

**aurecon**

**Project:** Roma Ecological  
Assessment Report – Stakeout  
Locations within Lot 95 on WV456  
and Lot 96 on WV457

**Project No.** 221708-001  
**Prepared for:** Santos Ltd  
**25 August 2011**

Santos Document No: 0020-GLNG-4-1.3-0082 rev0

# Document Control Record

Document prepared by:

Aurecon Australia Pty Ltd  
 ABN 54 005 139 873  
 Level 14, 32 Turbot Street  
 Brisbane QLD 4000  
 Locked Bag 331  
 Brisbane QLD 4001  
 Australia

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

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<b>Report Title</b>		Roma Ecological Assessment Report – Stakeout Locations within Lot 95 on WV456 and Lot 96 on WV457				
<b>Document ID</b>		Roma_EA_Lot94WV4564	<b>Project Number</b>			
<b>File Path</b>		P:\CH\Projects\Santos\Project delivery\Lot 95 WV456 and Lot 96 WV457\Lot 95 WV456 and Lot 96 WV457.docx				
<b>Client</b>		Santos Ltd	<b>Client Contact</b>			
<b>Rev</b>	<b>Date</b>	<b>Revision Details/Status</b>	<b>Prepared by</b>	<b>Author</b>	<b>Verifier</b>	<b>Approver</b>
0	18 July 2011	Draft for Internal Review	SS	SS	GAP	
1	10 August 2011	Final for Review	KH	SS	GAP	
2	25 August 2011	Final for Issue	KH	SS	GAP	VJB
<b>Current Revision</b>		2				

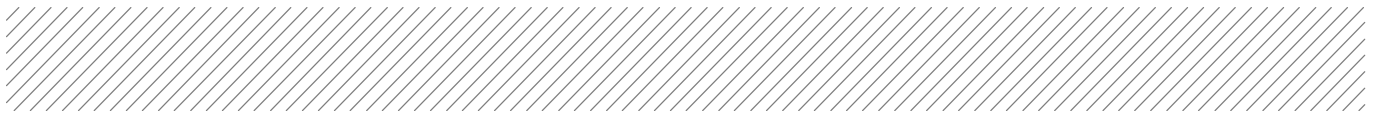
Approval			
Author Signature		Approver Signature	
Name		Name	
Title		Title	

# Roma Ecological Assessment Report – Stakeout Locations within Lot 95 on WV456 and Lot 96 on WV457

Date | 25 August 2011  
Reference | Final  
Revision | 2

Aurecon Australia Pty Ltd  
ABN 54 005 139 873  
Level 14, 32 Turbot Street  
Brisbane QLD 4000  
Locked Bag 331  
Brisbane QLD 4001  
Australia

**T** +61 7 3173 8000  
**F** +61 7 3173 8001  
**E** [brisbane@aurecongroup.com](mailto:brisbane@aurecongroup.com)  
**W** [aurecongroup.com](http://aurecongroup.com)



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# 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.

