

## Detailed Regional Ecosystem Mapping PL310 (in part)



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**O2 Ecology Pty Ltd t/as O2 Ecology** ABN 98 153 475 382



Originating Office – Brisbane

Level 1 100 Brunswick St

Fortitude Valley QLD 4006

T 61 7 3339 7900 | F 61 7 3339 7922 | info@o2ecology.com.au

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Name	Email Address
Liz Dunlop	liz.dunlop@glng.com

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## List of Abbreviations

Abbreviation	Definition
Biodiversity Status:	
E	Endangered
OC	Of Concern
NC	No Concern at Present
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEHP	Queensland Department of Environment and Heritage Protection
DoE	Commonwealth Department of the Environment
DSITI	Queensland Department of Science, Information Technology, and Innovation
EDL	Ecologically Dominant Layer
GPS	Global Positioning System
ha	Hectare
IBRA	Interim Biogeographic Regionalisation for Australia
km	Kilometre
PL	Petroleum Lease
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
TEC	Threatened Ecological Community
VM Act	Queensland's <i>Vegetation Management Act 1999</i>
VM Act Class:	
E	Endangered
OC	Of Concern
LC	Least Concern

## 1. Introduction

O2 Ecology was engaged by Santos GLNG to produce a large scale and more robust Regional Ecosystem (RE) mapping layer over sections of petroleum lease (PL) area 310. Due to the scale of Santos GLNG operations it is not practical to conduct detailed ecological assessments to verify every polygon of the published RE mapping. The inaccuracies present in the current published RE mapping are currently resulting in redesigns and rerouting of infrastructure late in the design process which can lead to increased design costs and schedule delays. This leads to increased design costs and to increased contractor and machinery downtime costs while redesigns are completed. A more robust and permanent RE mapping layer would allow design of key infrastructure to be undertaken more efficiently and Santos GLNG are committed to developing a more workable mapping layer.

### 1.1. Objectives

The key objective for this project is to produce large scale RE mapping over the south-eastern portion of PL310 based aerial photography interpretation of high resolution imagery made available by Santos GLNG in conjunction with results of field inspections.

### 1.2. Location of Study Area

The study area occurs immediately to the west of PL282 and to the north-west of PL281, which has previously been mapped by O2 Ecology (2015). The study area includes the south-eastern portion of PL310 to the east of Stake Yard Road plus an area immediately north of the Warrego Highway (**Figure 1**). The total area of the study area is approximately 91 km<sup>2</sup> and is located approximately 50 km east of Roma. Refer to **Figure 1** for the location of the study area. The properties assessed in the field survey are listed in **Table 1**. These properties were targeted due to the presence of remnant vegetation, gilgai, or other vegetation and environmental features of interest. Properties were not selected based on future development programs.

