



**Roma Ecological Assessment  
Report – Lot 234 WV496  
Santos Ltd**

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Document prepared by:

Aurecon Australia Pty Ltd  
ABN 54 005 139 873  
32 Turbot Street  
Brisbane  
Queensland 4000 Australia

T: +61 7 3173 8000  
F: +61 7 3173 8001  
E: brisbane@ap.aurecongroup.com  
W: aurecongroup.com

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Flora species list

# 1. Background

## 1.1 Project description

Santos Ltd (Santos) have commissioned Aurecon Australia Pty Ltd (Aurecon) to undertake ecological investigations of proposed areas of development for the Roma gas fields.

The Roma gas fields are located near the township of Roma and are characterised by undulating terrain with small elevated areas including the Thomby and Grafton Range. The dominant vegetation types within the Roma gas fields include Eucalypt and/or Brigalow woodlands, Blue grass or Mitchell grass downs, and smaller areas of White Cypress Pine and Mulga (Eddie 2007). The Roma gas fields are located within the Balonne River catchment.

Much of this area has been subject to cattle grazing and other agricultural practices, as well as previous development associated with the gas fields.

This report is specific to the proposed development areas listed below and shown in Figure 1:

- Pipeline corridor R28,
- Geotechnical survey locations situated within the above corridors and shown in Figure 1
- Road corridors.

These areas are collectively referred to as the 'proposed development area', and are located entirely within Lot 234 WV496. Note that the subject of this report is solely related to Lot 234 WV496. Where survey areas overlap additional properties, these sites will be further addressed in the report relevant to those properties/lots.

## 1.2 Purpose of report

The aim of this report is to provide an ecological assessment of the proposed development areas located on Lot 234 WV496 (Figure 1), and to identify areas and species of notable ecological or conservation value. This report does not make any recommendations regarding the development in relation to any Santos environmental authorities or other approvals.





**Legend**

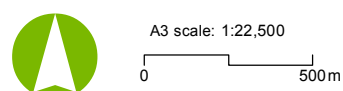
- Notable Species
  - Geotech Borehole Locations
  - Ground Truthed Areas
  - Drainage (100K)
  - ESA Category A
  - ESA Category B
  - ESA Category C
- Regional Ecosystem Mapping**
- Non-remnant / regrowth
  - Endangered - Sub-dominant
  - Endangered - Dominant
  - Of Concern - Sub-dominant
  - Of Concern - Dominant
  - Not Of Concern
  - Plantation forest
  - Water

Notes:

Date: 18/07/2011

Version: 1

Map by: Moore NK P:\CW\215648 Santos\Mapping\13\WT18\_Fairview\_Overview.mxd 09/06/2011 09:01



Job No: 215648  
Coordinate system: GDA 1994 MGA Zone 55



## 2. Methodology

### 2.1 Desktop methodology

Proposed development areas have been projected on a range of maps provided by Santos. These maps include Regional Ecosystem (RE) Mapping (version 6.0; Department of Environment and Resource Management [DERM]), Environmentally Sensitive Areas (ESA) mapping, drainage mapping and aerial photography. Where available ahead of time, these resources were reviewed to determine target areas for the field inspection. It is important to note that the RE classifications used in this report are based on the 'biodiversity status' of the vegetation and not the '*Vegetation Management Act 1999* (VM Act) status' of the vegetation.

### 2.2 Field methodology

The proposed development areas were assessed by two (2) Aurecon ecologists (Luke Foster and Karen Bowland) on the 13 June 2011. These assessments were to determine the existing vegetation communities and habitat value of the proposed clearing within the development areas as well as to verify the RE mapping as produced by DERM.

GIS environmental constraints layers (eg RE Mapping, ESA mapping etc) and high resolution aerial photography were uploaded onto a toughbook (C5 mobile clinical assistant CFT-001 – Motion computing), with an integrated GPS used to locate surveys areas. Handheld Garmin GPS units (GPS map 76) were also used during the field investigations. It should be noted that while efforts were made to ensure the GPS co-ordinates provided in this report are accurate, a margin of error approximately +/- 15 m is expected due to the limitations of the devices used and the recording environment.