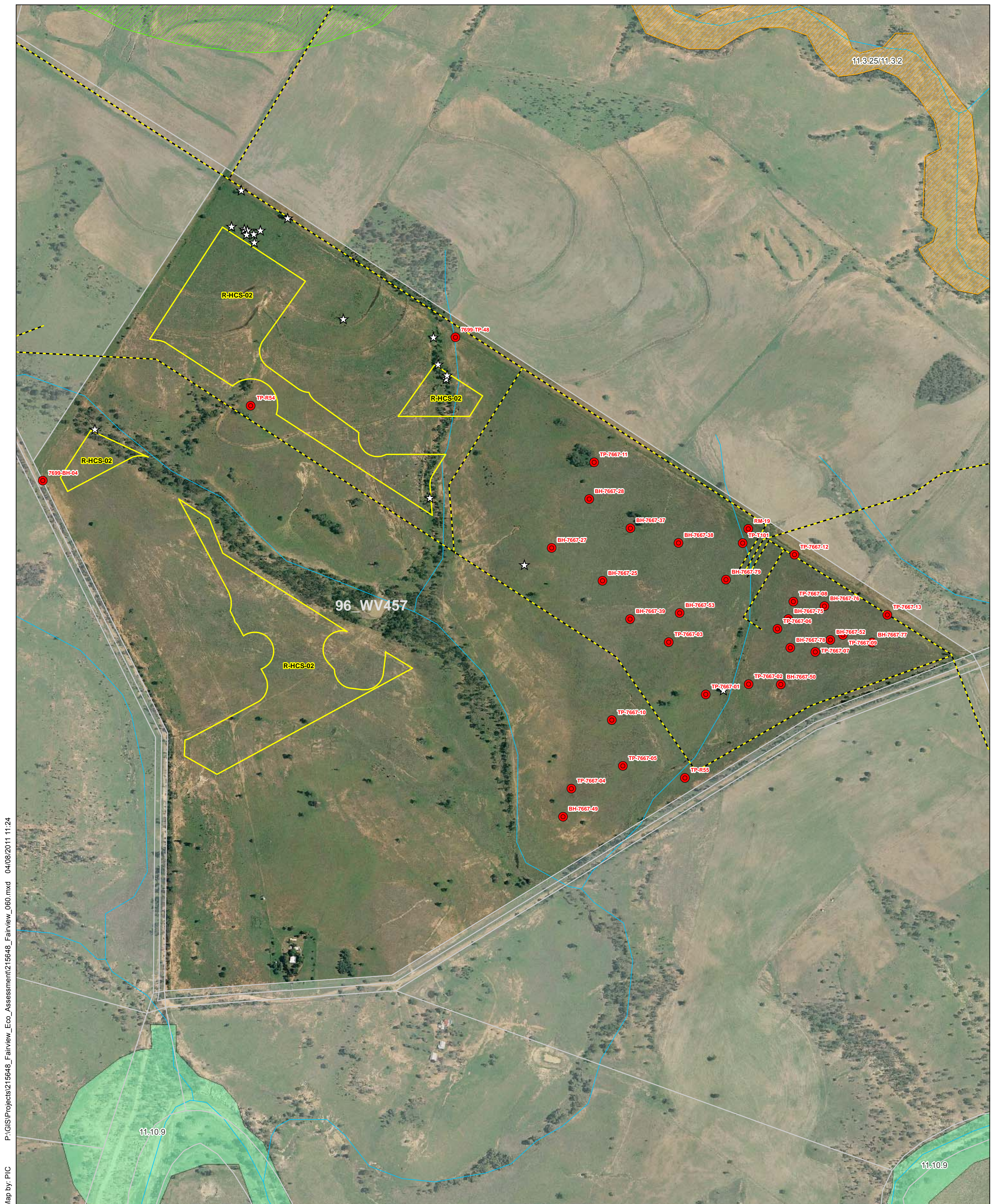
This report is specific to the proposed development areas listed below and shown in Figure 1.1 and Figure 1.2:

- Stakeout locations associated with the proposed Compressor Station within Lot 96 on WV457 (surrounding the proposed effluent irrigation area and contractor yard 2)
- Stakeout locations and associated proposed EIA test pits within Lot 94 on WV456

Note that the subject of this report is solely related to the aforementioned stakeout locations within Lots 96 on WV457 and 94 on WV456. Additional proposed development areas within these properties have been addressed in the reports specific to those properties/lots.

## 1.2 Purpose of report

The aim of this report is to provide an ecological assessment of the proposed stakeout locations within Lot 96 on WV457 and Lot 94 on WV456 (Figure 1.1 and Figure 1.2), 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.



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 Map by: PIC

**Legend**

- |                           |   |                           |
|---------------------------|---|---------------------------|
| ☆ EVNT and Type A Species | <b>ESA Mapping (Including Buffer Areas)</b> | <b>Regional Ecosystem</b> |
| Corridors - Ground Truth  | Category A                                  | Endangered - Dominant     |
| Geotech Borehole          | Category B                                  | Endangered - Sub-dominant |
| Cadastre                  | Category C                                  | Of Concern - Dominant     |
| Watercourse               |   | Of Concern - Sub-dominant |
|                           |   | Least Concern             |

Source:  
Cadastre: DERM, 2011.