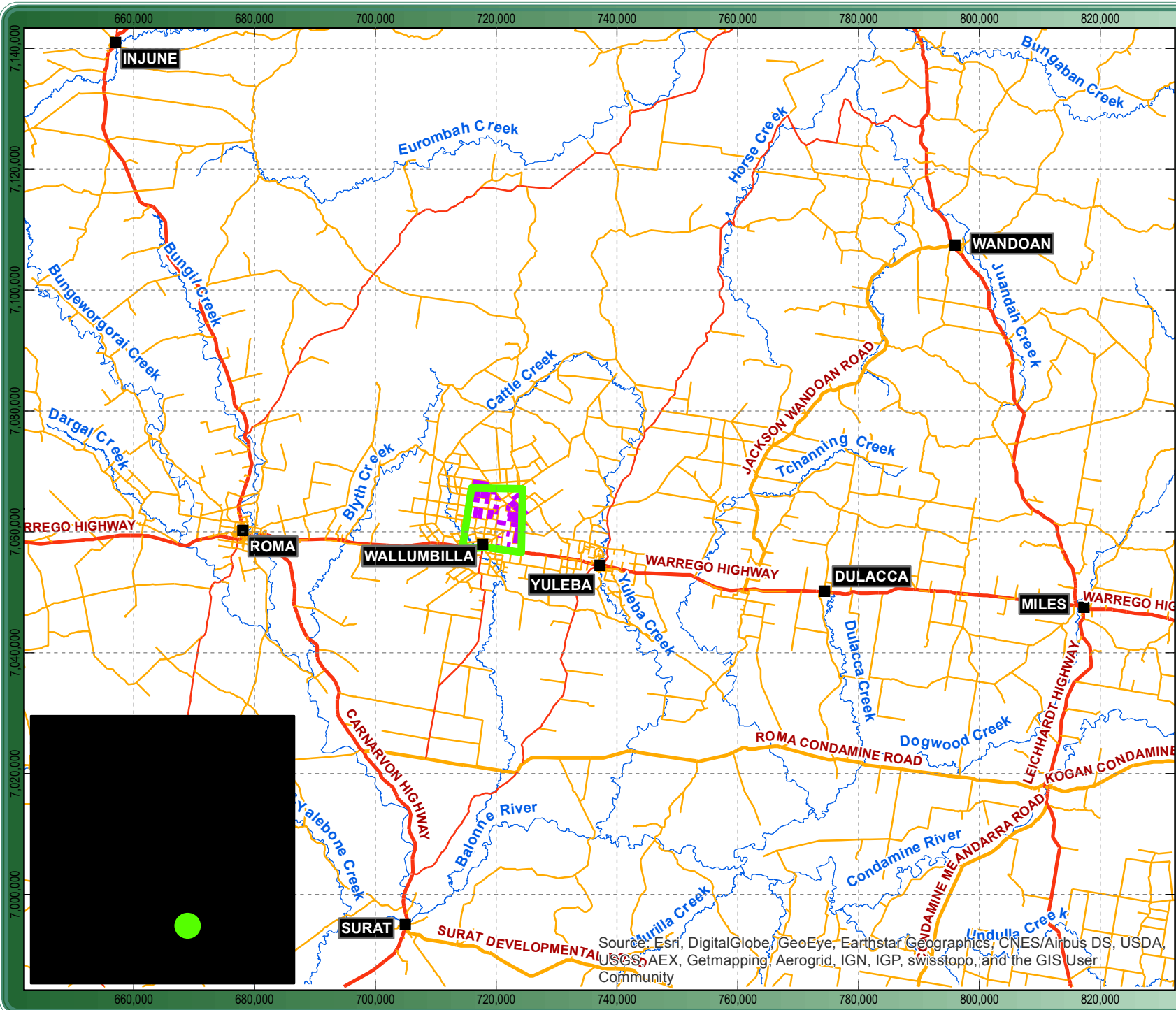
**Table 1 Properties visited within the PL310 study area**

Property Name	Lot	Plan	Area (ha)
Evian	368	WAL53427	64.75
Kundabung	111	WAL53367	48.562
	122	WAL53367	72.057
	132	WV103	22.4398
Macotte	301	WV1331	71.6673
Nasby Farm	96	WAL53352	27.165
Beau View	355	WV290	64.588
Boonderoo	2	SP186195	238.8
Wilgavale	1	RP892977	124.9
	75	WV1887	131.422
	76	WV165	265.588
	79	WV171	129.499
	139	CP892978	311.3
	150	WV192	101.144
	351	WAL53452	64.75

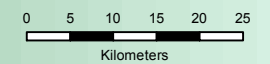
Property Name	Lot	Plan	Area (ha)
Harries	15	WV1414	38.066
Oakery	371	WV33	129.461
	373	WV33	129.499
Sans Pariel	341	WV221	130.142
	348	WV132	64.745
	554	WV239	170.312
Springtime	403	WV29	116.322
	361	WV290	134.705
The Pines	555	WV1441	96.561
Macarra	2	RP129705	427.315
	2	RP168325	249.3
Shadowlands	1	RP168325	46.07
Retreat	177	WAL53463	64.75

A number of second order streams dissect the PL310 study area including Middle Creek, Kangaroo Creek, Sawpit Creek, Sleepy Creek, Wallumbilla Creek, and Washpool Creek.

15 Feb 2016 Z:\GIS\ECO15\_0017\_2\GIS\Maps\Working (Optional)\v2\ECO15\_0017\_03-01\_Locality.mxd



**SUNSHINE COAST**  
 8 Crebe Street  
 Peregrin Beach, QLD, 4566  
 t (07) 5448 3288  
 ACN: 98 153 475 382 ABN: 153 475 382  
[www.o2ecology.com.au](http://www.o2ecology.com.au)



1:875,000 at A4

Map Projection: Transverse Mercator  
 Horizontal Datum: GDA 1994  
 Grid: GDA 1994 MGA Zone 55

**Legend**

- Localities
- Study Area
- PL310 properties
- Highways
- Secondary roads
- Local connector roads
- Streets
- Major Waterways

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 This document is confidential and legally privileged and has been prepared for the Santos TOGA Pty Ltd Upstream GLNG legal team.