The corridors were 100 m wide and of varying lengths, and the circular well pad areas had a radius of 175 m. Geotechnical survey locations were also assessed as part of the survey areas (a 50m buffer zone around each survey location was assessed).

The ground-truthing of the proposed development areas included undertaking detailed flora species surveys including sampling of unknown flora, and recording all incidental fauna observations. All species known to be of conservation significance (such as endangered, vulnerable, near threatened or Type A species under the *Nature Conservation Act 1992* [NC Act] or endangered, vulnerable or rare species under the *Environment Protection and Biodiversity Conservation Act 1999* [EPBC Act]) were recorded using the toughbook.

A list of flora species observed in the proposed development areas has been included in Appendix A. Incidental fauna observations are provided in the relevant sections throughout this report.

## 3. Ecological assessment

### 3.1 Corridor R28

#### General

Corridor R28 is located within historically cleared land that is currently being used for grazing. Salt Bush Road runs on the eastern boundary of this lot and intersects the corridor at the junction of Salt Bush Road and The Bend Road. TP-R53 and RM08-11 are associated with corridor R28 and will be included in this assessment. Corridor R28 and pads TP-R53 and RM08-11 can be seen in Figure 3.1, Figure 3.2 and Figure 3.3 respectively.

No RE's are mapped within this corridor, due to its cleared nature. The only remnant vegetation remaining within this corridor is on the western edge of Salt Bush Road.

No ESAs occur within the corridor; however an ESA occurs within 1 km to the north-west of the corridor.

A stream order 1 water course intersects RM08-11. At the time of surveys this water course was dry.



Figure 3.1 Proposed corridor R28 within Lot 234 WV496



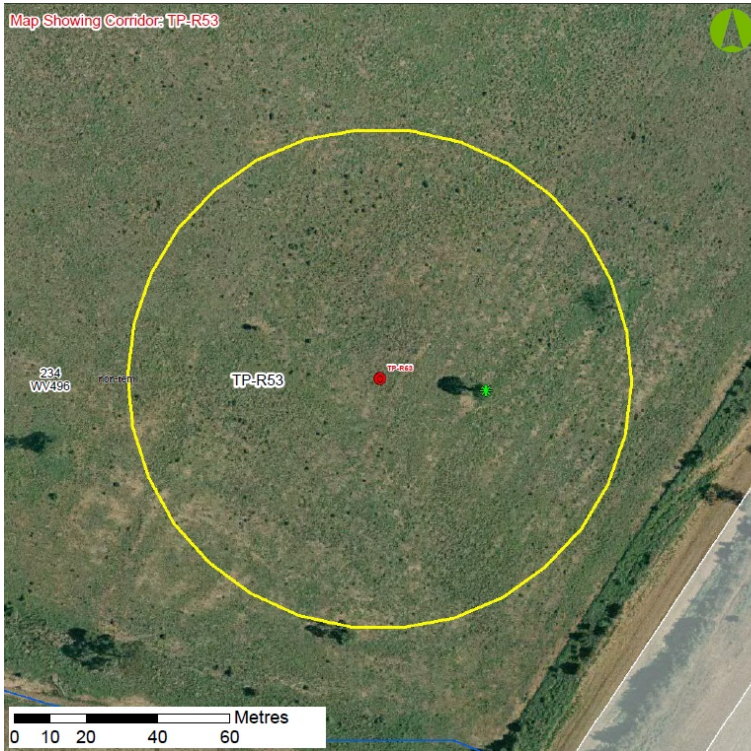


Figure 3.2 TP-R53 within Lot 234 WV496



Figure 3.3 RM08-11 within Lot 234 WV496



## Floristics

Due to the highly cleared nature of this corridor, the vegetation is ground species dominated. Pasture species such as *Pennisetum ciliare* (Buffel Grass) dominates this area with scattered patches of *Calotis lappulacea* (Yellow Burr Daisy), *Verbena tenuisecta* (Mayne's Curse) and *Sclerolaena birchii* (Galvanised Burr). Shrub species include scattered *Geijera parviflora* (Wilga) and *Capparis loranthifolia* (Nipan).