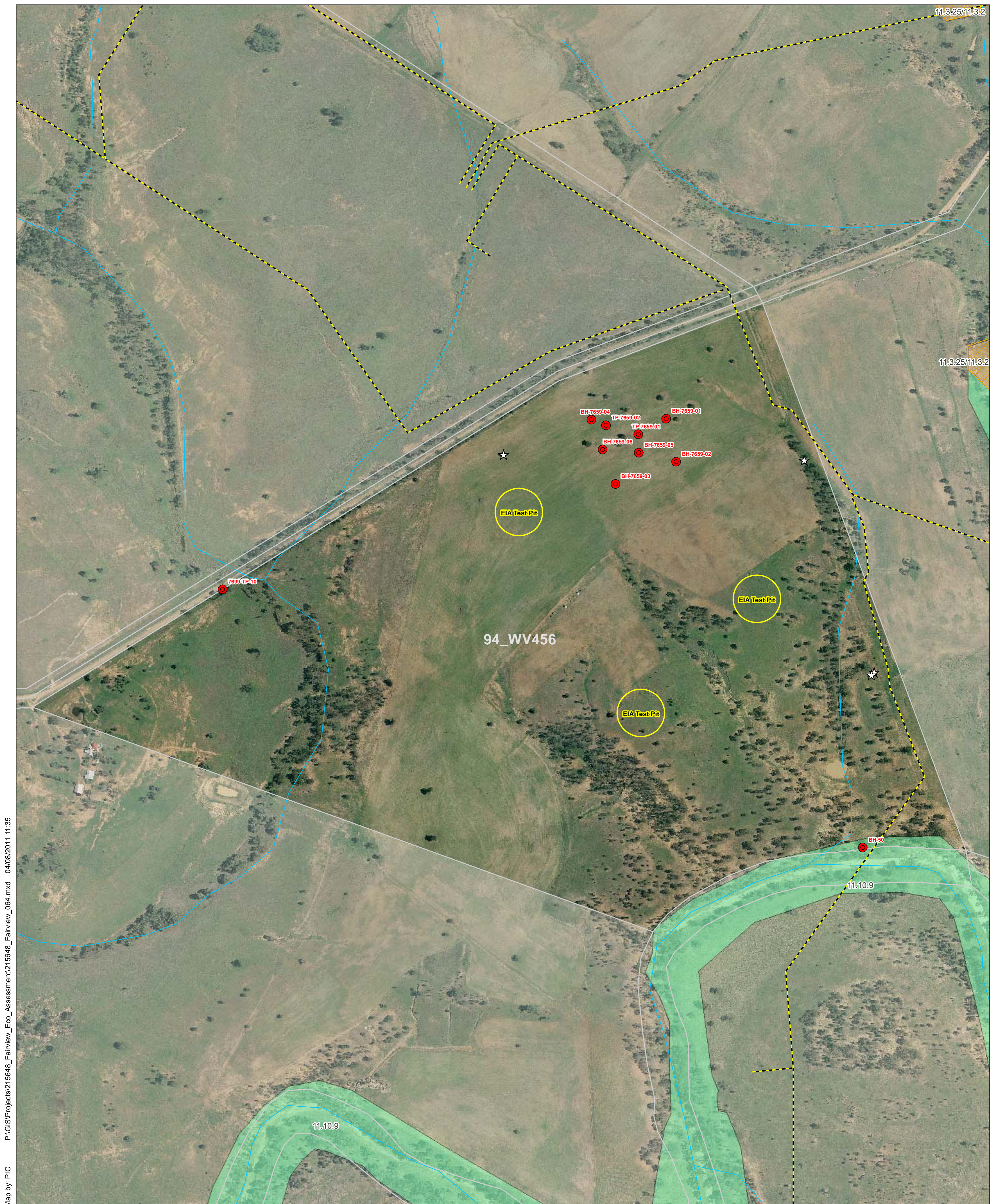


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 Coordinate system: GDA\_1994\_MGA\_Zone\_55

**Santos Upstream Ecological Assessment**

**Figure 1-1: Location of Proposed Pipeline Corridors Investigated**



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**Legend**

- |                            |   |                             |
|----------------------------|---|-----------------------------|
| ☆ EVNT and Type A Species  | <b>ESA Mapping (Including Buffer Areas)</b> | <b>Regional Ecosystem</b>   |
| ▭ Corridors - Ground Truth | ▨ Category A                                | ▭ Endangered - Dominant     |
| ● Geotech Borehole         | ▨ Category B                                | ▭ Endangered - Sub-dominant |
| ▭ Cadastre                 | ▨ Category C                                | ▭ Of Concern - Dominant     |
| — Watercourse              |   | ▭ Of Concern - Sub-dominant |
|                            |   | ▭ Least Concern             |

Source: Cadastre: DERM, 2011.