**Santos GLNG**  
 Detailed Regional  
 Ecosystem Mapping PL310

Regional Context  
 Priority Areas

**Figure 1**

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Data Source: DTMR: State Controlled Roads, DNRM: Major watercourse lines - Queensland (April 2014), Geoscience Australia 250k topo: Populated places © State of Queensland (DTMR, DNRM); Imagery: Esri, DigitalGlobe



## 2. Methods

This section outlines the methods utilised by O2 Ecology to produce large scale RE mapping over PL310. O2 Ecology was supplied with orthorectified high resolution imagery (25cm) dated 2015 over these areas. This imagery was the base layer used for mapping.

O2 Ecology's principal botanist interpreted the imagery, and correlated the observed patterns with other mapping (e.g. geology mapping, existing RE mapping), historical aerial photography, Google Earth imagery, and expert knowledge to produce large scale amended RE mapping over the sections of the PL310 area selected by Santos GLNG. Digital spatial data for 10 m contours, waterways, weathering intensity mapping, and land system mapping (CSIRO 1974) were also referred to during map construction. The majority of map polygons were attributed with a single RE and confidence ratings were assigned to indicate accuracy of both the polygon boundary and RE attribution for each polygon (as per Neldner et al. 2012). Each produced polygon was attributed in accordance with the Santos Spatial Structure guidelines.

Amended RE mapping was produced at a nominal scale of 1:10,000. Mapping at 1:10,000 scale has a minimum polygon size of approximately 0.1 ha, a minimum width for linear features of approximately 10 m, and polygon boundaries with spatial precision of  $\pm 10$  m. This compares to the nominal scale of 1:100,000 for the published RE mapping, with a minimum area for mapped features of 5 ha, a minimum width for linear features of 75 m, and line work with positional accuracy of  $\pm 100$  m.

### 2.1. Field Survey

A field survey was conducted to assist in the preparation of large-scale RE mapping over the study area. A number of sites were selected within the PL310 study area to gain data to assist with the attribution of polygons. Survey sites were selected within specific areas chosen by Santos GLNG to sample representative vegetation communities present in these areas. Field surveys were based on direct observations of flora and vegetation, including soils, geology and landforms.

#### 2.1.1. Site Selection

Field surveys were undertaken in representative vegetation communities across sections of the PL310 area. Sites were selected on the basis of:

- Aerial photography interpretation of site characteristics;
- Presence of mapped remnant or regrowth vegetation;
- Prior approval from landholders; and
- Potential for close access by vehicle.

#### 2.1.2. Flora and Vegetation Survey Methods

The August 2012 version of the Queensland Herbarium's Regional Ecosystem map modification kit was utilised in field assessments. When the attribution of a RE to a polygon was in doubt, the Regional Ecosystem type assessment form (Sheet D) was completed. In areas where the mapping was correct or when there was an obvious change in the vegetation community, a Quaternary level assessment (Neldner et al. 2012) was undertaken. Field site assessment included noting the landform, soil type and evidence of disturbance. A total of 49 field sites were assessed across the study area with an additional 38 Quaternary sites undertaken on or adjacent the PL310 area. Additional survey sites were undertaken on lot 1 on WAL53463 ("Retreat"), which falls to the east of the PL310 area. Survey site locations are shown in **Figure 5**. Site photographs were taken towards the four cardinal compass points with a photograph taken of the soil surface.

The remnant/non-remnant status of native vegetation was determined by comparing the existing predominant canopy of a site with that in a normal or undisturbed state. The predominant canopy is defined by the Queensland Herbarium as the ecologically dominant layer (EDL) or that layer of the vegetation which contains the most above ground biomass. The EDL can be defined in terms of growth form, height, cover density and species. In the majority of cases, the EDL is equivalent to the upper stratum of Walker and Hopkins (1990).

