodia basedowii
F2 - Acacia retivenia over the hard spinifex Triodia wiseana
F3 - Acacia inaequilatera over the hard spinifex Triodia basedowii and the soft spinifex Triodia pungens
F4 - Mixed low shrubs over the hard spinifex Triodia basedowii
F8 - Grevillea and Acacia shrubs over mixed spinifex grassland
F9 - Acacia dictyophleba over the hard spinifex Triodia basedowii
F10 - Acacia wanyu over the hard spinifex Triodia wiseana
G - Sparse shrubs over the hard spinifex Triodia basedowii
Mallee Steppe
O - Mallees of Eucalyptus odontocarpa over the hard spinifex Triodia basedowii
Tree Steppe
B - Trees of Eucalyptus leucophloia over the hard spinifex Triodia wiseana
Grasslands
L - Xerochloa laniflora grassland
Scrubs
E - Chenopod dwarf scrub
Shrub Savanna
M - Cassias over grass
Complexes
J - Sand dunes
K - Claybans with little or no vegetation
M - Sparse shrubs on clay soils
N - Drainage lines of Acacia and other shrubs over the soft spinifex Triodia pungens
P - Bare stony slopes
Q - White quartzite scree slopes
BENNETT ENVIRONMENTAL CONSULTING
Client Name
KINTYRE VEGETATION SURVEY
VEGETATION SITES
bec-kintyre-wkpln01.dgn

REASSESSMENT OF SELECTED AREAS

KINTYRE LEASE



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January 2013

STATEMENT OF LIMITATIONS

Scope of Services

This report ("the report") has been prepared in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Eleanor Bennett ("the Author"). In some circumstances a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services.

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In preparing the report, the Author has relied upon data, surveys, analyses, designs, plans and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise stated in the report, the Author has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. The Author will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to the Author.

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SUMMARY

Dr J. Bull and D. Roberts from Onshore Environmental Consulting Pty Ltd undertook a botanical survey from 12th to 19th October 2012. The field work followed average summer and autumn rainfall but by October most annual and ephemeral species had completed flowering and fruiting but the shrub species were in late flower or early fruit. Access in some areas was also a problem due to the lack of tracks and presence of rocky hills.

Five tasks were to be undertaken. These were:

1. **Search an extended area for the presence of Threatened and Priority Flora**.
   The search for *Ptilotus mollis* was undertaken on foot to ensure that all potential habitats were searched. *Ptilotus mollis* was recorded from 10 locations and the areas where it was located, where it was not located and potential areas where it could be located were mapped.

   Eremophila tietkensii has recently had the smaller leaved and smaller height plants separated into a distinct taxon *Eremophila* sp. Rudall River. This is a Priority 2 flora, which has been recorded from the scree slopes at several locations on the Kintyre lease.

2. **Resurvey selected quadrats**.
   The original quadrats were set up and monitored by Dr Eleanor Bennett of Bennett Environmental Consulting Pty Ltd in 2007 and 2010. Several were remonitored in 2011 but a selection of some not remonitored were monitored in 2012. A fire in late 2009 and very dry conditions in 2009-2010 meant that the quadrats established in 2010 recorded very few taxa. Good rainfall in 2011 and 2012 resulted in additional taxa being present.

3. **Survey the 6km section of the proposed access road not previously surveyed**
   The access road proposed by Kintyre from the current Telfer Road to Kintyre was mapped for vegetation units and vegetation condition by Dr Eleanor Bennet in 2011, except for a 6km stretch. This was surveyed in 2012 with an additional vegetation unit being recorded on the stony rises, a habitat nor recorded along the remainder of the proposed road.

4. **Undertake a weed survey along Rudall River Road**
   **Cenchrus ciliaris*, Buffel Grass is a common weed through the Pilbara Region. This was mapped along the Rudall River Road, where it occurred in drainage and creek lines.

5. **Search for *Comesperma pallidum* in the area where previously recorded**.
   Although an extensive search was undertaken no plants of this taxon were located.

Maps were prepared for the locations of *Ptilotus mollis* and *Eremophila* sp, Rudall River; the 6km length of the proposed Telfer – Kintyre Road and the locations of **Cenchrus ciliaris* along the Rudall River Road.

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1. INTRODUCTION

1.1 Background

All the background information about the Kintyre site is provided in Bennett Environmental Consulting Pty Ltd (2007, 2010, 2011a and 2011b). Bennett Environmental Consulting Pty Ltd and Hart, Simpson and Associates Pty Ltd (1994, 1997) have undertaken several surveys of the Kintyre Lease. Permanent quadrats were established in 2007 and 2010. 2010 recorded low rainfall and fires had been through most of the area in 2009. In 2007 the survey was undertaken after good rains and again in 2011 there had been excellent rainfall. In 2011 several of the quadrats established in 2007 and 2010 were remonitored to determine the recovery of the area after fire.

In 2011 the vegetation and vegetation condition along the proposed Kintyre access road from the Telfer road was assessed. A section approximately 6km in length was only assessed from a helicopter whereas the remainder had been assessed on the ground. Two priority flora; *Thysanotus* sp. Desert East of Newman (RP Hart 964) - priority 2 was recorded from 4 sites and *Indigofera ammobia* – priority 3 was recorded from 1 site. In 2007, the priority 3 flora, *Conospermum pallidum* was recorded from one quadrat. A second search was undertaken in 2011 but no plants were recorded.

1.2 Scope of Work

Five tasks were to be undertaken in 2012. These were:

1. Search an extended area for the presence of Threatened and Priority Flora;
2. Resurvey selected quadrats;
3. Survey the 6km section of the proposed access road not previously surveyed;
4. Undertake a weed survey along Rudall River Road; and
5. Search for *Comesperma pallidum* in the area where previously recorded.

2. METHODS

Several different methods were used:

1. The search for the presence of threatened and priority flora was accessed by driving a four wheel drive vehicle to an area. From there a quad bike accessed the base of the hills by the extensive sand plains, but the hills were accessed on foot as the area was rocky and not readily accessed by vehicle.
2. The resurvey of the selected quadrats and the search for *Conospermum pallidum* were undertaken using four wheel drive vehicle, quad bikes and on foot. They were located using a hand held GPS to locate the permanent droppers.
3. Quad bikes were used when surveying in the 6km section of the proposed access road after parking the four wheel drive vehicle on the current Telfer access road. Five quadrats were monitored as well as several relevees along the length.
4. The weed survey along Rudall River Road was undertaken using a four wheel drive vehicle.

3. RESULTS

The survey was undertaken by Dr J. Bull and D. Roberts from Onshore Environmental Consulting Pty Ltd between 12th- 19th October 2012. Plants unknown in the field were collected and pressed and later identified by comparison with specimens held at the Western Australian Herbarium.

3.1. State Categories for Threatened and Priority Flora

As searches were undertaken to locate threatened and priority flora the definitions used are provided in Table 1. Codes for Threatened and the Priority Flora are the ratings under the Wildlife Conservation Act (1950) as extracted from Department of Environment and Conservation (2013a).

Table 1. State Level - Code and description of Rare and Priority Flora

Code	Code Threatened and Priority Flora Categories
T	T (Threatened Flora) -Extant Taxa. Taxa, which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection.
X	DRF (Declared Rare Flora) -Presumed Extinct Taxa. Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently.
1	Priority One -Poorly Known Taxa. Taxa, which are known from one or a few (generally <5) populations, which are under threat.
2	Priority Two -Poorly Known Taxa. Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat.
3	Priority Three -Poorly Known Taxa. Taxa, which are known from several populations, at least some of which are not believed to be under immediate threat.
4	Priority Four -Rare Taxa. Taxa which are considered to have been adequately surveyed and which whilst being rare, are not currently threatened by any identifiable factors.

3.2 Search for Threatened and Priority Flora

Two priority floras were recorded during the survey. These were *Ptilotus mollis* a Priority 4 flora and *Eremophila* sp. Rudall River a Priority 2 flora

A. ***Ptilotus mollis***

The information recorded from this search in provided in Appendix A and mapped in Appendix E. *Ptilotus mollis* was recorded from 10 sites. This taxon occurs on steep hill sides of scree, mixed sand stone and quartz with small outcrops at the cliff face. All sites were recorded in 2012.

Table 2. Recorded locations of *Ptilotus mollis*

SITE	EASTING	NORTHING	NUMBER OF PLANTS/10m^2
KS05	403878E	7601278N	10. Population extends further
KS06	401421E	7526351N	6
KS07	401387E	7526365N	8
KS08	401224E	7526420N	4
KS09	401150E	7526412N	1
KS59	400776E	7521579N	5
KS60	400838E	7521577N	8
KS61	400898E	7521561N	11
KS62	400956E	7521539N	6
KS72	401238E	7521527N	12 Population continues to KS59 and KS62



Habitat of *Ptilotus mollis*



Shrub of *Ptilotus mollis*



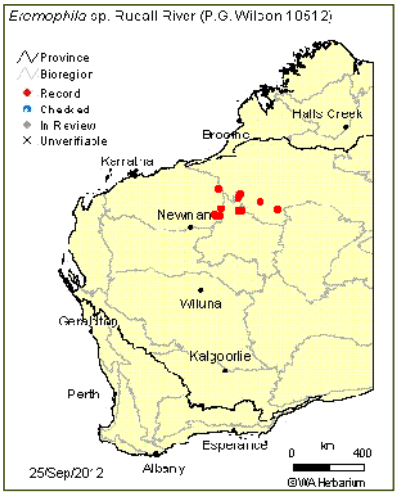
***Ptilotus mollis* inflorescence**

Additional similar habitat areas were searched for *Ptilotus mollis* but no plants were located. Potential habitat locations that were not searched due to time constraints. These should be searched prior to any development occurring.

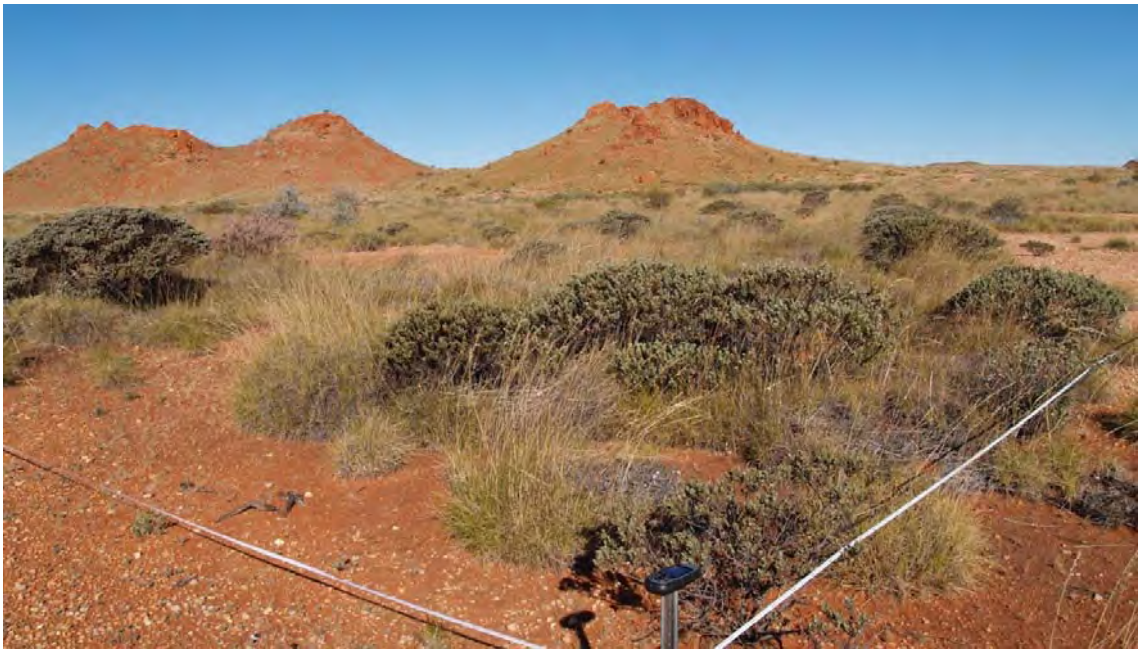
B. *Eremophila* sp. Rudall River

Originally this taxon was identified as *Eremophila pachomai* by Hart (1994 and 1997) the correct name at that time. Bennett (2007, 2010, and 2011) found that name was no longer current but it had been combined with *Eremophila tietkensii* (Chinnock, 2007). Chinnock recorded Eremophila *tietkensii* as being widespread in the Ashburton, Canning, Carnegie and Giles Botanical Districts but does state that the leaves are typically long and lanceolata in form. He noted that smaller leaf forms occur in the north-western part of its range and may represent a distinct subspecies but he did not separate them. In Flora base (Western Australian Herbarium, 2013a) *Eremophila tietkensii* is described as "a spreading shrub, to 2m high with white/blue/purple flowers". The plants growing on the Kintyre lease are the smaller leaved form which is currently listed by the Western Australian Herbarium as *Eremophila* sp. Rudall River, a Priority 2 Flora. Their identity has been confirmed by Andrew Brown at the Western Australian Herbarium who is working on the group.