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Coordinate system: GDA\_1994\_MGA\_Zone\_55

**Santos Upstream Ecological Assessment**

**Figure 1-2: Location of Proposed Pipeline Corridors Investigated**



## 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. Note that figures created for this report are based on the official DERM mapping, which illustrates the VM Act status.

### 2.2 Field methodology

The proposed development areas were assessed by two (2) Aurecon ecologists (S Stone and C Arkinstall) on the 10 of July, 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 stakeout locations within Lot 96 on WV457 were of varying shape and size, as illustrated on Figure 1.1. The three circular stakeout locations within Lot 94 on WV456 had a radius of 100 m.

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 C. Incidental fauna observations are provided in the relevant sections throughout this report.





# 3 Ecological assessment

## 3.1 Stakeout Locations within Lot 96 on WV457

### General

The stakeout locations within Lot 96 on WV457 vary in size and shape, and are situated within the western half of the property (as illustrated in Figure 1.1).

The stakeout locations are considered highly modified environments, as a result of historical land clearing, and current agricultural practices. As a result, canopy, sub-canopy and shrub strata are considered sparse (i.e. 5%). The ground layer represents the dominant stratum, with approximately 90% cover, of which exotic pasture grasses and weeds represent approximately 85%.

No RE communities, or known ESA's (or associated buffers) have been recorded in association with these stakeout locations. The closest ESA mapping occurs approximately 460 m to the north (within Lot 11 on WV1759).

Two DERM mapped (stream order 1) watercourses and associated drainage lines bisect the stakeout locations.

### Floristics

Canopy cover within stakeout locations is largely devoid (ie 5%), and were typically restricted to the stream order 1 riparian zones. Indicative canopy/sub-canopy species include *Eucalyptus populnea* (Poplar box), *Allocasuarina luehmannii* (Bull oak), *Acacia excelsa* (Ironwood), and *Geijera parviflora* (Wilga).

Species recorded within the sparse shrub layer include *Alstonia constricta* (Bitter bark), *Apophyllum anomalum* (Broom bush), *Eremophila mitchelli* (False sandalwood), *Owenia acidula* (Emu apple), *Atalaya hemiglauca* (White wood), and regrowth *E. populnea*. *Opuntia tomentosa* (Velvety tree pear) dominates the shrub layer predominately within the clearing in the north-western corner of the lot, in association with the proposed effluent irrigation area.

*Pennisetum ciliare* (Buffel grass) dominates the stakeout locations, with occurrences of *Aristida jerichoensis* (Jerico wire grass), *Chloris pectinata* (Comb chloris), *Panicum effusum* (Inquisitive grass), *Themeda triandra* (Kangaroo grass), *Bothriochloa bladhii* (Forest blue grass), *Melinis repens* (Red Natal grass), *Heteropogon contortus* (Black Speargrass), and *Dichanthium sericeum* (Queensland blue grass).

Three (3) Type A restricted plants (under the provisions of the NC Act) have been recorded within the stakeout locations, namely *Brachychiton populneus* (Kurrajong). Table 3.1.1 and Figure 1.1 indicate the location of these individuals.

**Table 3.1.1 Location of Type A Restricted Plants (*Nature Conservation Act 1992*)**

<b>Species</b>	<b>Easting</b> (GDA 94, Zone 55J)	<b>Northing</b> (GDA 94, Zone 55J)
<i>Brachychiton populneus</i>	701468.46	7072758.40
<i>Brachychiton populneus</i>	701470.91	7072768.22
<i>Brachychiton populneus</i>	700541.46	7072625.54

Additional Type A restricted species have been detected within the bounds of Lot 96 on WV457, however these individuals exist outside of the stakeout areas, and are therefore not a subject of this report. Refer to the Lot 96 WV457 specific report for further information on the location of these species.

No additional conservation significant flora species (under the provisions of the EPBC Act and/or NC Act) were detected within or immediately adjacent to the stakeout locations during field investigations.

A species list for the stakeout locations is provided in Appendix C.