The relative dominance of species in each of the strata was assigned as per the definitions in the August 2012 version of the Regional Ecosystem Map Assessment Kit (Queensland Herbarium 2012) and as described below:

- **D (dominant species):** A species that contributes most to the overall above-ground biomass of a particular stratum.
- **C (co-dominant species):** Where two or more species contribute more or less equally to form the dominant above-ground biomass of a particular stratum.
- **S (subdominant species):** A species is considered to be subdominant when it contributes less biomass than the dominant species, but occurs as more than an isolated individual. As a general rule, the species must individually contribute more than 10% of the total biomass of the stratum in which it occurs.
- **A (associated species):** Any species present in a stratum but does not contribute more than 10% of the total biomass of the stratum in which it occurs.

## 2.2. Field Survey Constraints

A storm system which passed through the area on the 16<sup>th</sup> November brought around 70 mm of rain to parts of the PL310 area. As a consequence of this, many tracks on the properties to be visited were closed until conditions improved. This resulted in some sites to be sampled being relocated to areas where access was possible and also meant that many sites were visited on foot.

## 2.3. Coordinate System and Map Datum

Positional data was collected with a handheld Garmin eTrex Global Positioning System (GPS) unit, with accuracy between 4 and 8 m. Locations were recorded using the UTM coordinate system with a GDA94 datum. All locations presented in this report are within UTM zone 55J.

## 2.4. Nomenclature

Scientific names for terrestrial flora are consistent with those used in the Census of the Queensland Flora (Bostock & Holland 2014) and botanical binomials presently accepted by the Queensland Herbarium, (DSITI). The description of REs follows that of the Regional Ecosystem Description Database (REDD, Version 9.0) (Queensland Herbarium 2015).

### 3. Results and Discussion

#### 3.1. Regional Ecosystem

In Queensland, assessable remnant vegetation is classified into REs. These REs are discrete vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. Each RE is identified with a three part label, for example, RE 11.3.25. The first number, 11, indicates the bioregion in which the RE is located, in this case the Brigalow Belt bioregion. The second number, 3, indicates the land zone on which the ecosystem is found, in this case alluvium associated with river and creek flats. The third number, 25, relates to the dominant vegetation, in this case *Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines.

The Queensland Herbarium (DSITI) is responsible for classifying and mapping REs, using a combination of remotely sensed data sets and on-ground studies. Version 9 of the RE mapping is certified under the *Vegetation Management Act 1999*, includes both a VM Class (e.g. Endangered, Of Concern or Least Concern) and Biodiversity Status (e.g. Endangered, Of Concern or No Concern at Present), and maps the extent of REs as of 2013.

#### 3.2. Bioregion and Subregion

The study area is located entirely within the Southern Downs (BRB26) subregion of the Brigalow Belt bioregion. The Brigalow Belt bioregion covers a total area of 135,500 km<sup>2</sup> and includes coastal areas, rugged ranges and alluvial plains. Dominant vegetation communities include open forests (dominated by *Acacia harpophylla*, *A. argyrodendron*, *A. cambagei*, *A. shirleyi*, *A. catenulata*, *Eucalyptus cambageana*, *E. camaldulensis*, *E. tereticornis*), woodlands (dominated by *Eucalyptus melanophloia*, *E. crebra*, *E. populnea*, *E. brownii*, *E. persistens*, *E. orgadophila*, *E. coolabah*, *E. camaldulensis*, *E. tereticornis*) and small patches of semi-evergreen vine thicket (Young et al. 1999).

The Southern Downs subregion is formed primarily on fine grained Jurassic and Cretaceous sediments, forming a low, hilly landscape including the watershed formed by the Great Dividing Range. There are extensive late Cainozoic flood-outs/clay plains in the southern part of the subregion with minor areas of Tertiary volcanics scattered throughout the subregion. Vegetation includes belah (*Casuarina cristata*), brigalow (*Acacia harpophylla*), poplar box (*Eucalyptus populnea*), and narrow-leaved ironbark (*Eucalyptus crebra*) communities, and less extensively spotted gum (*Corymbia citriodora*), dusky leaved ironbark (*Eucalyptus fibrosa* subsp. *nubila*), semi evergreen vine thicket, *Astrebla* and *Acacia* communities (Young et al. 1999).