Along the road corridor, scattered *Acacia harpophylla* (Brigalow) and *Allocasuarina leuhmannii* (Bull Oak) are present.

Scattered paddock trees are present within the cleared areas.

A total of five (5) Type A restricted plants were identified within this corridor and associated pads, the details and locations of which are outlined below in Table 3.1.

**Table 3.1 Location of type A restricted plants (*Nature Conservation Act 1992*)**

Species	Easting (GDA 94, Zone 55J)	Northing (GDA 94, Zone 55J)
<i>Brachychiton rupestris</i>	699032	7074152
<i>Brachychiton rupestris</i>	699223	7074338
<i>Brachychiton populneus</i>	699252	7074387
<i>Brachychiton rupestris</i>	699032	7074152
<i>Brachychiton rupestris</i>	699032	7074152

## Habitat Values

Due to the majority of this corridor having undergone extensive clearing, the habitat value is considered low. However, the remaining vegetation along Salt Bush Road is considered to be of high habitat value, as it provides one of the few remaining fauna corridors in the area. A complex vegetation structure, fallen timber and the presence of larger tree species also supports this high value.

High macropod usage was observed within this corridor through visual sightings, tracks and scats.

A number of incidental fauna species were recorded during surveys. These were identified either by sight, calls, tracks or scats. The species recorded include: Australian Magpie (*Gymnorhina tibicen*), Sulfur-crested Cockatoo (*Cacatua galerita*), Richard's Pipit (*Anthus novaeseelandiae*), Torresian Crow (*Corvus orru*), Galah (*Cacatua roseicapilla*), Grey Butcher Bird (*Cracticus torquatus*), Pied Butcher Bird (*Cracticus nigrogularis*), Apostle Bird (*Struthidea cinerea*), Striated Pardelote (*Pardalotus striatus*), Variegated Fairy Wren (*Malurus lamberti*), Noisy Minor (*Manorina melanocephala*), Red Rump Parrot (*Psephotus haematonotus*), Weebill (*Smicronis brevirostris*), Silvereye (*Zosterops lateralis*), Yellow Thornbill (*Acanthiza nana*), feral cat (*Felix catus*), Willie Wagtail (*Rhipidura leucophrys*), Magpie-lark (*Grallina cyanoleuca*), and White-winged Chough (*Corcorax melanorhamphos*).

## 3.2 Road corridor (partial)

### General

The road corridor runs in a northern direction along the eastern edge of Lot 234 (WV496). The majority of the road corridor is situated within the limits of the existing Salt Bush Road corridor, and partially within Lot 2 (RP858912). Associated pads within this corridor are 7699-TP-16 and RM08-11 (partial). Both of these pads and part of the road corridor have been addressed in the Lot 2 RP858912 report. The road corridor and pads 7699-TP-16 and RM08-11 can be seen in Figure 3.4, Figure 3.5 and Figure 3.6 respectively.