#### **Habitat values**

Fourteen (14) incidental fauna species were recorded within the proposed development area, namely Galah (*Eolophus roseicapilla*), Magpie (*Gymnorhina tibicen*), Magpie lark (*Grallina cyanoleuca*), Willie wagtail (*Rhipidura leucophrys*), Torresian crow (*Corvus orru*), Striated pardalote (*Pardalotus striatus*), Pale-headed rosella (*Platycercus adscitus*), Sulphur-crested cockatoo (*Cacatua galerita*), Crested pigeon (*Ocyphaps lophotes*), Apostlebird (*Struthidea cinerea*), Wedge-tail eagle (*Aquila audax*), Striped honeyeater (*Plectorhyncha lanceolata*), Banded lapwing (*Vanellus tricolor*), and Red-necked wallaby (*Macropus rufogriseus*). All of these species are listed as Least Concern under the provisions of the NC Act and are not listed under the provisions of the EPBC Act.

No conservation significant fauna species (under the provisions of the EPBC Act and/or NC Act) were detected during field investigations.

As discussed, the stakeout locations have been extensively disturbed by historical clearing and current grazing practices. Habitat features associated with the stakeout locations are therefore typically limited to dense groundcover vegetation (ie grassy tussocks) and woody debris (ie fallen/felled timber). As a result, the habitat value of this survey area is considered low, overall.


Accordingly, the species utilising resources in these regions of the survey area are most likely to be limited to common, generalist species that are able to adapt to significant habitat disturbances (ie House mouse [*Mus musculus*], macropods etc). Common birds of prey known from the area (ie Wedge-tailed eagle [*Aquila audax*] and Nankeen kestrel [*Falco cenchroides*]) would also be expected to utilise this site and the surrounding areas for foraging purposes.

## **3.2 Stakeout Locations within Lot 94 on WV456**

### **General**

Three (3) circular stakeout locations occur within Lot 94 on WV456, which measure 100 m in diameter (Figure 1.2). As discussed earlier in this report, the fourth proposed stakeout location in the western region of the property was not assessed, as it is no longer proposed.

The stakeout locations are considered highly modified environments, as a result of historical land clearing, and current agricultural practices. As a result, canopy, sub-canopy and shrub strata are absent. The dense (ie 70%) ground layer is represented by a mixture of native and exotic pasture grasses, and weeds.



No RE communities, watercourses, or known ESA's (or associated buffers) have been recorded in association with these stakeout locations. The closest ESA mapping occurs approximately 600 m to the north-east (within Lot 11 on WV1759).

### **Floristics**

As a result of historical clearing and current agricultural practices (ie grazing), canopy and shrub strata is absent within the stakeout locations.

*Pennisetum ciliare* (Buffel grass) dominates the stakeout locations, with occurrences of *Chloris pectinata* (Comb chloris), *Aristida caput-medusae* (Curly head wire grass), *Themeda triandra* (Kangaroo grass), *Melinis repens* (Red Natal grass), *Heteropogon contortus* (Black Speargrass), and *Dichanthium sericeum* (Queensland blue grass).

No Type A restricted species (under the provisions of the NC Act), or conservation significant flora species (under the provisions of the EPBC Act and/or NC Act) were detected within or immediately adjacent to the stakeout locations during field investigations.

A species list for the stakeout locations is provided in Appendix C.

### **Habitat values**

Three (3) incidental fauna species were recorded within the proposed development area, namely Torresian crow (*Corvus orru*), Striated pardalote (*Pardalotus striatus*), and Brown quail (*Coturnix ypsilophora*). All of these species are listed as Least Concern under the provisions of the NC Act and are not listed under the provisions of the EPBC Act.

No conservation significant fauna species (under the provisions of the EPBC Act and/or NC Act) were detected during field investigations.

As discussed, the stakeout locations have been extensively disturbed by historical clearing and current grazing practices. Habitat features associated with the stakeout locations are therefore typically limited to dense groundcover vegetation (ie grassy tussocks) and woody debris (ie fallen/felled timber). As a result, the habitat value of this survey area is considered low, overall.

Accordingly, the species utilising resources in these regions of the survey area are most likely to be limited to common, generalist species that are able to adapt to significant habitat disturbances (ie House mouse [*Mus musculus*], macropods etc). Common birds of prey known from the area (ie Wedge-tailed eagle [*Aquila audax*] and Nankeen kestrel [*Falco cenchroides*]) would also be expected to utilise this site and the surrounding areas for foraging purposes.



## 4 Conclusion

The stakeout locations occur within highly modified environments, as a result of historical land clearing, and current agricultural practices. As a result, overall, the canopy, sub-canopy and shrub strata are considered sparse. The ground layer is typically represented by a mosaic of native and exotic pasture grasses, and weeds.