#### 3.3. Geology

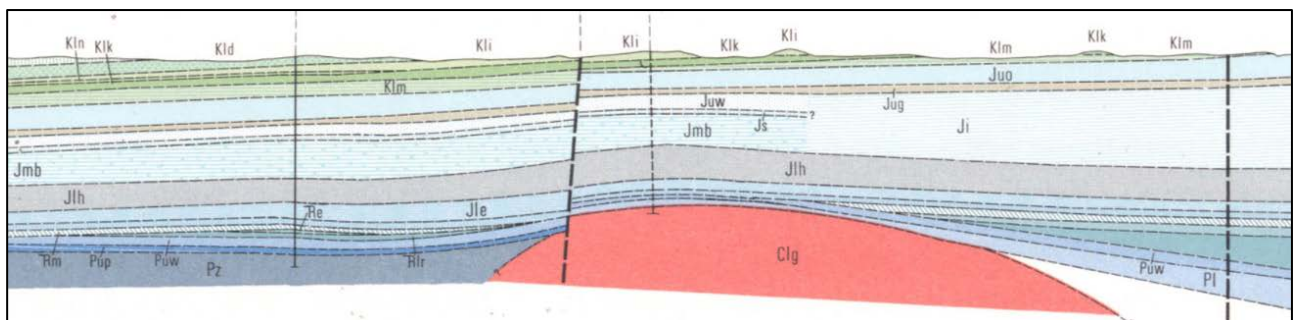
The 2012 Department of Natural Resources and Mines (DNRM) surface rock unit GIS datasets for the Roma 1:250,000 geology map sheet (Department of Natural Resources and Mines 2012) (**Figure 3**) identify the study area as containing a number of Cretaceous aged sedimentary deposits. These geology units are described in more detail below in **Table 2**.

It should be noted that at 1:250,000 scale, line accuracy within the geology map is  $\pm 250$  m and was used only as guide.

**Table 2 Major surface geology units mapped from the study area (source: Roma 1:250,000 geology map)**

Unit Name	Map Symbol	Age	Lithology Description
	Qs/Kld	Quaternary/Lower Cretaceous	Sand, gravel, soil with gravel
Doncaster member	Kld	Lower Cretaceous	Mudstone, some siltstone, quartzose sandstone and coquinite. Shelly fossils
Doncaster member (weathered)	Kld>w		
Minmi member	Kli	Lower Cretaceous	Glauconitic lithic to quartzose sandstone, siltstone, mudstone, bioturbidites. Shelly fossils
Kingull member	Klk	Lower Cretaceous	Clayey sandstone, carbonaceous mudstone
Nullawurt sandstone member	Klm	Lower Cretaceous	Quartzose to sublabile sandstone, siltstone, mudstone

The stratigraphy of the surface geology is important in understanding the extent and distribution of land zones and Regional Ecosystem mapping over the study area. The stratigraphic profile of an area close to the study area is included in the hard copy of the Roma 1:250,000 geology map and is illustrated in **Figure 2**.



**Figure 2 Geological stratigraphy illustrating the layering of the major surface geologies in the vicinity of the PL310 area (Source: Roma 1:250,000 geology map).**

The Weathering Intensity Map of Australia dataset shows the degree to which the surface bedrock and sediment are weathered. The degree to which the surface is weathered (or its weathering intensity) is intrinsically linked to the factors involved in soil/regolith formation including parent material, climate, topography, biota and time. The weathering intensity mapping index is based on surface geochemistry (potassium, thorium, uranium) shown by the gamma radiometric data shown in the radiometric map of Australia, and landscape relief from the 90 m SRTM DEM. High weathering intensity values indicate high to very highly weathered materials. As weathering progresses there is generally a loss of potassium compared with uranium and thorium, which can be retained in residual oxides and clays. Low relief landforms tend to preserve or maintain weathered material. The accuracy of the weathering index though would vary depending on the resolution of the gamma radiometrics, which varies across the country.

It is unclear whether a specific weathering intensity value correlates with deeply weathered profiles. However, the Doncaster Member map unit (Kld>w) in the eastern extent on the PL area is described as deeply weathered and correlates well with the weathering intensity index. Examining the radiometrics data for that location, it is low in potassium and high in thorium/uranium, which would explain the high weathering index values. As a consequence, those areas mapped as having a high weathering intensity index were closely scrutinised to determine whether they could be classed as deeply weathered profiles. The underlying geology map and land system map also assisted in determine the extent of deeply weathered areas in the study area.