At Kintyre *Eremophila* sp. Rudall River is a low shrub typically up to 1m tall, occasionally up to 1.5m tall that is located on the lower scree slopes. These scree slopes are a common feature across the whole of the Kintyre lease. It is typically the dominant shrub taxon at these sites. *Eremophila* sp. Rudall River had white to pale mauve flowers with pink to purple calyx lobes when in flower.



Florabase (Western Australian Herbarium (2013a) provides the distribution of *Eremophila* sp. Rudall River as shown in the attached map. This map indicates the species is not restricted to the immediate Rudall River region.



Habitat of *Eremophila* sp. Rudall River at quadrat KIN23



Shrub of *Eremophila* sp. Rudall River





Flowering and fruiting branch of *Eremophila* sp. Rudall River

Table 3. Recorded locations of *Eremophila* sp. Rudall River

SITE/QUADRAT	YEAR OF SURVEY	GPS
KIN23	2007	403342E; 7532167N
KIN23A	2007	404215E; 7527705N
KIN23B	2007	403839E; 7527765N
KIN23C	2010	404560E; 7527043N
KIN23D	2007	404886N; 7527152N
KIN69	2010	405944E; 7528248N
KIN99	2010	403340E; 7526475N
KIN100	2010	403274E; 7529686N
KIN01E	2010	407058E; 7530480N
KIN01F	2010	407066E; 7530473N
KIN17D	2010	403801E; 7527205N
KS17	2012	401827E; 7525401N
KS18	2012	402251E; 7525398N
KS24	2012	402092E; 7524704N
KS29	2012	400898E; 7524222N
KS57	2012	400340E; 7521803N
KS95	2012	402472E; 7523763N
KS98	2012	401251E; 7523158N
KS105	2012	401713E; 7524533N
KH01	2012	403853E; 7601752N

Basically all the lower scree slopes in particular those with quartzitic rocks included this species. It is quite widespread across the Kintyre lease. The Western Australian Herbarium (2013a) has recorded of this taxon from 12 locations including the Rudall River National Park.

3.3 Resurvey of Quadrats

Eight quadrats were resurveyed. These were Quadrats KIN38, KIN39 and KIN45 established in 2008 and Quadrats KIN70, KIN71, KIN72, KIN73 and KIN74 established in 2010. Quadrats KIN70, KIN71, KIN72, KIN73 and KIN74 were not remonitored in 2011 due to access problems, however access in 2012 appeared to be much easier due to tracks having been established in some areas.

A fire went through the area in late 2009. Quadrats KIN38, KIN39 and KIN45 were originally monitored prior to the 2010 fire. These sites had changed as a result of the 2009 fire with many more species being recorded and some of the original species no longer present.

Quadrats KIN70, KIN71, KIN72, KIN73 and KIN74 showed greater diversity in 2012 after recovering from the 2010 fire.

The quadrat data with a photographic comparison is provided in Appendix B.

3.4 Survey of 6km section of proposed Telfer to Kintyre Road

Ground truthing of this section of the proposed Telfer to Kintyre access road is completed as a result of this survey. One priority flora *Eremophila* sp. Rudall River was recorded from this section of the proposed Kintyre access road. The vegetation units are mapped in Appendix E and species recorded in Appendix C.

One additional vegetation unit not recorded in the 2011 survey was located on the rocky rises. This is: Low Heath of *Acacia hilliana* over *Triodia* sp. Shovelanna Hill on low stony hills. It was recorded from sites KS88, KS90, KS91 and KS92.

3.5 Weed Survey of Rudall River Road

The locations of **Cenchrus ciliaris*, commonly called Buffel Grass are listed in Appendix D and mapped in Appendix E. The dense stands of this weed were recorded along drainage lines and creeks.

3.6 Search for *Comesperma pallidum*

An extensive search was undertaken of the area where this species had previously been recorded but no plants were recorded.

4. SUMMARY

The field work was undertaken at a time when the area was dry and most annual and ephemeral species had completed flowering and fruiting. Access in some areas was also a problem due to the lack of tracks and presence of rocky hills. The search for *Ptilotus mollis* was undertaken on foot to ensure that all potential habitats were searched. *Ptilotus mollis* was recorded from 10 locations and the areas where it was located, where it was not located and potential areas where it could be located were mapped. No other threatened or priority species were located, including *Conospermum pallidum* which was recorded in the 2007 survey.

With additional research being undertaken on the genus *Eremophila*, *Eremophila tietkensii* recorded during the 2007 and 2010 surveys undertaken by Bennett Environmental Consulting Pty Ltd has now been renamed *Eremophila* sp. Rudall River. It is listed as a priority 2 flora as it has a restricted range of distribution.

The nominated quadrats were resurveyed. There were changes recorded as a result of the late 2009 fire and good rainfall recorded in 2011 and 2012 when compared with the original assessment undertaken in 2007 or 2010.

A survey of the 6km length of the proposed Telfer to Kintyre Road which was not ground surveyed in 2011 was undertaken. This resulted in one new vegetation unit being recorded from the rocky hillslopes, not recorded previously along the length of this access road.

The locations of **Cenchrus ciliaris* along the Rudall River road were recorded. This is a common weed throughout the Pilbara and should be controlled to ensure it does not invade currently weed free areas. All vehicles entering the Kintyre site should be cleaned of soil and plant material to ensure it is not accidentally carried into the site.

If development is to be undertaken of the hills where *Ptilotus mollis* was located then additional searches of the potential mapped areas (see Appendix E) should be undertaken to record the total distribution.

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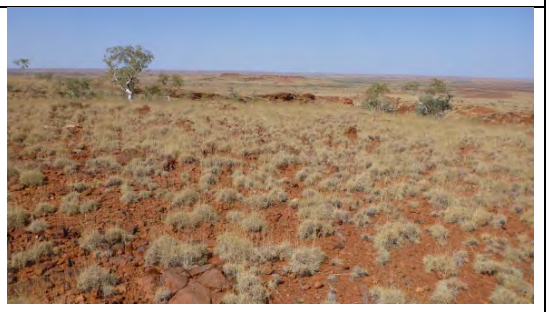
APPENDIX A

Search for Threatened and Priority Flora

ABBREVIATION	EXPLANATION
sp.	Species where the genus is known but no flowers or fruits to positively identify to species
subsp.	Subspecies
var.	variety
*	Weed
affin.	Close to that species
ca.	About
?	Uncertain if name provided is correct