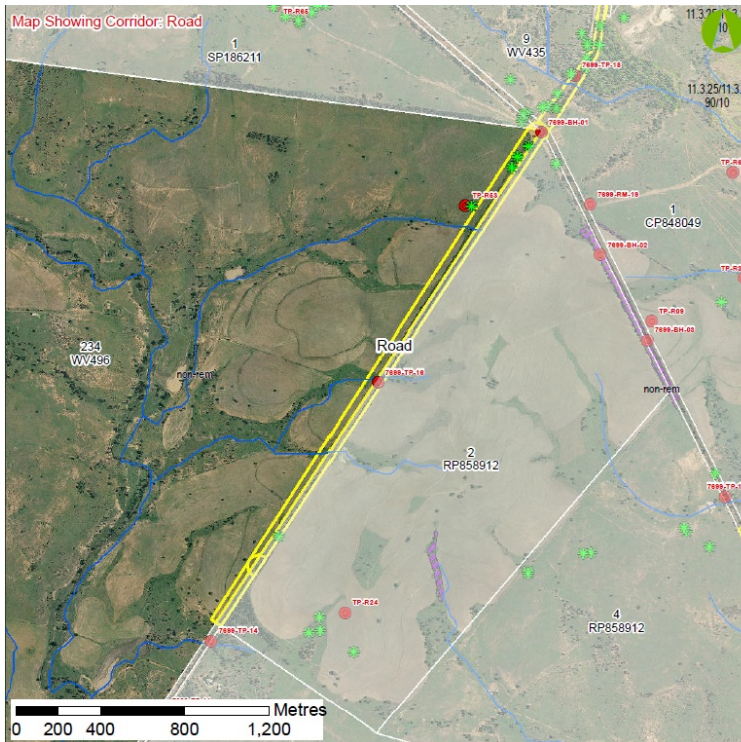


The road corridor and associated well pads are situated in an existing road corridor and as such disturbance is high. A thin strip of vegetation is present alongside the road, however this varies in thickness. The eastern and western edges of the road corridor and associated pads are located within cultivated land.

There is no RE mapping available for this corridor as the corridor is situated within cultivated land, with only small patches of road side vegetation present.

There are no Mapped ESAs within the corridor; however the nearest ESA is approximately 1 km north east of the corridor.

Two stream order 1 water courses intersect the road corridor. Both were dry at the time of surveys.



**Figure 3.4 Proposed road corridor in Lot 234 WV496**



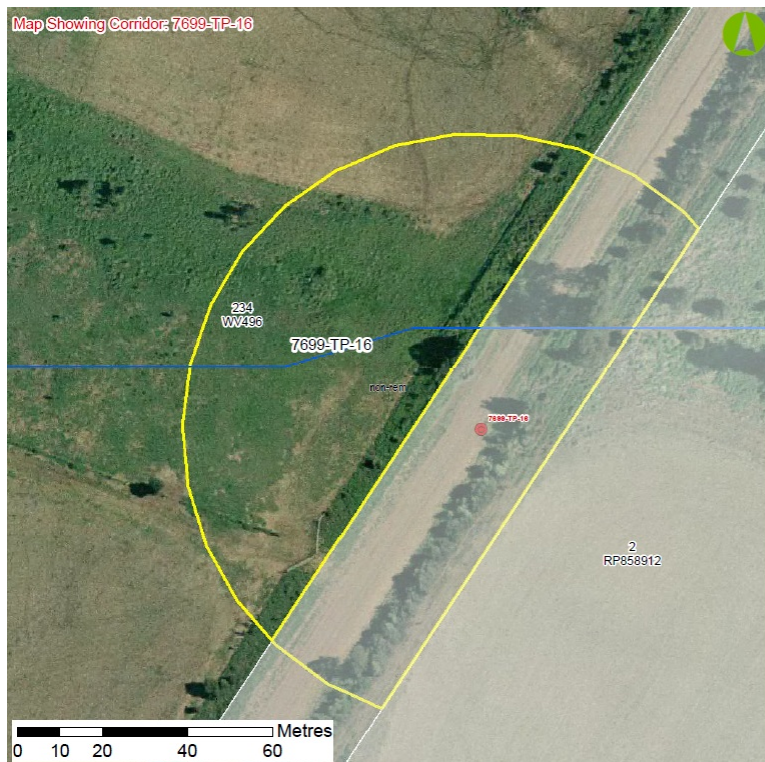


Figure 3.5 7699-TP-16 within Lot 234 WV496



Figure 3.6 RM08-11 within Lot 234 WV496



## Floristics

This corridor is located within roadside vegetation which is made up of a number of native species. Canopy species present include *Acacia harpophylla* (Brigalow), *Casuarina cristata* (Belah) and *Eucalyptus populnea* (Poplar Box). Mid-storey species include *Acacia leiocalyx* (Black Wattle), *Geijera parviflora* (Wilga), and *Canthium oleifolium* (Hatstand). Ground cover species are a mixture of native and introduced species including *Themeda triandra* (Kangaroo Grass), *Sporobolus creber* (Western Rats Tail Grass), and *Bothriochloa bladhii* subsp. *Bladhii* (Forest Blue Grass). Scattered mature *Opuntia tomentosa* (Velvety Tree Pear) are present throughout the corridor.