No RE communities, or known ESA's (or associated buffers) have been recorded in association with these stakeout locations.

Two DERM mapped (stream order 1) watercourses and associated drainage lines bisect the stakeout locations within Lot 96 on WV457.

Three (3) Type A restricted plants (under the provisions of the NC Act) have been recorded within the Lot 96 on WV457 stakeout locations, namely *Brachychiton populneus* (Kurrajong). No Type A restricted species were recorded in association with the stakeout locations within Lot 94 on WV456.

Habitat values of the stakeout locations on both properties were considered low, overall. Habitat features associated with the stakeout locations are typically limited to dense groundcover vegetation (ie grassy tussocks) and woody debris (ie fallen/felled timber).

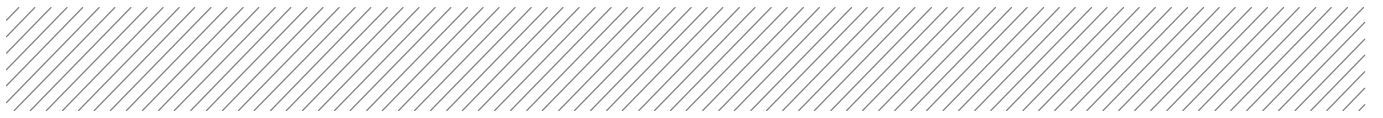
No flora or fauna species protected under the provisions of the EPBC Act were observed within the proposed development areas during these investigations.



# 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

Family Name	Scientific Name	Common Name	Lot 96 on WV457	Lot 94 on WV456
Adiantaceae	<i>Cheilanthes sieberi</i>	Mulga Fern	✓	-
Apocynaceae	<i>Alstonia constricta</i>	Bitter Bark	✓	-
Asteraceae	<i>Brachyscome dentata</i>	Lobe-seed Daisy	-	✓
Asteraceae	<i>Bracteantha bracteata</i>	Everlasting Daisy	✓	-
Asteraceae	<i>Calotis cuneifolia</i>	Purple Burr Daisy	✓	✓
Asteraceae	<i>Calotis lappulacea</i>	Yellow Burr Daisy	✓	-
Asteraceae	<i>Chrysocephalum apiculatum</i>	Yellow Buttons	✓	-
Asteraceae	<i>Cirsium vulgare</i>	Spear Thistle, Black Thistle	-	✓
Asteraceae	<i>Conyza bonariensis</i>	Fleabane	-	✓
Asteraceae	<i>Pterocaulon sphacelatum</i>	Apple Bush	✓	-
Asteraceae	<i>Sonchus oleraceus</i>	Sow Thistle	-	✓
Asteraceae	<i>Xerochrysum bracteatum</i>	Everlasting Daisy	-	✓
Cactaceae	<i>Opuntia tomentosa</i>	Velvety Tree Pear <sup>LPA2</sup>	✓	✓
Capparaceae	<i>Apophyllum anomalum</i>	Warrior bush	✓	-
Capparaceae	<i>Capparis lasiantha</i>	Native Orange	✓	✓
Casuarinaceae	<i>Allocasuarina leuhmannii</i>	Bull Oak	✓	-
Chenopodiaceae	<i>Sclerolaena birchii</i>	Galvanised Burr	✓	✓

Family Name	Scientific Name	Common Name	Lot 96 on WV457	Lot 94 on WV456
Chenopodiaceae	<i>Maireana microphylla</i>	Small-leaf Bluebush	✓	✓
Chenopodiaceae	<i>Sclerolaena muricata</i>	Black rolly-polly	✓	✓
Chenopodiaceae	<i>Chenopodium carinatum</i>	Keeled Goosefoot	✓	-
Chenopodiaceae	<i>Chenopodium desertorum</i>	Desert Goosefoot	✓	-
Cupressaceae	<i>Callitris glaucophylla</i>	White Cypress Pine	✓	-
Cyperaceae	<i>Fimbristylis dichotoma</i>	Fimbristylis	-	✓
Goodeniaceae	<i>Goodenia glabra</i>	Smooth Goodenia	-	✓
Juncaceae	<i>Juncus usitatus</i>	Juncus	✓	-
Laxmanniaceae	<i>Lomandra multiflora</i>	Lomandra	-	✓
Loranthaceae	<i>Dendrophthoe glabrescens</i>	Orange mistletoe	✓	-
Malvaceae	<i>Abutilon oxycarpum</i>	Chinese Lantern	✓	-
Malvaceae	<i>Sida acuta</i>	Spiny head Sida	✓	✓
Malvaceae	<i>Sida subspicata</i>	Queensland Hemp	-	✓
Meliaceae	<i>Owenia acidula</i>	Emu Apple	✓	-
Mimosaceae	<i>Acacia excelsa</i>	Iron wood	✓	-
Myoporaceae	<i>Eremophila mitchellii</i>	False Sandalwood	✓	-
Myrtaceae	<i>Eucalyptus populnea</i>	Poplar Box	✓	-
Oxalidaceae	<i>Oxalis stricta</i>	Yellow Wood Sorrel	✓	-
Poaceae	<i>Aristida caput-medusae</i>	Curly Head Wire Grass	-	✓