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS01	401875E; 7525702N	*Eremophila latrobei* subsp. *latrobei* 1.2m tall. Adjacent to minor drainage line through schist/quartz hills. Scattered *Corymbia aspera* with *Acacia eriopoda* High Open Shrubland over *Triodia pungens* Hummock Grassland.	
KS02	401754E; 7525799N	Quadrats/ sandstone stony slope amongst hills (in minor drainage line). *Acacia retivenea* subsp. *clandestina* 2-3m tall. 6 / 10m^2 about 200 plants. *Acacia eriopoda* with *Triodia* sp. Shovelanna Hill and *Triodia pungens*	
KS03	401574E; 7526007N	*Eremophila latrobei* subsp. *latrobei* scattered through hills. *Acacia retivenea* subsp. *clandestina.* Hillslope, sandstone with quartz	
KS04	401553E; 7526138N	Hill crest. *Eucalyptus leucophloia* subsp.*leucophloia Acacia retivenea* subsp. *clandestina* Open Shrubland*, Triodia wiseana, Triodia* sp. Shovelanna Hill, *Triodia basedowii.*	
KS05	401553E; 7526138N	***Ptilotus mollis*** P3 – 0.2-0.35cm Steep hill side with scree of mixed sand stone and quartz; west facing with small outcrops at cliff. *Eucalyptus leucophloia* subsp.*leucophloia* over *Triodia pungens* Open Hummock Grassland	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS06	401421E; 7526351N	***Ptilotus mollis***	
KS07	401387E; 7526365N	***Ptilotus mollis*** *Triodia angustata* and *Triodia pungens. Ptilotus mollis* <2% cover. Scree slope powdery white sandstone.	
KS08	401224E; 7526420N	***Ptilotus mollis.*** Hill crest – slope Quartz and sandstone. *Acacia retivenea* subsp. *clandestina 1*-2m <2% cover over *Triodia angustata.*	
KS09	401150E; 7526412N	***Ptilotus mollis.*** Hill crest.	
KS10	400993E; 7526468N	*Acacia maitlandii* 0.5-1.5m small population of about 40 plants. Hill slopes quartz sandstone. *Eucalyptus leucophloia* subsp.*leucophloia*, scattered *Acacia maitlandii* over *Triodia* sp. Shovelanna Hill, *Triodia pungens, Triodia wiseana* Hummock Grassland	
KS11	400620E; 7526255N	Minor drainage line. *Eucalyptus leucophloia* subsp.*leucophloia* and *Corymbia aspera* over *Acacia eriopoda* Open Scrub over *Triodia pungens* Hummock Grassland. *Acacia pyrifolia, Acacia acradenia* and *Acacia ancistrocarpa* also present	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS12	400680E; 7525997N	Undulating hill crests with quartz sandstone rocks. *Eucalyptus leucophloia* subsp.*leucophloia* Low Woodland over *Triodia pungens* and *Triodia* sp. Shovelanna Hill Hummock Grassland.	
KS13	400877E; 7525836N	Narrow gully, minor drainage line *Eucalyptus leucophloia* subsp.*leucophloia, Corymbia aspera* low woodland over *Acacia retivenea* subsap. *clandestina* High Shrubland over *Triodia pungens* Open Hummock Grassland with *Eriachne lanata* and *Eriachne mucronata* <2% cover.	
KS14	400944E; 7525835N	Narrow ravine.	
KS15	401455E; 7525583N	Hill crest, sandstone. *Corymbia aspera* and *Eucalyptus leucophloia* subsp.*leucophloia* over *Acacia retivenea* subsp. *clandestina* Shrubland over *Triodia pungens* and *Triodia* sp. Shovelanna Hill Hummock Grassland.	
KS16	401688E; 7525465N	Hill crest, plateau top. *Eucalyptus leucophloia* subsp.*leucophloia* over *Acacia retivenea* subsp. *clandestina* shrubland over *Triodia pungens* and *Triodia* sp. Shovelanna Hill High Grassland.	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS17	401827E; 7525401N	***Eremophila* sp. Rudall River** o.5m tall, 1 plant on hill crest.	
KS18	402251E; 7525398N	*Eucalyptus leucophloia* subsp.*leucophloia* Low Woodland over *Acacia synchronicia* and *Acacia retivenea* subsp. *clandestina* over ***Eremophila* sp. Rudall River** Low Open Shrubland over *Triodia pungens* and *Triodia* sp. Shovelanna Hill Open Hummock Grassland. Stony undulating slope.	
KS19	402205E; 7525129N	Minor drainage line through quartz sandy rocky plain. *Eucalyptus leucophloia* subsp.*leucophloia* Low Woodland of *Acacia eriopoda* High Shrubland over *Triodia pungens, Triodia* sp. Shovelanna Hill and *Triodia schinzii* Hummock Grassland	
KS20	402203E; 7525103N	*Corymbia opaca*. Sandy plain.	
KS21	402186E; 7525048N	Lower slope. *Eucalyptus leucophloia* subsp.*leucophloia* Low Woodland over *Acacia robeorum* and *Acacia acradenia* High Open Shrubland over *Triodia wiseana*, and *Triodia* sp. Shovelanna Hill Hummock Grassland.	
KS22	402177E; 7524961N	Rocky ledges, sandstone. *Triodia pungens* and *Triodia wiseana* Hummock Grassland.	
KS23	402148E; 7524850N	Hill Crest. *Eucalyptus leucophloia* subsp.*leucophloia* over *Tribulus suberea* and *Acacia robeorum* <2% over *Triodia* sp. Shovelanna Hill Hummock Grassland.	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS24	402092E; 7524704N	Low quadrat rise ***Eremophila* sp. Rudall River** *Acacia synchronicia* Low Shrubland over *Triodia wiseana* Hummock Grassland. Opportunistics included *Acacia melleodora, Trichodesma zeylanicum, Hakea lorea* subsp.*lorea, Isotropis atropurpurea.*	
KS25	402158E; 7524630N	Red sandplain. *Acacia ancistrocarpa, Acacia ligulata* and *Hakea lorea* subsp.*lorea* High Shrubland over *Triodia schinzii* Hummock Grassland.	
KS26	402399E; 7524569N	Orange sandplain. *Hakea lorea* subsp.*lorea. Acacia inaequilatera, Acacia ligulata* and *Acacia melleodora* Shrubland over *Aristida holathera* and *Eriachne aristida* Grassland. Other species included *Dicrastylis cordifolia, Tephrosia arenicola, Stylobasium spathulatum, Senna symonii, Petalostylis cassioides* and *Solanum centrale.*	
KS27	402573E; 7525007N	Quartz sandy drainage line. *Acacia eriopoda* High Shrubland over *Eriachne obtusa* and *Aristida holathera* Open Tall Grassland over *Triodia pungens* Open Hummock Grassland.	
KS28	402560E; 7525076N	Quartz sandy plain. *Eucalyptus odontocarpa* Low Open Mallee over *Acacia eriopoda* and *Acacia ancistrocarpa* High Shrubland over *Triodia basedowii* and *Triodia pungens* Hummock Grassland.	
KS29	400898E; 7524222N	Quartz with stony rises and plains. ***Eremophila* sp. Rudall River**.	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS30	400261E; 7524257N	Quartz sand stone hills. *Eucalyptus leucophloia* subsp.*leucophloia* over *Acacia ancistrocarpa, Acacia retivenea* subsp. *clandestina* and *Acacia synchronicia* Open Shrubland over *Triodia pungens, Triodia wiseana* and *Triodia* sp. Shovelanna Hill Hummock Grassland.	
KS31	399964E; 7524253N	Red sandplain with minor drainage line and occasional stony rises. *Corymbia opaca* scattered trees over *Hakea lorea* subsp.*lorea* scattered Low Trees over *Acacia eriopoda, Acacia melleodora* High Open Shrubland over *Triodia basedowii, Triodia schinzii* and *Triodia pungens*	
KS32	399735E; 7524198N	*Acacia eriocarpa, Acacia adsurgens* and *Acacia elachantha* High Shrubland over *Isotropis atropurpurea, Bonamia rosea, Tephrosia rosea* var. *clementii* Low Open Shrubland over *Triodia pungens* and *Triodia schinzii* Open Hummock Grassland over *Aristida holathera* Open Tall Grassland.	
KS33	399406E; 7524126N	Red loamy sand plains *Acacia melleodora* Medium Open Shrubland over *Triodia schinzii* and *Triodia basedowii* Closed Hummock Grassland.	
KS34	398893E; 7523973N	Sandy clay loam flats. Scattered *Hakea lorea* subsp.*lorea* over *Acacia inaequilatera, Acacia adsurgens* and *Acacia elachantha* over *Eremophila gilesii* subsp. *gilesii, Indigofera georgei* and *Pterocaulon sphacelatum* Low Shrubs over *Eragrostis* species and *Aristida contorta*	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS35	399164E; 7523519N	Sandplain amongst hills. *Corymbia opaca* scattered trees over *Acacia eriopoda, Acacia adsurgens, Acacia melleodora* and *Acacia retivenea* subsp. *clandestina* High Shrubland over *Triodia schinzii* Closed High Grassland.	
KS36	399288E ; 7523440N	Sandstone hill slopes. Shrubs of *Eremophila latrobei* subsp. *latrobei* (white hairy form).	
KS37	399312E; 7523212N	Sandstone, hill crest. *Acacia retivenea* subsp. *clandestina* Open Shrubland over *Triodia* sp. Shovelanna Hill and *Triodia wiseana* Hummock Grassland.	
KS38	399491E; 7523085N	Broad stony valley amongst hills with stony rocky slopes. *Acacia retivenea* subsp. *clandestina* High Open Shrubland over *Triodia pungens, Triodia* sp. Shovelanna Hill and *Triodia wiseana* Hummock Grassland.	
KS39	400131E; 7523389N	Cave entrance on scree. *Acacia retivenea* subsp. *clandestina* High Open Shrubland and *Eremophila latrobei* subsp. *latrobei* over *Triodia pungens* and *Eragrostis olida* Open Hummock Grassland.	
KS40	400201E; 7523413N	Flat hill crest. Sandstone. *Eucalyptus leucophloia* subsp.*leucophloia* over *Acacia retivenea* subsp. *clandestina* Open Shrubland over *Triodia wiseana* and *Triodia tabulatum.*	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS41	401000E; 7524134N	Sandy loam plains. *Hakea chordophylla, Acacia sclerosperma* over *Triodia pungens, Eriachne obtusa* and **Cenchrus ciliaris* ca. 15 plants.	
KS42	401534E; 7523779N	Stony slopes of quartz sandstone hill. *Maireana carnosa* 0.2m	
KS43	401534E; 7523779N	Sandstone scree slope 45° slatey. *Lepidium amelum* over *Triodia pungens* and *Triodia wiseana* Open Hummock Grassland and *Eucalyptus leucophloia* subsp.*leucophloia.*	
KS44	401457E; 7523689N	Hill crest. *Acacia synchronicia*, *Acacia acradenia* Open Shrubland with scattered *Eucalyptus leucophloia* subsp.*leucophloia* over *Triodia wiseana* and *Triodia basedowii* Open Hummock Grassland.	
KS45	401431E; 7523687N	*Newcastelia cephalantha*. Vegetation as above.	
KS46	401143E; 7523784N	Eroded quartz, sand stone hills. *Eucalyptus leucophloia* subsp.*leucophloia* scattered over *Triodia angusta, Triodia* sp. Shovelanna Hill, *Triodia wiseana* and *Triodia pungens* with Scattered *Acacia acradenia, Acacia synchronicia* scattered shrubs and scattered Chenopods, including *Atriplex quinii*.	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS47	402906E; 7525772N	Scattered Shrubs of *Hakea lorea* subsp.*lorea, Grevillea wickhamii Acacia acradenia* over *Dicrastylis cordifolia, Dampiera candicans, Goodenia armitiana, Bonamia rosea* Low Shrubland over *Aristida holathera* Open Grassland over *Triodia basedowii* Very Open Hummock Grassland.	
KS48	405996E ; 7528442N	Red sand dune abutting hills. *Triodia schinzii* Hummock Grassland. Other species included *Gastrolobium simplicifolium* (previously *Otion simplicifolium*), *Acacia melleodora, Dampiera atriplicina, Grevillea stenobotrya and Dicrastylis doranii.*	
KS49	411762E; 7522917N	Sandy. *Aluta maisonneuvei.*	
KS50	408950E; 7524054N	*Gyrostemon tepperi.*	
KS51	401628E; 7522793N	Sandstone hills. Scattered *Eucalyptus leucophloia* subsp.*leucophloia* over *Acacia retivenia* subsp*. clandestina* and *Acacia synchronicia* over *Triodia pungens* Hummock Grassland.	
KS52	401551E; 7522379N	Hill crest/upper slope. Iron stone sandstone capping over crests. *Eucalyptus leucophloia* subsp.*leucophloia* scattered over *Acacia retivenea* subsp. *clandestina* Medium Open Shrubland over *Eremophila latrobei* subsp. *latrobei* and *Newcastelia cephalantha* over *Triodia* sp. Shovelanna Hill and *Triodia pungens.*	