Pasture species such as *Sorghum* sp. also have encroached from neighbouring cultivation. Partial areas of the associated pads (7699-NH-03 and 7699-BH-02) fall within the cultivated areas. At the time of surveys, these were predominantly bare earth with scattered pasture plants.

Three Type A Restricted plants was recorded within the road corridor. The details and location of this is shown below in Table 3.2.

**Table 3.2 Location of Type A Restricted Plants (*Nature Conservation Act 1992*)**

Species	Easting (GDA 94, Zone 55J)	Northing (GDA 94, Zone 55J)
<i>Brachychiton rupestris</i>	699223	7074338
<i>Brachychiton populneus</i>	699252	7074387
<i>Brachychiton rupestris</i>	699305	7074438

No mapped ESAs occur within the corridor; however there are scattered *Acacia harpophylla* (Brigalow) which is listed as an endangered community under the EPBC Act, throughout the road side vegetation. The locations of this species within the corridor are given below in Table 3.3. This data is also available in the Lot 2 RP858912 report.

**Table 3.3 Location of EVNT species**

Species	Notes	Easting (GDA 94, Zone 55J)	Northing (GDA 94, Zone 55J)
<i>Acacia harpophylla</i>	Population start	698020	7072422
<i>Acacia harpophylla</i>	Population end	698088	7072531
<i>Acacia harpophylla</i>	Population start	698252	7072785
<i>Acacia harpophylla</i>	Population end	698295	7072854

## Habitat values

The vegetation present alongside the road and within the corridor represents moderate to high habitat value. This is due to the presence of some vegetative structure, fallen timber and dense vegetation in parts.

The narrowness of the vegetation restricts the fauna species that potentially may utilise the area.

A number of incidental fauna species were recorded during surveys. These were identified either by sight, calls, tracks or scats. The species recorded include: Australian Magpie (*Gymnorhina tibicen*), Sulfur-crested Cockatoo (*Cacatua galerita*), Richard's Pipit (*Anthus novaeseelandiae*), Torresian Crow (*Corvus orru*), Galah (*Cacatua roseicapilla*), Grey Butcher Bird (*Cracticus torquatus*), Pied Butcher Bird (*Cracticus nigrogularis*), Apostle Bird (*Struthidea cinerea*), Striated Pardalote (*Pardalotus striatus*) Variegated Fairy Wren (*Malurus lamberti*), Noisy Minor (*Manorina melanocephala*), Red Rump Parrot

(*Psephotus haematonotus*), Weebill (*Smicrornis brevirostris*), Silvereye (*Zosterops lateralis*), Yellow Thornbill (*Acanthiza nana*), and feral cat (*Felis catus*).

No EVNT fauna species were identified within the corridor.



## 4. Conclusion

The corridors and associated pads within Lot 234 WV496 occur predominantly across cleared and cultivated landscapes and vegetation types. While most of the vegetation is cleared, small pockets along roadsides and scattered paddock trees remain. The remaining vegetation within this lot was found to contain species of significance (ie Type A restricted plants).

Multiple watercourses occur within, or in close proximity to, development areas. The watercourses within the proposed development areas have very limited fringing riparian vegetation, and as such are considered to be of low ecological and habitat value.

The roadside vegetation is considered to be of moderate to high habitat value.

Multiple Type A restricted plant species were observed within the proposed development areas.

*Acacia harpophylla* (Brigalow) which is protected under the provisions of the EPBC Act was observed within the proposed development areas during these investigations.

## 5. References

Eddie, C (2007) Field Guide to Trees and Shrubs of Eastern Queensland Oil and Gas Fields, First Edition, Santos Ltd, Adelaide.

Regional Ecosystem Mapping, Version 6.0, Queensland Government Department of Environment and Resource Management (DERM).