Family Name	Scientific Name	Common Name	Lot 96 on WV457	Lot 94 on WV456
Poaceae	<i>Aristida jerichoensis</i>	Jericho wire grass	✓	-
Poaceae	<i>Austrostipa verticillata</i>	Slender Bamboo Grass	✓	-
Poaceae	<i>Bothriochloa bladhii</i>	Forest Blue Grass	✓	-
Poaceae	<i>Chloris pectinata</i>	Comb chloris	✓	✓
Poaceae	<i>Cymbopogon refractus</i>	Barbwire Grass	-	✓
Poaceae	<i>Dichanthium sericeum</i>	Queensland Blue Grass	✓	✓
Poaceae	<i>Eragrostis brownii</i>	Browns Lovegrass	✓	-
Poaceae	<i>Eragrostis fallax</i>	Tall Lovegrass	✓	-
Poaceae	<i>Heteropogon contortus</i>	Black Spear Grass	✓	✓
Poaceae	<i>Melinis repens</i>	Red Natal	✓	✓
Poaceae	<i>Panicum decompositum</i>	Hairy Panic	-	✓
Poaceae	<i>Panicum effusum</i>	Inquisitive Grass	✓	-
Poaceae	<i>Panicum simile</i>	Two-coloured Panic	✓	-
Poaceae	<i>Pennisetum ciliare</i>	Buffel Grass	✓	✓
Poaceae	<i>Sporobolus caroli</i>	Desert Sporobolus	✓	✓
Poaceae	<i>Sporobolus creber</i>	Western Rats Tail Grass	✓	✓
Poaceae	<i>Themeda triandra</i>	Kangaroo Grass	✓	✓
Poaceae	<i>Urochloa mosambicensis</i>	Urochloa	✓	-
Polygonaceae	<i>Emex australis</i>	-	-	✓

Family Name	Scientific Name	Common Name	Lot 96 on WV457	Lot 94 on WV456
Portulacaceae	<i>Portulaca pilosa</i>	Hairy Pigweed	✓	-
Primulaceae	<i>Anagallis arvensis</i>	Scarlet pimpernel	✓	✓
Proteaceae	<i>Grevillea striata</i>	Beefwood	-	✓
Rubiaceae	<i>Psyrax odorata</i>	Canthium	✓	-
Rutaceae	<i>Geijera parviflora</i>	Wilga	✓	-
Sapindaceae	<i>Atalaya hemiglauca</i>	Whitewood	✓	✓
Solanaceae	<i>Lycium ferocissimum</i>	African boxthorn <sup>LPA2</sup>	✓	-
<b>Sterculiaceae</b>	<b><i>Brachychiton populneus</i></b>	<b>Kurrajong</b>	✓	-
Verbenaceae	<i>Verbena bonariensis</i>	Bunchy Verbena, Purpletop Verbena	-	✓
Verbenaceae	<i>Verbena tenuisecta</i>	Mayne's Curse	✓	✓

**Bold** = NC Act Type A Species

<sup>LPA2</sup> = Class 2 declared species under the provisions of the Land Protections (*Pest and Stock Route Management*) Act 2002



**Aurecon Australia Pty Ltd**

ABN 54 005 139 873

Level 14, 32 Turbot Street  
Brisbane QLD 4000

Locked Bag 331  
Brisbane QLD 4001  
Australia

**T** +61 7 3173 8000

**F** +61 7 3173 8001

**E** [brisbane@aurecongroup.com](mailto:brisbane@aurecongroup.com)

**W** [aurecongroup.com](http://aurecongroup.com)

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