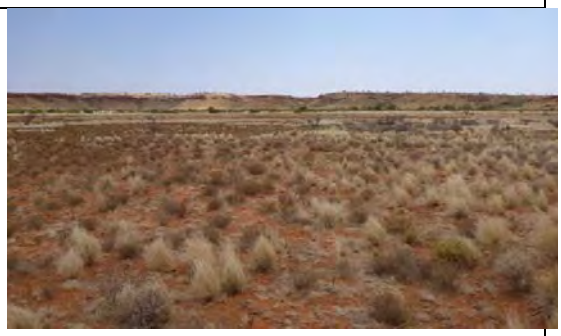
SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS53	401232E; 7522073N	Eucalyptus leucophloia subsp. leucophloia <2% over *Acacia retivenea* subsp. *clandestina* and *Acacia synchronicia* High Open Shrubland over *Triodia* sp. Shovelanna Hill, *Triodia pungens* and *Triodia wiseana* Hummock Grassland.	
KS54	400915E; 7522124N	Narrow gully coming through sandstone hills. *Corymbia aspera* Low Woodland over *Acacia eriopoda* and *Acacia retivenea* subsp. *clandestina* High Open Shrubland over *Eremophila latrobei* subsp. *latrobei* Open Shrubland of *Sida ? clementii.*	
KS55	400767E; 7522149N	Stony quartz sand stone steep slopes. *Eucalyptus leucophloia* subsp.*leucophloia* Low Woodland over *Acacia retivenea* subsp. *clandestina* High Open Shrubland over *Triodia* sp. Shovelanna Hill and *Triodia pungen*s Open Hummock Grassland. Recently burnt through area.	
KS56	400438E; 7521872N	Minor drainage line. *Acacia eriopoda* High Shrubland over Open Hummock Grassland of *Triodia pungens.*	
KS57	400340E; 7521803N	Undulating quartz sandstone mounds and rises amongst minor drainage lines. *Acacia synchronicia* and *Acacia ancistrocarpa* 1-2m tall over ***Eremophila* sp. Rudall River** over *Triodia pungens* Hummock Grassland.	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS58	400553E; 7521542N	Quartz slopes of main range. *Acacia synchronicia* scattered shrubs over *Frankenia setosa* and *Triodia basedowii* Low Open Shrubland over *Triodia angusta*. Other species *Sclerolaena* species, *Maireana carnosa.*	
KS59	400776E; 7521579N	Steep scree slope under narrow sandstone cliff. ***Ptilotus mollis*** Low Open Shrubland over *Triodia wiseana* Open Hummock Grassland. Habitat burnt by recent fire.	
KS60	400838E; 7521577N	***Ptilotus mollis***. Cliff and steep scree.	
KS61	400898E; 7521561N	Thin tall ridgeline south facing cliffs have ***Ptilotus mollis*** on them. **NOTE:** *Ptilotus mollis* likely to be on some steep screes in area.	
KS62	400956E; 7521539N	***Ptilotus mollis*** on steep scree below cliff. Scattered *Eucalyptus leucophloia* subsp.*leucophloia* over *Triodia pungens* and *Triodia wiseana* Open High Grassland.	
KS63	400807E; 7521444N	*Frankenia setosa.*	
KS64	401314E; 7520890N	Scattered *Eucalyptus leucophloia* subsp.*leucophloia* over *Atriplex quinii* Low Shrubs over *Triodia pungens* and Triodia *wiseana* Hummock Grassland	
KS65	401308E; 7520754N	*Ptilotus obovatus* over *Triodia wiseana* and *Triodia pungens*	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS66	401482E; 7520546N	Undulating quartz rise. *Eucalyptus leucophloia* subsp.*leucophloia* Low Trees over *Acacia synchronicia* High Open Shrubland over *Triodia pungens* and *Triodia wiseana* over Open Hummock Grassland and scattered Chenopods.	
KS67	401627E; 7520717N	Hill crest, plateau top. *Eucalyptus leucophloia* subsp.*leucophloia* scattered over *Acacia retivenea* subsp. *clandestina, Acacia synchronicia, Senna sericea* Open Shrubland over *Triodia wiseana* and *Triodia* sp. Shovelanna Hill Hummock Grassland.	
KS68	401634E; 7520957N	Burnt hill slope crest. Cliff lines of where *Ptilotus mollis* occurs.	
KS69	401727E; 7520989N	*Triodia bitextura* on breakaway ridge at hill top.	
KS70	401677E; 7521140N	Stony sand stone Steep scree.	
KS71	401401E; 7521413N	Steep ridgeline, cliff and sand stone hill crest. Part burnt. *Eucalyptus leucophloia* subsp.*leucophloia* over *Acacia retivenea* subsp. *clandestina, Eremophila latrobei* subsp. *latrobei* over *Triodia pungens.*	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS72	401238E; 7521527N	Start of population of ***Ptilotus mollis*** along cliff scree slopes of main ridge. Population continues to KS59 and KS62, although not way pointed, sure population is continuous along ridge and possibly further west of KS59.	
KS73	401819E; 7521613N	Hill crest, broad. .Scattered *Eucalyptus leucophloia* subsp.*leucophloia* over *Eucalyptus odontocarpa* Mallee over *Acacia retivenea* subsp. *clandestina* High Open Shrubland *Triodia* sp. Shovelanna Hill Hummock Grassland.	
KS74	401931E; 7522003N	High crest, outcropping with *Eremophila latrobei* subsp. *latrobei* and *Amphipogon sericeus.*	
KS75	401931E; 7522003N	Quartzite slope. *Triodia angusta, Triodia wiseana, Triodia pungens* Open Hummock Grassland. *Frankenia setosa.*	
KS76	403727E; 7524568N	Sand plain burnt. *Hakea lorea* subsp.*lorea* scattered over *Acacia ancistrocarpa* Open Shrubland with *Senna artemisioides* subsp. *oligophylla, Streptoglossa macrocephala* Open Shrubland.	
KS94	403727E; 7524568N	Loamy sand plain – floodplain. *Acacia eriopoda, Hakea lorea* subsp.*lorea, Acacia synchronicia, Acacia ligulata* High Open Shrubland over *Senna glutinosa* subsp. *pruinosa* and *Senna artemisioides* subsp. *oligophylla* Open Shrubland over *Triodia basedowii* and *Triodia pungens* Hummock Grassland over *Aristida contorta, Paraneurachne muelleri, Acacia holathera* Open Grassland.	
KS95	402472E; 7523763N	Eroded gentle slopes into drainage line. *Acacia eriopoda, Acacia ancistrocarpa* and *Acacia synchronicia* High Open Shrubland over ***Eremophila* sp. Rudall River** Low Open Shrubland over *Triodia pungens.*	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS96	402452E; 7523735N	Slope into drainage line. *Eucalyptus camaldulensis* Low Woodland over *Acacia eriopoda* High Shrubland over **Cenchrus ciliaris, Chrysopogon fallax, Eriachne aristidea* Tussock Grassland. 15m wide sandy channel bed.	
KS97	401198E; 7523082N	Slope from drainage line to *Acacia wanyu* High Shrubland over *Triodia pungens* Hummock Grassland.	
KS98	401251E; 7523158N	Sandy loam plain. *Hakea lorea* subsp.*lorea* scattered Trees over *Acacia wanyu* High Shrubland over ***Eremophila* sp. Rudall River** Open Shrubland over *Triodia pungens* and *Triodia basedowii* Hummock Grassland.	
KS99	401198E; 7523082N	*Acacia wanyu*	
KS100	401337E; 7523450N	Minor drainage line. *Corymbia opaca* Scattered Low Trees over *Acacia eriopoda* High Shrubland over *Sorghum plumosum, Themeda triandra, Eriachne aristidea, Chrysopogon fallax, *Cenchrus ciliaris* Tussock Grassland. **Cenchrus ciliaris* 7% cover.	
KS101	401407E; 7523675N	Hill crest. *Eucalyptus leucophloia* subsp.*leucophloia* over *Acacia acradenia, Acacia synchronicia, Acacia pyrifolia* Open Shrubland over *Triodia wiseana, Triodia pungens* and *Triodia* sp. Shovelanna Hill.	
KS102	401422E; 7523851N	From lower slopes to sand plains. *Acacia melleodora, Acacia ligulata, Acacia synchronicia* and *Acacia ancistrocarpa* High Shrubland over *Eriachne obtusa, Aristida holathera* Tussock Grassland over *Triodia schinzii* and *Triodia pungens* Open Hummock Grassland.	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS103	401484E; 7524067N	Open sandy loam plain with a clay loam crust. *Aristida contorta* and *Eriachne obtusa* Open Tussock Grassland over *Triodia pungens* Open Hummock Grassland over *Fimbristylis dichotoma* Open Sedges. Patches of scalds/low sumps *of Eriachne flaccida.*	
KS104	401601E; 7524337N	Slope into *Triodia schinzii* and plain with *Acacia* species.	
KS105	401713E; 7524533N	Quartz slopes. *Acacia synchronicia* and ***Eremophila* sp. Rudall River** Open Shrubland over *Triodia wiseana, Triodia pungens* and *Setaria surgens.*	
KS106	401725E; 7525050N	Sandstone hill side. *Eucalyptus leucophloia* subsp.*leucophloia* Low Woodland over *Acacia acradenia* and *Acacia retivenea* subsp. *clandestina* Scattered Shrubs over *Triodia pungens* Hummock Grassland.	
KS107	401772E; 7525163N	Hill crest, sandstone. *Eucalyptus leucophloia* subsp.*leucophloia* Low Woodland over *Acacia acradenia* small shrubs over *Triodia* sp. Shovelanna Hummock Grassland.	
KS108	401870E; 7525461N	Steep scree cliffs. *Eucalyptus leucophloia* subsp.*leucophloia* Low Woodland over *Triodia pungens* and *Triodia wiseana* Open Hummock Grassland.	
KS109	401882E; 7525878N	Steep scree slope under cliff. *Eucalyptus leucophloia* subsp.*leucophloia* over *Eremophila latrobei* subsp. *latrobei* Open Shrubland over *Triodia pungens* Open Hummock Grassland.	
KS110	402039E; 7525607N	Steep scree slope.	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS111	403264E; 7524488N	Creek crossing near C4. Sandy major drainage line. *Eucalyptus camaldulensis* and *Eucalyptus victrix* Low Woodland over *Acacia eriopoda* High Shrubland over *Eriachne aristidea, *Cenchrus ciliaris, Sorghum plumosum* Open Tussock Grassland over Sedges.	

CREEK CROSSING PRIORITY SEARCHES			
SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
C1	402749E 7524999N	Medium drainage line. *Corymbia aspera* Scattered Low Trees over *Acacia eriopoda* High Shrubland over *Eragrostis cumingii, Chrysopogon fallax, Eriachne aristidea, Eriachne obtusa, Themeda avenacea, Triodia pungens* Open Hummock Grassland.	
C2	401485E 7523360N	Major drainage line. *Eucalyptus camaldulensis* Woodland over *Acacia eriopoda* High Open Shrubland over *Cenchrus ciliaris, Chrysopogon fallax, Eriachne aristidea* Tussock Grassland over Scattered Sedges. Recently burnt on south east bank	
C3	401223E 7523065N	Major drainage line, sandy. *Eucalyptus camaldulensis* Low Open Woodland over *Acacia eriopoda* High Open Shrubland over *Themeda triandra, Eriachne aristidea, *Cenchrus ciliaris, Sorghum plumosum*, *Chrysopogon fallax* Tussock Grassland over *Triodia pungens* Open Hummock Grassland. Scattered sedges.	
C4	403317E 7524470N	Stony sand plain at edge of depressed flood plain of major drainage line. Burnt. *Acacia synchronicia, Acacia eriopoda, Senna sericea* over *Triodia basedowii Triodia pungens* all burnt.	

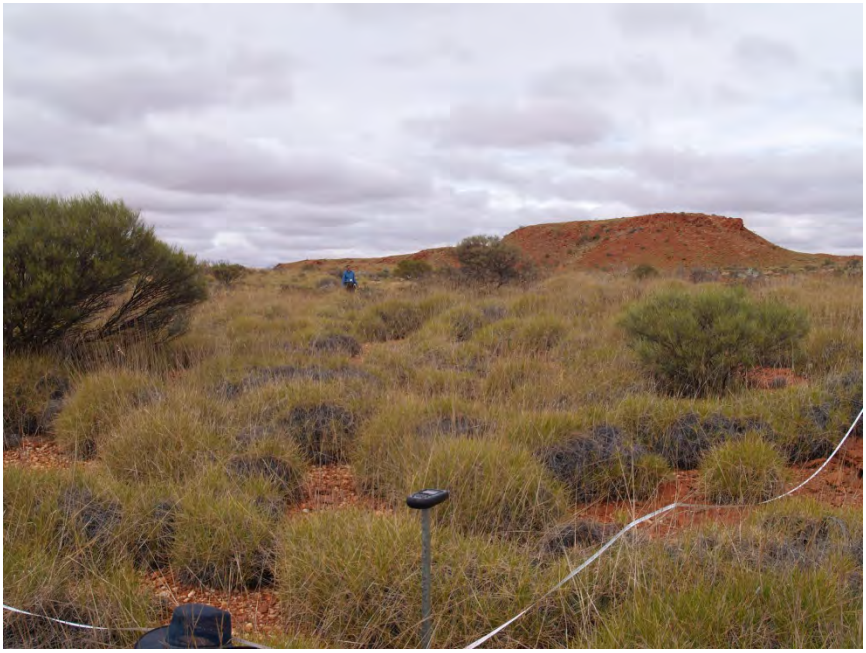
APPENDIX B

Resurvey of Quadrats Established in 2007 and 2010

ABBREVIATION	EXPLANATION
sp.	Species where the genus is known but no flowers or fruits to positively identify to species
subsp.	Subspecies
var.	variety
*	Weed
affin.	Close to that species
cf.	Compared to species
ca.	About
?	Uncertain if name provided is correct

QUADRAT 38

Approximate Location: Middle of proposed accommodation village
Datum (WGS84): 403503E; 7526828N
Soil: Silty loam
Rocks: Numerous rocks on the surface
Topography: Lower slope
Field Vegetation Description: Open Shrubland of *Acacia wanyu* over Low Open Shrubland of *Eremophila* sp. Rudall River over Open Hummock Grassland of *Triodia pungens*
Vegetation Condition: 1-2
Notes: Quartzite scree slope and outcropping schist. Area consists of a series of rounded hillocks. Site has changed from the original 2008 survey due to fire



Photograph taken in 2008



Photograph taken in 2012

Species list recorded in 2012		
TAXON	**HEIGHT (cm)**	**% COVER**
Acacia pyrifolia	50-350	<1
Acacia wanyu	200	3-10
Aristida contorta	20	10
Aristida holathera	20	<1
Aristida inaequiloba	50	<1
Bulbostylis barbata	15	2
Cleome viscosa	35	3
Corchorus sidoides subsp. *sidoides*	40	2
Dysphania rhadinostachya	15	<1
Enneapogon purpurascens	14	<1
Eragrostis olida	30	<1
Eremophila forrestii	100	<1
Eremophila sp. Rudall River	90	20
Eriachne aristidea	40	<1
Eriachne ciliata	10	<1
Euphorbia australis	10	<1
Evolvulus alsinoides var. *villosicalyx*	30	<1
Fimbristylis dichotoma	15	<1
Gomphrena cunninghamii	10	<1
Goodenia vilmoriniae	30	<1
Heliotropium tenuifolium	14	<1
Hibiscus coatesii	20	<1
Hibiscus sturtii var. *campylochlamys*	20	<1
Maireana planifolia	80	<1
Oldenlandia crouchiana	15	<1
Polycarpaea corymbosa	15	<1
Ptilotus calostachyus	50	<1
Ptilotus helipteroides	35	<1
Ptilotus polystachyus	35	<1
Salsola tragus	10	<1
Sclerolaena diacantha	10	<1
Senna artemisioides subsp. *helmsii*	60	1
Senna glutinosa subsp. x *luerssenii*	100	1
Sida brownii	40	1
Sida echinocarpa	50-100	<1
Sida sp.	55	<1
Solanum lasiophyllum	40	<1
Streptoglossa decurrens	10	1
Synaptantha tillaeacea	10	<1
Trachymene oleracea subsp. *oleracea*	40	3
Tribulus suberosus	30	<1
Triodia pungens	110	50
Triodia wiseana	30-100	2