**Appendix A**  
**Flora species list**





## Appendix A

Flora Species List			
Scientific Name	Common Name	Road	R28 including TP-R53 and RM08-11
<i>Abutilon oxycarpum</i>	Chinese Lantern		
<i>Acacia deanei</i>	Dean's Wattle		
<i>Acacia excelsa</i>	Iron wood		
<i>Acacia harpophylla</i>	Brigalow		
<i>Acacia leiocalyx</i>	Black Wattle		
<i>Acacia macradenia</i>	Zigzag Wattle		
<i>Acacia salicina</i>	Sally Wattle		
<i>Alectryon diversifolius</i>	Scrub Boonaree		
<i>Allocasuarina luehmannii</i>	Bull Oak		
<i>Alstonia constricta</i>	Bitter Bark		
<i>Apophyllum anomalum</i>	Warrior bush		
<i>Aristida calycina</i>	Dark Wiregrass		
<i>Aristida caput medusae</i>	Many-headed Wire Grass		
<i>Aristida holathera</i>	Tall Wire Grass		
<i>Aristida jerichoensis</i>	Jericho wire grass		
<i>Aristida muricata</i>	Wire Grass		
<i>Atalaya hemiglauca</i>	Whitewood		
<i>Austrostipa verticillata</i>	Slender Bamboo Grass		
<i>Bidens pilosa</i>	Cobblers Pegs		
<i>Bothriochloa bladhii subsp. bladhii</i>	Forest Blue Grass		
<i>Bothriochloa decipiens var. decipiens</i>	Pitted Bluegrass		
<i>Bothriochloa ewartiana</i>	Desert Blue Grass		
<i>Brachychiton populneus</i>	Kurrajong		
<i>Brachychiton rupestris</i>	Narrow Leaved Bottle Tree		
<i>Bracteantha bracteata</i>	Everlasting Daisy		
<i>Calotis cuneifolia</i>	Purple Burr Daisy		
<i>Calotis lappulacea</i>	Yellow Burr Daisy		
<i>Calotis scabiosifolia</i>	Rough Daisy Burr		
<i>Canthium oleifolium</i>	Hat stand, Wild Lemon		
<i>Capparis loranthifolia</i>	Nipan, Wait a while		
<i>Capparis spinosa</i>	Capparis midsize		
<i>Capsella bursa-pastoris</i>	Shepherd's purse		
<i>Carissa ovata</i>	Currant Bush		
<i>Casuarina cristata</i>	Belah		
<i>Cheilanthes aspera</i>	Bristly cloak fern		
<i>Cheilanthes sieberi</i>	Mulga Fern		



<i>Chenopodium desertorum</i>	Desert Goosefoot		
<i>Chloris divaricata</i>	Windmill Chloris		
<i>Chloris gayana</i>	Rhodes Grass		
<i>Chloris pectinata</i>	Comb Chloris		
<i>Chrysocephalum apiculatum</i>	Yellow Buttons		
<i>Cirsium vulgare</i>	Spear Thistle, Black Thistle		
<i>Conyza bonariensis</i>	Fleabane		
<i>Crotalaria dissitiflora</i>	Grey Rattlepod		
<i>Cucumis myriocarpus</i>	Paddy melon		
<i>Cyperus difformis</i>	sedge 2 - difformis, Dirty Dora		
<i>Desmodium varians</i>	Tree Foil		
<i>Dichanthium sericeum</i>	Queensland Blue Grass		
<i>Digitaria ammophila</i>	Digitaria		
<i>Emex australis</i>	Goathead Burr		
<i>Enchylaena tomentosa</i>	Ruby Saltbush		
<i>Enneapogon avenaceus</i>	Bottle Washer		
<i>Enteropogon acicularis</i>	Curly Windmill Grass		
<i>Enteropogon ramosus</i>	Twirly Windmill Grass		
<i>Eragrostis brownii</i>	Browns Lovegrass		
<i>Eragrostis leptostachya</i>	Lovegrass		
<i>Eragrostis sororia</i>	Woodland Lovegrass		
<i>Eremophila mitchellii</i>	False Sandalwood		
<i>Eucalyptus chloroclada</i>	Baradine Red Gum		
<i>Eucalyptus melanophloia</i>	Silver Leaved Ironbark		
<i>Eucalyptus orgadophila</i>	Mountain Coolibah		
<i>Eucalyptus populnea</i>	Poplar Box		
<i>Euphorbia peplus</i>	Petty Spurge		
<i>Exocarpus cupressifolia</i>	Bush Cherry		
<i>Fimbristylis dichotoma</i>	Fimbristylis		
<i>Geijera parviflora</i>	Wilga		
<i>Glycine tomentella</i>	Hairy Glycine		
<i>Gomphocarpus physocarpus</i>	Balloon Cotton Bush		
<i>Goodenia glabra</i>	Smooth Goodenia		
<i>Grevillea striata</i>	Beefwood		
<i>Harrisia spp</i>	Harrisia cactus		
<i>Jasminum didymum subsp. racemosum</i>	Native Jasmine		
<i>Juncus usitatus</i>	Juncus		
<i>Lepidium sagittulatum</i>	Pepper Cress		
<i>Lomandra hystrix</i>	Creek Mat Rush		
<i>Lomandra multiflora</i>	Lomandra		
<i>Maireana microphylla</i>	Small-leaf Bluebush		
<i>Maireana villosa</i>	Silky Bluebush		