QUADRAT 39

Approximate Location: Track to village
Datum (WGS84): 404385E; 7527063N – dropper not present
Soil: Red sand
Rocks: N/A
Topography: Flat, gently sloping to south east
Field Vegetation Description: High Shrubland of *Acacia eriopoda* over Open Shrubland of *Acacia wanyu* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2
Notes: Burnt over 5 years in 2008. In 2012 moderate even burn 2-5 years, uneven burn. Big change in species composition due to fire ephemerals. Donkey scats present. Access tracks nearby



Photograph taken in 2008



Photograph taken in 2012

Species Recorded in 2012		
TAXON	**HEIGHT (cm)**	**% COVER**
Acacia acradenia	100-200	<1
Acacia ancistrocarpa	300	<1
Acacia colei	200	<1
Acacia eriopoda	300	10
Acacia melleodora	250	<1
Acacia wanyu	150	4
Aristida contorta	30	<1
Aristida holathera	60	4
Bulbostylis barbata	15	<1
Cassytha affin.*capillaris*	Twiner	<1
Cenchrus ciliaris	50	<1
Chrysopogon fallax	40-100	1
Cleome viscosa	70	<1
Corchorus sidoides subsp*. sidoides*	50	3
Digitaria brownii	50	<1
Dysphania rhadinostachya subsp*. rhadinostachya*	10	<1
Eragrostis olida	50	<1
Eremophila forrestii subsp*. forrestii*	50	1
Eriachne mucronata	40	<1
Euphorbia australis	15	<1
Euphorbia boophthona	90	<1
Evolvulus alsinoides var*. villosicalyx*	20	<1
Fimbristylis dichotoma	20	<1
Gomphrena cunninghamii	10	<1
Goodenia stobbsiana	50	<1
Goodenia vilmoriniae	70	<1
Grevillea wickhamii	250	<1
Hibiscus burtonii	60	<1
Hibiscus sturtii var*. campylochlamys*	40	<1
Hybanthus aurantiacus	50	<1
Keraudrenia velutina subsp*. elliptica*	50	2
Maireana planifolia	50	<1
Paraneurachne muelleri	50	2
Perotis rara	10	<1
Pluchea tetranthera	40	<1
Polycarpaea corymbosa	30	<1
Pterocaulon sphacelatum	70	<1
Salsola tragus	20	<1
Schizachyrium fragile	20	<1
Senna artemisioides subsp*. helmsii*	50	<1
Senna artemisioides subsp*. oligophylla*	70	1
Senna glutinosa var*. luerssenii*	100	<1
Sida arenicola	100	<1
Solanum lasiophyllum	60	<1
Sporobolus australasicus	30	<1
Tephrosia rosea var*. clementii*	110	<1
Trianthema triquetrum	10	<1

TAXON	HEIGHT (cm)	% COVER
Tribulus suberosus	60	<1
Triodia basedowii	70	20
Triodia pungens	70	10
Triodia wiseana	50	<1
Yakirra australis	10	<1

QUADRAT 45

Approximate Location: Hill slope
Datum (WGS84): 403637E; 7529409N
Soil: Red silty clay
Rocks: Sandstone rocks outcropping
Topography: Middle to upper slope
Field Vegetation Description: Woodland of *Eucalyptus leucophloia* subsp.*leucophloia* over Scattered Herbs of *Ptilotus calostachyus* and Scattered Grasses of *Eriachne mucronata*
Vegetation Condition: 2
Notes: Recent fire in 2010. In 2012 moderate fire about 2 years previously. Access tracks nearby



Photograph taken in 2010



Photograph taken in 2012

Species recorded in 2012		
TAXON	**HEIGHT (cm)**	**% COVER**
Acacia melleodora	100	<1
Acacia pyrifolia	70	<1
Acacia retivenea subsp*. clandestina*	100-150	<1
Aristida holathera	25	<1
Bulbostylis barbata	10	<1
Cleome viscosa	70	<1
Cyperus cunninghamii	40	<1
Dodonaea coriacea	20	<1
Eragrostis olida	40	15
Eriachne aristidea	30	<1
Eriachne mucronata	50	2
Eucalyptus leucophloia subsp.*leucophloia*	200-1000	10-15
Euphorbia coghlanii	15	<1
Gomphrena cunninghamii	10	<1
Goodenia stobbsiana	50	<1
Goodenia triodiophila	30	<1
Hibiscus coatesii	20	1
Newcastelia cephalantha	60	<1
Oldenlandia crouchiana	15	<1
Paraneurachne muelleri	50	<1
Paspalidium clementii	20	<1
Ptilotus astrolasius	30	<1
Ptilotus auriculata	20	<1
Ptilotus calostachyus	50	<1
Ptilotus exaltatus	60	1
Schizachyrium fragile	10	<1
Senna glutinosa subsp. *glutinosa*	150	1
Sida arenicola	70	<1
Sida cf. *Pilbara*	40	<1
Sida excedentifolia	10	<1
Stenopetalum decipiens	50	<1
Tephrosia supina	10	<1
Triodia pungens	50	30

QUADRAT 70

Approximate Location:
Datum (WGS84): 405581E; 7528340N
Soil: Red silty loam
Rocks: Numerous quartz and sandstone rocks ca. 10cm
Topography: Lower slope
Field Vegetation Description: Open Heath of *Grevillea wickhamii* subsp. *aprica* and *Acacia retivenea* subsp. *clandestina* over Hummock Grassland of *Triodia epactia*
Vegetation Condition: 2-3
Notes: In 2012 were unable to locate exact site. The one selected matches approximately. Track through area



Photograph taken in 2010



Photograph taken in 2012

Species recorded in 2012		
TAXON	**HEIGHT (cm)**	**% COVER**
Acacia ancistrocarpa	100-200	<1
Acacia eriopoda	100	<1
Acacia pyrifolia	100	<1
Acacia retivenea subsp. *clandestina*	150	10
Acacia robeorum	200	<1
Eriachne ciliata	10	<1
Eriachne mucronata	30	<1
Eucalyptus leucophloia subsp.*leucophloia*	600	<1
Grevillea wickhamii subsp. *aprica*	100-300	10
Hakea lorea subsp.*lorea*	150	<1
Senna glutinosa subsp. *glutinosa*	80	<1
Sporobolus australianus	10	<1
Triodia epactia	100	60

QUADRAT 71

Approximate Location:
Datum (WGS84): 405397E; 7527307N
Soil: Red sandy loam with a small amount of clay
Rocks: Few scattered rocks on surface
Topography: Flat
Field Vegetation Description: Open Shrubland dominated by *Acacia eriopoda* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 2-3
Notes: Fire age old. > 5years



Photograph taken in 2010



Photograph taken in 2012

Species recorded in 2012		
TAXON	**HEIGHT (cm)**	**% COVER**
Acacia ancistrocarpa	120	1
Acacia eriopoda	170	<1
Acacia ligulata	200	2
Acacia melleodora	50-100	<1
Acacia synchronicia	100-200	1
Aristida holathera	40	<1
Evolvulus alsinoides subsp*. villosicalyx*	15	<1
Fimbristylis dichotoma	20	<1
Grevillea wickhamii subsp. *aprica*	300	1
Hakea lorea subsp. *lorea*	50	<1
Ptilotus astrolasius var. *astrolasius*	15	3
Senna artemisioides subsp. *oligophylla*	70	2
Senna glutinosa subsp. *glutinosa*	200	5
Senna glutinosa subsp*. luerssenii*	110	<1
Triodia basedowii	90	45
Triodia pungens	70-150	5
Triodia schinzii	110	<1

QUADRAT 72

Approximate Location:
Datum (WGS84): 405288E; 7527297N
Soil: Red sand
Rocks: N/A
Topography: Flat along creek
Field Vegetation Description: Open Scrub of *Acacia eriopoda* over Hummock Grassland of *Triodia pungens*
Vegetation Condition: 3
Notes: Drainage line



Photograph taken in 2010



Photograph taken in 2012

Species recorded in 2012		
TAXON	**HEIGHT (cm)**	**% COVER**
Acacia ancistrocarpa	100	5
Acacia eriopoda	200-300	55
Acacia ligulata	70	<1
Aristida holathera	45	1
Bonamia rosea	50	<1
**Cenchrus ciliaris*	60	10
Chrysopogon fallax	120	2
Corchorus sidoides subsp. *sidoides*	40	<1
Eragrostis eriopoda	70	1
Eremophila longifolia	150	5
Eriachne aristidea	35	<1
Eucalyptus camaldulensis	800	2
Eulalia aurea	130	<1
Euphorbia australis	20	<1
Evolvulus alsinoides var. *decumbens*	25	<1
Gossypium australe	70	3
Heliotropium sp.	30	<1
Heteropogon contortus	120	<1
Hibiscus sturtii var. *platychlamys*	60	<1
Hybanthus aurantiacus	40	3
Isotropis atropurpurea	55	2
Melhania oblongifolia	70	<1
Perotis rara	10	<1
Polymeria ambigua	Twiner	<1
Pterocaulon sphacelatum	40	<1
Scaevola parvifolia subsp. *pilbarae*	30	1
Senna artemisioides subsp. *oligophylla*	70	<1
Senna artemisioides subsp. *helmsii*	100	<1
Sorghum plumosum	70	5
Stylidium spathulatum	100-200	<1
Trachymene oleracea	60	<1
Trichodesma zeylanicum var. *grandiflorum*	50	1
Triodia basedowii	50-100	<1
Triodia pungens	120	40
Vigna lanceolata	Twiner	<1
Whiteochloa cymbiformis	80	<1

QUADRAT 73

Approximate Location:
Datum (WGS84): 405650E; 7526517N
Soil: Red sand with loamy sub-surface
Rocks: N/A
Topography: Lower slope above creek
Field Vegetation Description: Low Open Forest of *Acacia macrocarpa* over Hummock Grassland of *Triodia basedowii* and *Aristida inaequiglumis*
Vegetation Condition: 3
Notes: In cut away from area. Playa running into creek. *Acacia macrocarpa* grove about 150m x 150m only



Photograph taken in 2010



Photograph taken in 2012

Species recorded in 2012		
TAXON	**HEIGHT (cm)**	**% COVER**
Acacia ancistrocarpa	150	3
Acacia eriopoda	150	5
Acacia macrocarpa	500	25
Acacia melleodora	120	2
Anthobolus leptomerioides	90	<1
Aristida holathera	40	<1
Aristida inaequiglumis	50	20
Bulbostylis barbata	10	<1
**Cenchrus ciliaris*	50	5
Corchorus laniflorus	70	<1
Corchorus sidoides subsp. *sidoides*	50	<1
Enneapogon polyphyllus	20	<1
Eragrostis dielsii	10	<1
Eragrostis laniflora	70	2
Eremophila forrestii	150	<1
Eriachne aristidea	15	<1
Euphorbia australis	20	2
Euphorbia sp.	70	<1
Evolvulus alsinoides subsp. *villosicalyx*	20	<1
Fimbristylis dichotoma	20	<1
Grevillea wickhamii subsp. *aprica*	150	<1
Hakea lorea subsp.*lorea*	200	<1
Hibbertia sturtii var. *platychlamys*	30	<1
Hibiscus burtonii	35	<1
Hybanthus aurantiacus	30	<1
Ipomoea muelleri	twiner	2
Isotropis atropurpurea	40	<1
Paraneurachne muelleri	50	<1
Perotis rara	P10	<1
Pluchea rubelliflora	30	<1
Polycarpaea corymbosa	15	<1
Polymeria ambigua	twiner	5
Pterocaulon sphacelatum	40	<1
Rhagodia eremaea	70	<1
Salsola tragus	20	<1
Sclerolaena cornishiana	35	<1
Senna artemisioides subsp. *helmsii*	50	1
Senna artemisioides subsp. *oligophylla*	80	3
Sida affin.*brownii*	30	<1
Sida fibulifera	20	<1
Solanum lasiophyllum	50	<1
Sorghum plumosum	70	5
Sporobolus australianus	20	<1
Stylobasium spathulatum	100-200	<1
Tephrosia rosea	50	1
Triodia basedowii	80	25
Triodia pungens	120	5
Triodia schinzii	100-200	<1

QUADRAT 74

Approximate Location:
Datum (WGS84): 405568E; 7526337N
Soil: Red silty sand
Rocks: N/A
Topography: Lower slope facing west
Field Vegetation Description: Low Open Woodland of *Eucalyptus odontocarpa* over Low Open Shrubland of *Senna glutinosa* subsp. *glutinosa* over Hummock Grassland of *Triodia basedowii* and *Aristida inaequiglumis*
Vegetation Condition: 2-3
Notes: *Eucalyptus odontocarpa* occurs as small clumps through this area



Photograph taken in 2010



Photograph taken in 2012

Species recorded in 2012		
TAXON	**HEIGHT (cm)**	**% COVER**
Acacia affin. *eriopoda*	60	<1
Acacia ancistrocarpa	120	<1
Acacia melleodora	150	<1
Aristida holathera	30	<1
Aristida inaequiglumis	60	15
Bonamia rosea	35	<1
Eragrostis dielsii	10	<1
Eragrostis eriopoda	60	1
Eucalyptus odontocarpa	400	10
Fimbristylis dichotoma	20	<1
Gossypium australe	50	<1
Grevillea stenobotrya	150	<1
Indigofera boviperda subsp. *boviperda*	30	<1
Paraneurachne muelleri	35	<1
Ptilotus astrolasius	530	<1
Senna artemisioides subsp. *helmsii*	60	5
Senna artemisioides subsp. *oligophylla*	100	10
Senna glutinosa subsp. *glutinosa*	70	10
Senna glutinosa subsp. *luerssenii*	150	<1
Sida echinocarpa	50	<1
Solanum lasiophyllum	50	<1
Streptoglossa odora	30	<1
Trianthema turgidifolia	20	<1
Triodia basedowii	90	40
Triodia pungens	100-200	<1
Triodia schinzii	90	<1

APPENDIX C

Survey of 6km Section of Proposed Telfer – Kintyre Road

ABBREVIATION	EXPLANATION
sp.	Species where the genus is known but no flowers or fruits to positively identify to species
subsp.	Subspecies
var.	variety
*	Weed
affin.	Close to that species
cf.	Compared to species
ca.	About
?	Uncertain if name provided is correct

RELEVEES ALONG HAUL ROAD – Abbreviation used in mapping in bold			
SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS77 **Ac**	402840E 7598039N	Interdune swale merging with low dune to west. *Hakea lorea* subsp*. lorea, Grevillea wickhamii* subsp*. clandestina, Acacia ancistrocarpa* 2-10% >2m; *Jacksonia aculeata* 10-30% <1m; *Triodia schinzii, Triodia basedowii, Aristida holathera* 2-10% Open High Grassland.	
KS78	402791E 7597908N	Dune crest.	
KS79 **As**	402786E 7597873N	Changes to *Acacia stellaticeps* over *Triodia basedowii* plain.	
KS80	402800E 7597945N	Changes from dune to swale.	
KS81 **As**	402905E 7598237N	*Acacia stellaticeps* loamy plain. *Acacia ligulata* <2% 1-2m; *Acacia stellaticeps* 10-30% <1m; *Triodia basedowii Triodia schinzii* sand plain.	
KS82 **Al**	403022E 7598452N	Changes from *Acacia stellaticeps* unit to Hummock Grassland. Sandplains *Acacia ligulata* <2%. *Triodia pungens* sandplain.	
KS83 **Al**	403292E 7599217N	In middle of *Acacia ligulata Triodia schinzii* sand plain – probably part of deflated dune field.	
KS84 **Tp**	403377E 7599387N	Changes from *Triodia schinzii* sand plain to *Triodia pungens, Triodia basedowii* sandplain with scattered *Acacia ligulata* and *Gossypium australe.*	
KS85 **Al**	403454E 7599836N	Slope into low bare stony ridge. *Triodia basedowii* dominant with scattered *Acacia ligulata* and *Senna artemisioides* subsp. *oligophylla.*	
KS86 **Al**	403463E 7599938N	Slope into *Acacia ligulata* plains with *Triodia basedowii, Triodia pungens.* Sandy loam plains.	
KS87 **Ac**	403500E 7600120N	In middle of sandy loam plains. *Acacia ancistrocarpa*, *Acacia ligulata, Grevillea wickhamii* High Open Shrubland over *Gossypium australe* Open Shrubland over *Pluchea tetranthera* Low Open Shrubland over *Triodia pungens* Shrubland Hummock Grassland.	
KS88 **Ah**	403599E 7600295N	Slope into low hill. *Acacia hilliana, Acacia stellaticeps* and *Triodia basedowii.*	

SITE NUMBER	GPS	DESCRIPTION	PHOTOGRAPH
KS89 **As**	No record	Stony sand plain. *Acacia stellaticeps* over *Triodia basedowii.*	
KS90 **Ah**	403767E 7600816N	Slope into *Acacia hilliana* low stony hill. *Acacia hilliana* and *Triodia* sp. Shovelanna Hill.	
KS91 **Ah**	403864E 7600977N	Acacia hilliana, Triodia sp. Shovelanna Hill on hill crest. Is near *Acacia ancistrocarpa* dominated swale.	
KS92 **Ah**	403869E 7601272N	Hill crest. *Acacia hilliana* over *Triodia pungens* and *Triodia* sp. Shovelanna Hill.	
KS93 **As**	403891E 7601340N	Slope into *Acacia stellaticeps* unit.	

QUADRAT KH01

Approximate Location: 4km south of Telfer Road
Datum (WGS84): 403853E; 7601752N
Soil: Sandy plain. Orange loamy sand
Rocks: Scattered mixed sandstones small rocks
Topography: Flat
Field Vegetation Description: Open Heath of *Acacia stellaticeps* and *Acacia hilliana* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 1-2
Notes: Dry conditions. Herbaceous species probably absent at this time due to poor conditions. *Eremophila* sp. Rudall River recorded from this quadrat



SPECIES	% COVER	HEIGHT (cm)
Acacia stellaticeps	40	70
Acacia ancistrocarpa	6	200-300
Acacia hilliana	<1	50
Acacia sphaerostachya	<1	110
Amphipogon affin. *sericeus*	<1	20
Androcalva loxophylla	<1	30
Anthobolus leptomerioides	<1	40
Aristida holathera	<1	30
Bonamia linearis	<1	Twiner
Calytrix carinata	<1	50
Cassytha sp.	<1	Twiner
Dampiera candicans	<1	50
Dodonaea coriacea	<1	10
Eremophila latrobei subsp. *glabra*	<1	100-150
Eremophila sp. Rudall River	<1	60
Euphorbia australis	<1	20
Goodenia microptera	<1	30
Goodenia stobbsiana	<1	50
Heliotropium ovalifolium	<1	20
Heliotropium tenuiflorum	<1	30

SPECIES	% COVER	HEIGHT (cm)
Hibbertia burtonii	<1	40
Isotropis atropurpurea	<1	60
Jacksonia aculeata	<1	40
Paraneurachne muelleri	<1	40
Scaevola parviflora	<1	35
Senna glutinosa subsp. *luerssenii*	<1	140
Sida arenicola	<1	100
Sida sp. Sand dune	<1	30
Stylidium spathulatum	<1	100-200
Triodia basedowii	65	30-90
Triodia pungens	2	150
Triodia schinzii	<1	150

QUADRAT KH02

Approximate Location: 7km south of Telfer Road
Datum (WGS84): 402853E; 7598125N
Soil: Red sand
Rocks: None
Topography: Sand dune crest and slopes
Field Vegetation Description: High Open Shrubland of *Grevillea stenobotrya* over Shrubland of *Dampiera candicans*, *Dicrastylis doranii* and *Gastrolobium simplicifolium* over Hummock Grassland of *Triodia schinzii* and Tussock Grassland of *Aristida holathera* and *Eriachne gardneri*
Vegetation Condition: 1-2
Notes: Fire 5-10 years



SPECIES	% COVER	HEIGHT (cm)
Acacia ancistrocarpa	<1	100-200
Acacia ligulata	<1	250
Acacia melleodora	<1	100
Acacia stellaticeps	<1	50-100
Androcalva loxophylla	2.5	40
Aristida holathera	7	60
Cassytha capillaris	<1	Twiner
Dampiera candicans	4	50
Dicrastylis doranii	<1	50
Eragrostis eriopoda	1.5	40
Eriachne gardneri	2	45
Gastrolobium simplicifolium	1.5	50
Grevillea stenobotrya	5.5	200-300
Heliotropium ovalifolium	1	40
Jacksonia aculeata	<1	50-100
Newcastelia roseoazurea	4.5	40
Oldenlandia pterospora	<1	20
Ptilotus arthrolasius	1	50
Scaevola parvifolia var. *pilbarensis*	<1	30
Sida sp. Sand dune	1.5	100-150
Solanum centrale	1	30
Stylidium spathulatum	<1	150
Swainsona microphylla	<1	70-100

SPECIES	% COVER	HEIGHT (cm)
Trianthema pilosa	<1	10
Triodia schinzii	15	100-200

QUADRAT KH03

Approximate Location: 7km south of Telfer Road
Datum (WGS84): 402726E; 7597727N
Soil: Stony loam sand plain
Rocks: Mixed chert sand stone pebbles
Topography: Lower slope
Field Vegetation Description: Scattered Tall Shrubs of *Acacia ligulata* over Low Shrubland of *Acacia stellaticeps* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 1-2
Notes: Burnt about 2-5 years



SPECIES	% COVER	HEIGHT (cm)
Acacia ligulata	<1	100
Acacia sphaerostachya	<1	50
Acacia stellaticeps	8	45
Amphipogon affin. *sericeus*	<1	40
Aristida holathera	<1	50
Bonamia linearis	<1	Twiner
Cassytha capillaris	<1	Twiner
Codonocarpus cotinifolius	<1	70
Dampiera candicans	<1	40
Eragrostis eriopoda	<1	30
Euphorbia australis	<1	10
Fimbristylis dichotoma	<1	30
Goodenia microptera	<1	50
Grevillea wickhamii	<1	220
Hakea lorea subsp. *lorea*	<1	200
Heliotropium ovalifolium	3	50
Hibiscus brachylaenus	<1	100-200
Jacksonia aculeata	<1	50
Newcastelia roseoazurea	<1	30
Paraneurachne muelleri	<1	40
Ptilotus arthrolasius	5	30
Ptilotus calostachyus	<1	30

SPECIES	% COVER	HEIGHT (cm)
Scaevola parvifolia var. *pilbarensis*	<1	30
Sclerolaena cornishiana	<1	40
Senna artemisioides subsp. *oligophylla*	<1	70
Sida sp. Rabbit Flat	<1	40
Streptoglossa macrocephala	4	30
Synaptantha affin. *tillaeacea*	<1	10
Triodia basedowii	50	70
Triodia pungens	<1	50-150

QUADRAT KH04

Approximate Location: 6km south of Telfer Road
Datum (WGS84): 403292E; 7599225N
Soil: Red loamy sand
Rocks: none
Topography: Lower slope
Field Vegetation Description: Scattered Tall Shrubs of *Acacia ligulata* over Low Shrubland of *Indigofera monophylla*, *Sida* sp. Sand dune and *Scaevola parvifolia* var. *pilbarensis* over Hummock Grassland of *Triodia schinzii* and *Triodia basedowii*
Vegetation Condition: 1-2
Notes: **Cenchrus ciliaris* present