<i>Malvastrum americanum</i>	Spiny Malvastrum		
<i>Marsdenia lanceolata</i>	Marsdenia		
<i>Medicago polymorpha</i>	Burr Medic		
<i>Melinis repens</i>	Red Natal		
<i>Opuntia stricta</i>	Prickly Pear		
<i>Opuntia tomentosa</i>	Velvety Tree Pear		
<i>Owenia acidula</i>	Emu Apple		
<i>Oxalis stricta</i>	Yellow Wood Sorrel		
<i>Pandorea pandorana</i>	Wonga Vine		
<i>Panicum buncei</i>	Native Panic		
<i>Panicum decompositum</i>	Hairy Panic		
<i>Panicum simile</i>	Two-coloured Panic		
<i>Paspalum dilatatum</i>	Paspalum		
<i>Pennisetum ciliare</i>	Buffel Grass		
<i>Phyllanthus gunnii</i>	Phyllanthus		
<i>Pittosporum angustifolium</i>	Native Apricot		
<i>Psydrax odorata subsp. australiana</i>	Canthium		
<i>Pterocaulon sphacelatum</i>	Apple Bush		
<i>Ranunculus lappaceus</i>	Australian Buttercup		
<i>Rumex brownii</i>	Swamp Dock		
<i>Salsola kali</i>	Roly Poly		
<i>Sclerolaena birchii</i>	Galvanised Burr		
<i>Sida platycalyx</i>	Sida		
<i>Sida rohlenae</i>	Shrub Sida		
<i>Sida subspicata</i>	Queensland Hemp		
<i>Solanum brownii</i>	Violet Nightshade		
<i>Solanum ellipticum</i>	Potato Bush		
<i>Solanum nigrum</i>	Blackberry nightshade		
<i>Sonchus oleraceus</i>	Sow Thistle		
<i>Sorghum alum</i>	Silk Sorghum		
<i>Sorghum plumosa</i>	Plume sorghum		
<i>Sporobolus caroli</i>	Desert Sporobolus, Fairy Grass		
<i>Sporobolus creber</i>	Western Rats Tail Grass		
<i>Tagetes minuta</i>	Stinking Rodger		
<i>Tephrosia supina</i>	Tephrosia		
<i>Themeda avenacea</i>	Wild Oats Grass		
<i>Themeda triandra</i>	Kangaroo Grass		
<i>Urochloa mosambicensis</i>	Urochloa, Sabi Grass		
<i>Verbena bonariensis</i>	Bunchy Verbena, Purpletop Verbena		
<i>Verbena officinalis</i>	Common Verbena, Native Verbena		
<i>Verbena tenuisecta</i>	Mayne's Curse		
<i>Xanthium occidentale</i>	Noogoora Burr		



*Zygophyllum howittii*

Red twinleaf