SPECIES	% COVER	HEIGHT (cm)
Abutilon otocarpum	<1	50
Acacia ligulata	3	100-200
Aristida holathera	2	40
Bonamia rosea	<1	20
Calytrix carinata	<1	30
Cenchrus ciliaris	<1	70
Cullen martinii	<1	100
Eragrostis eriopoda	2	50
Eriachne aristidea	<1	30
Fimbristylis dichotoma	<1	20
Gossypium australe	1.5	100-200
Grevillea eriostachya	<1	50-150
Grevillea stenobotrya	<1	20
Hakea lorea subsp.*lorea*	<1	250
Heliotropium ovalifolium	1.5	40
Heliotropium tenuiflorum	<1	30
Indigofera monophylla	4	50
Newcastelia roseoazurea	<1	40
Oldenlandia pterospora	<1	30
Paraneurachne muelleri	<1	40

SPECIES	% COVER	HEIGHT (cm)
Pluchea ferdinandi-muelleri	<1	60
Scaevola parvifolia var. *pilbarensis*	4	25
Sclerolaena cornishiana	<1	70
Senna artemisioides subsp. *helmsii*	<1	50-100
Senna artemisioides subsp. *oligophylla*	<1	50
Sida sp. Rabbit Flat	4.5	50-100
Sida sp. Sand dune	<1	40
Tephrosia arenicola	<1	100
Trianthema pilosa	<1	15
Triodia basedowii	<1	40-100
Triodia pungens	5	50-150
Triodia schinzii	35	100-200

QUADRAT KH05

Approximate Location: 4km south of Telfer Road
Datum (WGS84): 403878E; 7601278N
Soil: Orange loamy sand
Rocks: Sandstone quartz outcrops
Topography: Low stony hill crest and slopes
Field Vegetation Description: Low Shrubland of *Acacia hilliana* over Hummock Grassland of *Triodia basedowii*
Vegetation Condition: 1-2
Notes: Bilby burrow found nearby



SPECIES	% COVER	HEIGHT (cm)
Acacia adoxa var. *adoxa*	<1	30
Acacia ancistrocarpa	<1	100-200
Acacia hilliana	30	50
Amphipogon affin.*sericea*	<1	30
Androcalva loxophylla	<1	30
Calytrix carinata	<1	40
Eriachne mucronata	<1	30
Eucalyptus gamophylla	<1	100-200
Goodenia stobbsiana	<1	20
Grevillea wickhamii	<1	50-150
Hybanthus aurantiacus	<1	30
Petalostigma cassioides	<1	45
Ptilotus calostachyus	<1	40
Scaevola browniana	<1	35
Triodia basedowii	50	55
Triodia pungens	<1	30-100

APPENDIX D

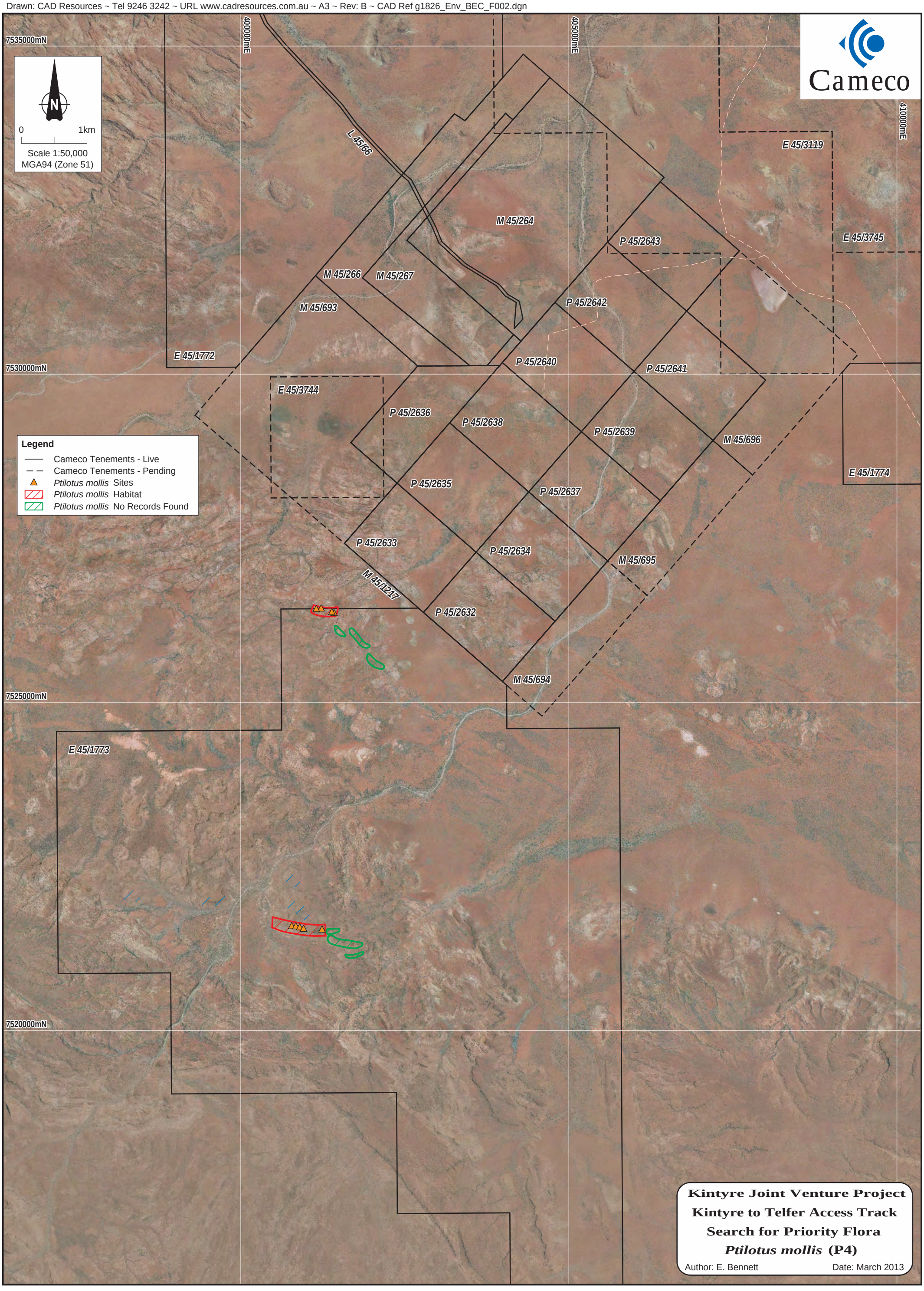
Weed Survey Along Rudall River Road

WEED SURVEY ALONG RUDALL RIVER ROAD		
SITE	**GPS**	**SPECIES**
KS112	410447E; 7511479N	**Cenchrus ciliaris*
KS113	410506E; 7511566N	**Cenchrus ciliaris*
KS114	410813E; 7511584N	**Cenchrus ciliaris*
KS115	411381E; 7511807N	**Cenchrus ciliaris*
KS116	411517E; 7511998N	**Cenchrus ciliaris*
KS117	411779E; 7512308N	**Cenchrus ciliaris*
KS118	411941E; 7512429N	**Cenchrus ciliaris*
KS119	411599E; 7524667N	**Cenchrus ciliaris*
KS120	411553E; 7525746N	**Cenchrus ciliaris*

APPENDIX E

Maps

Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ A3 ~ Rev: B ~ CAD Ref g1826_Env_BEC_F002.dgn



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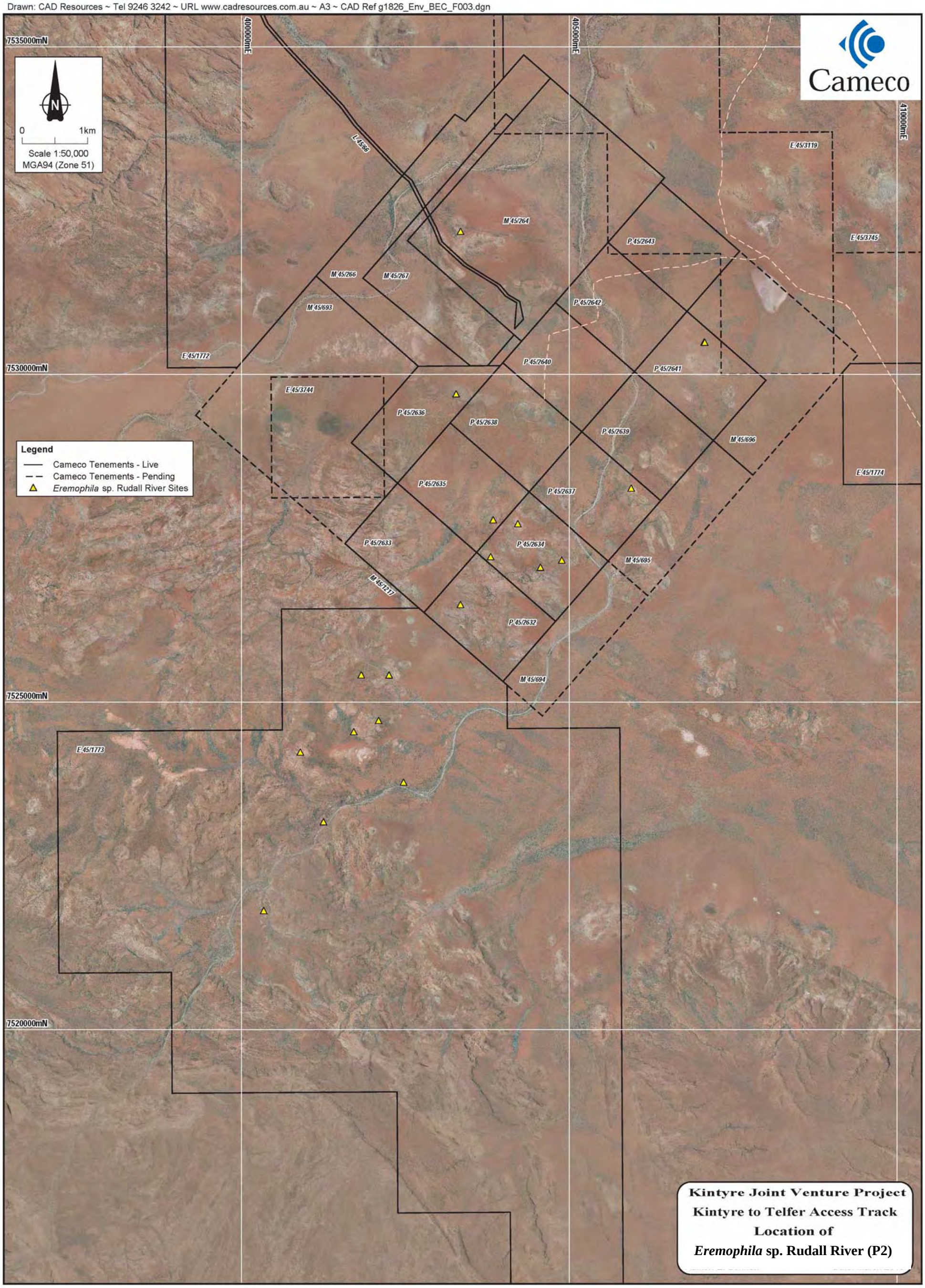
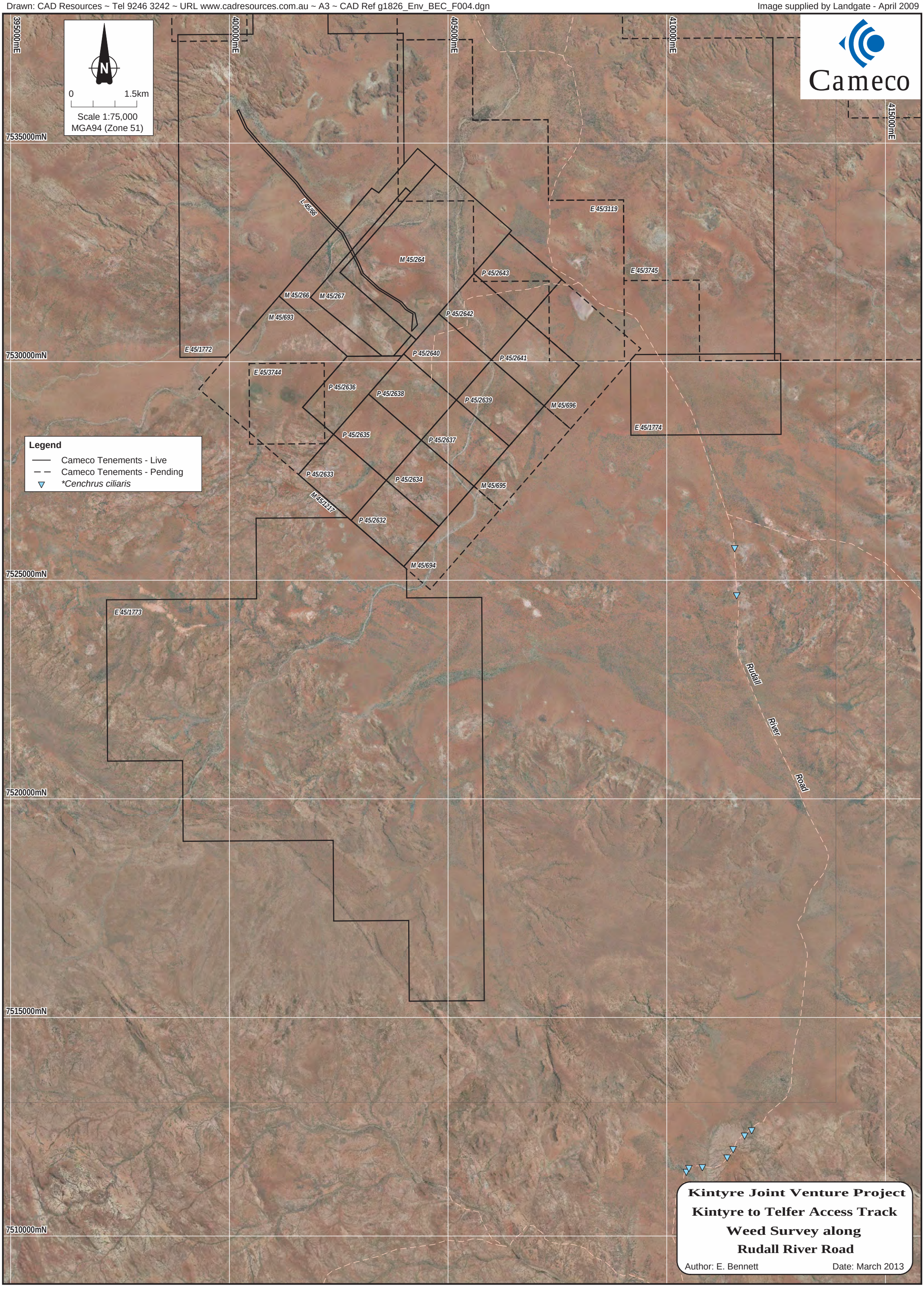


Drawn: CAD Resources ~ Tel 9246 3242 ~ URL www.cadresources.com.au ~ A3 ~ CAD Ref g1826_Env_BEC_F004.dgn

Image supplied by Landgate - April 2009



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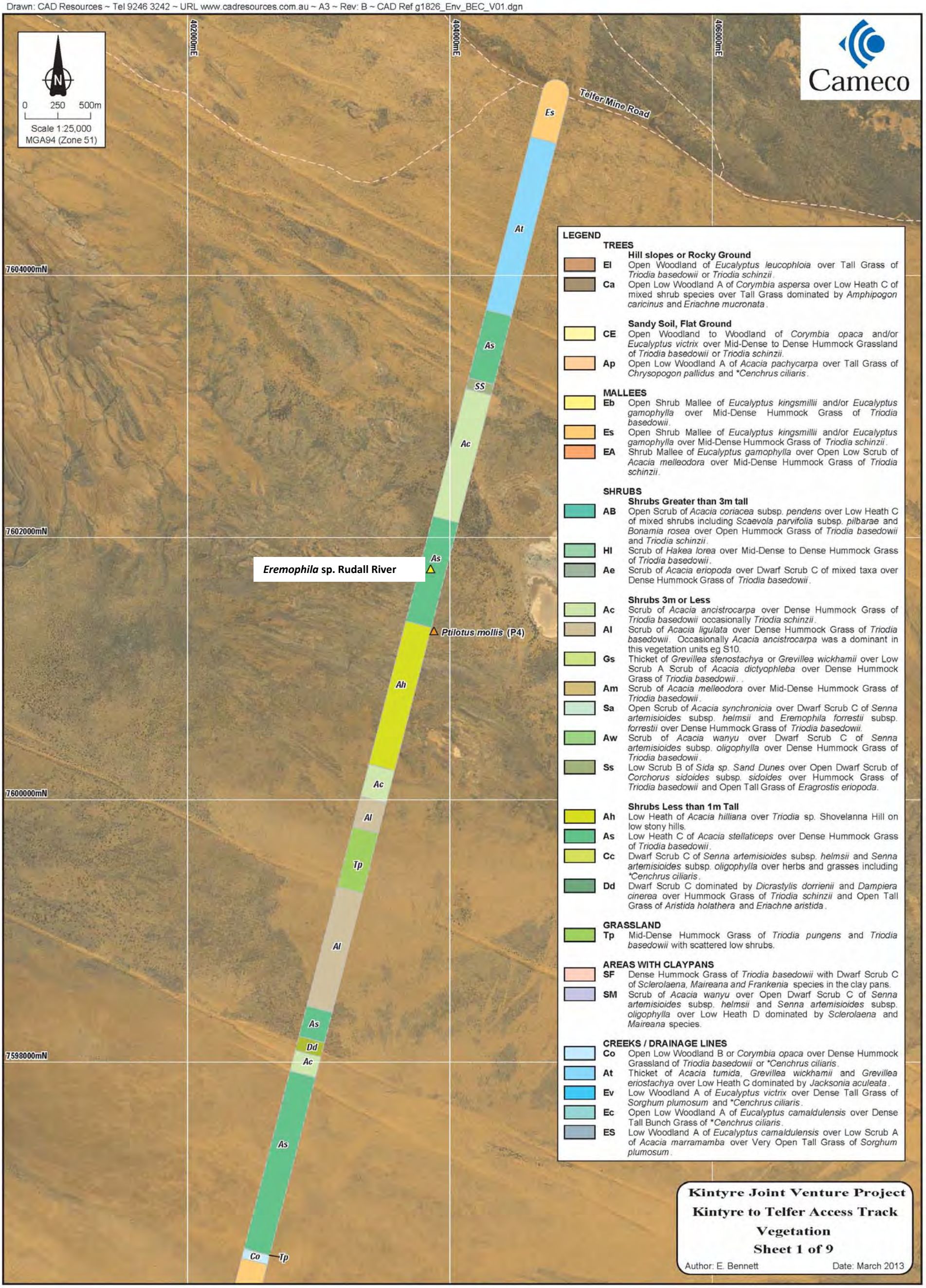

LEGEND

TREES

Hill slopes or Rocky Ground

- **El** Open Woodland of *Eucalyptus leucophloia* over Tall Grass of *Triodia basedowii* or *Triodia schinzii*.
- **Ca** Open Low Woodland A of *Corymbia aspersa* over Low Heath C of mixed shrub species over Tall Grass dominated by *Amphipogon caricinus* and *Eriachne mucronata*.

Sandy Soil, Flat Ground

- **CE** Open Woodland to Woodland of *Corymbia opaca* and/or *Eucalyptus victrix* over Mid-Dense to Dense Hummock Grassland of *Triodia basedowii* or *Triodia schinzii*.
- **Ap** Open Low Woodland A of *Acacia pachycarpa* over Tall Grass of *Chrysopogon pallidus* and **Cenchrus ciliaris*.

MALLEES

- **Eb** Open Shrub Mallee of *Eucalyptus kingsmillii* and/or *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia basedowii*.
- **Es** Open Shrub Mallee of *Eucalyptus kingsmillii* and/or *Eucalyptus gamophylla* over Mid-Dense Hummock Grass of *Triodia schinzii*.
- **EA** Shrub Mallee of *Eucalyptus gamophylla* over Open Low Scrub of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia schinzii*.

SHRUBS

Shrubs Greater than 3m tall

- **AB** Open Scrub of *Acacia coriacea* subsp. *pendens* over Low Heath C of mixed shrubs including *Scaevola parvifolia* subsp. *pilbarae* and *Bonamia rosea* over Open Hummock Grass of *Triodia basedowii* and *Triodia schinzii*.
- **Hl** Scrub of *Hakea lorea* over Mid-Dense to Dense Hummock Grass of *Triodia basedowii*.
- **Ae** Scrub of *Acacia eriopoda* over Dwarf Scrub C of mixed taxa over Dense Hummock Grass of *Triodia basedowii*.

Shrubs 3m or Less

- **Ac** Scrub of *Acacia ancistrocarpa* over Dense Hummock Grass of *Triodia basedowii* occasionally *Triodia schinzii*.
- **Al** Scrub of *Acacia ligulata* over Dense Hummock Grass of *Triodia basedowii*. Occasionally *Acacia ancistrocarpa* was a dominant in this vegetation units eg S10.
- **Gs** Thicket of *Grevillea stenostachya* or *Grevillea wickhamii* over Low Scrub A Scrub of *Acacia dictyophleba* over Dense Hummock Grass of *Triodia basedowii*. .
- **Am** Scrub of *Acacia melleodora* over Mid-Dense Hummock Grass of *Triodia basedowii*.
- **Sa** Open Scrub of *Acacia synchronicia* over Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Eremophila forrestii* subsp. *forrestii* over Dense Hummock Grass of *Triodia basedowii*.
- **Aw** Scrub of *Acacia wanyu* over Dwarf Scrub C of *Senna artemisioides* subsp. *oligophylla* over Dense Hummock Grass of *Triodia basedowii*.
- **Ss** Low Scrub B of *Sida sp. Sand Dunes* over Open Dwarf Scrub of *Corchorus sidoides* subsp. *sidoides* over Hummock Grass of *Triodia basedowii* and Open Tall Grass of *Eragrostis eriopoda*.

Shrubs Less than 1m Tall

- **Ah** Low Heath of *Acacia hilliana* over *Triodia* sp. Shovelanna Hill on low stony hills.
- **As** Low Heath C of *Acacia stellaticeps* over Dense Hummock Grass of *Triodia basedowii*.
- **Cc** Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over herbs and grasses including **Cenchrus ciliaris*.
- **Dd** Dwarf Scrub C dominated by *Dicrastylis dorrienii* and *Dampiera cinerea* over Hummock Grass of *Triodia schinzii* and Open Tall Grass of *Aristida holathera* and *Eriachne aristida*.

GRASSLAND

- **Tp** Mid-Dense Hummock Grass of *Triodia pungens* and *Triodia basedowii* with scattered low shrubs.

AREAS WITH CLAYPANS

- **SF** Dense Hummock Grass of *Triodia basedowii* with Dwarf Scrub C of *Sclerolaena, Maireana and Frankenia* species in the clay pans.
- **SM** Scrub of *Acacia wanyu* over Open Dwarf Scrub C of *Senna artemisioides* subsp. *helmsii* and *Senna artemisioides* subsp. *oligophylla* over Low Heath D dominated by *Sclerolaena* and *Maireana* species.

CREEKS / DRAINAGE LINES

- **Co** Open Low Woodland B or *Corymbia opaca* over Dense Hummock Grassland of *Triodia basedowii* or **Cenchrus ciliaris*.
- **At** Thicket of *Acacia tumida, Grevillea wickhamii* and *Grevillea eriostachya* over Low Heath C dominated by *Jacksonia aculeata*.
- **Ev** Low Woodland A of *Eucalyptus victrix* over Dense Tall Grass of *Sorghum plumosum* and **Cenchrus ciliaris*.
- **Ec** Open Low Woodland A of *Eucalyptus camaldulensis* over Dense Tall Bunch Grass of **Cenchrus ciliaris*.
- **ES** Low Woodland A of *Eucalyptus camaldulensis* over Low Scrub A of *Acacia marramamba* over Very Open Tall Grass of *Sorghum plumosum*.

Kintyre Joint Venture Project

Kintyre to Telfer Access Track

Vegetation

Sheet 1 of 9

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