Land systems mapped for the study area are listed in **Table 3** (CSIRO 1974). Land systems mapping was undertaken at a scale greater than 1:500,000.

**Table 3 Land systems and dominant land units mapped for the study area (CSIRO 1974).**

Land System	Dominant Land Unit	Position in landscape	Vegetation	Soils
AX	64	Alluvial plains	Poplar box woodland with some belah	Duplex soils
(S)uBl	38	Gently undulating plains	Belah forest and some brigalow and shrubs	Deep texture-contrast soils
(S)uBu	31	Undulating lowlands	Eucalypt woodland with bull oak	Texture contrast soils
(S)uX	26	Gently undulating lowlands	Poplar box woodlands and shrubs	Deep red earths with sparse surficial ferruginous gravel
(S)uXB	37	Undulating lowlands	Poplar box and brigalow woodland and shrubs	Deep texture contrast soils

Land system codes: A = alluvium, S = shale mudstone and other labile sediments, ( ) = deeply weathered profile, u = undulating relief, r = rolling relief, X = poplar box, Ni = narrow-leaved ironbark, B = brigalow, Bl = belah, Bu = bull oak, Be = bendee

### 3.4. Land Zones

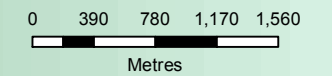
Land zones represent significant differences in geology and the associated landforms, soils and physical processes and generally correspond to broad geological and geomorphological categories and are a critical component of the RE classification scheme.

Land zones have been delineated across the study area based on the available surface geology mapping. Five land zones have been delineated from the study area and are broadly consistent with the surface geology mapping (**Table 4**).

**Table 4 Land zones and associated geologies occurring in the study area. Land zone descriptions as per Wilson and Taylor (2012).**

Land zone	Description	Associated geology
3	Recent Quaternary alluvial systems, including closed depressions, palaeo-estuarine deposits currently under fresh water influence, inland lakes and associated wave built lunettes. Excludes colluvial deposits such as talus slopes and pediments. Includes a diverse range of soils, predominantly Vertosols and Sodosols; also with Dermosols, Kurosols, Chromosols, Kandosols, Tenosols, Rudosols and Hydrosols; and Organosols in high rainfall areas.	Qa (not reliably mapped at the scale of the geology mapping over some of the study area)
5	Tertiary-early Quaternary extensive uniform near level or gently undulating plains with sandy or loamy soils. Includes dissected remnants of these surfaces. Also includes plains with sandy or loamy soils of uncertain origin, and plateau remnants with deep soils usually overlying duricrust. Excludes recent Quaternary alluvial systems (land zone 3), exposed duricrust (land zone 7), and soils derived from underlying bedrock (land zones 8 to 12). Soils are usually Tenosols and Kandosols, also minor deep sandy surfaced Sodosols and Chromosols. There may be a duricrust at depth.	Kld>w and other flat deeply weathered areas
7	Cainozoic duricrusts formed on a variety of rock types, usually forming mesas or scarps. Includes exposed ferruginous, siliceous or mottled horizons and associated talus and colluvium, and remnants of these features, for example low stony rises on downs. Soils are usually shallow Rudosols and Tenosols, with minor Sodosols and Chromosols on associated pediments, and shallow Kandosols on plateau margins and larger mesas.	Kld>w
9	Fine grained sedimentary rocks, generally with little or no deformation and usually forming undulating landscapes. Siltstones, mudstones, shales, calcareous sediments, and labile sandstones are typical rock types although minor interbedded volcanics may occur. Includes a diverse range of fine textured soils of moderate to high fertility, predominantly Vertosols, Sodosols, and Chromosols.	Kld, Klk
10	Medium to coarse-grained sedimentary rocks, with little or no deformation, forming	Kli, Klm

Land zone	Description	Associated geology
	<p>plateaus, benches and scarps. Includes siliceous (quartzose) sandstones, conglomerates and minor interbedded volcanics, and springs associated with these rocks. Excludes overlying Cainozoic sand deposits (land zone 5). Soils are predominantly shallow Rudosols and Tenosols of low fertility, but include sandy surfaced Kandosols, Kurosols, Sodosols and Chromosols.</p>	

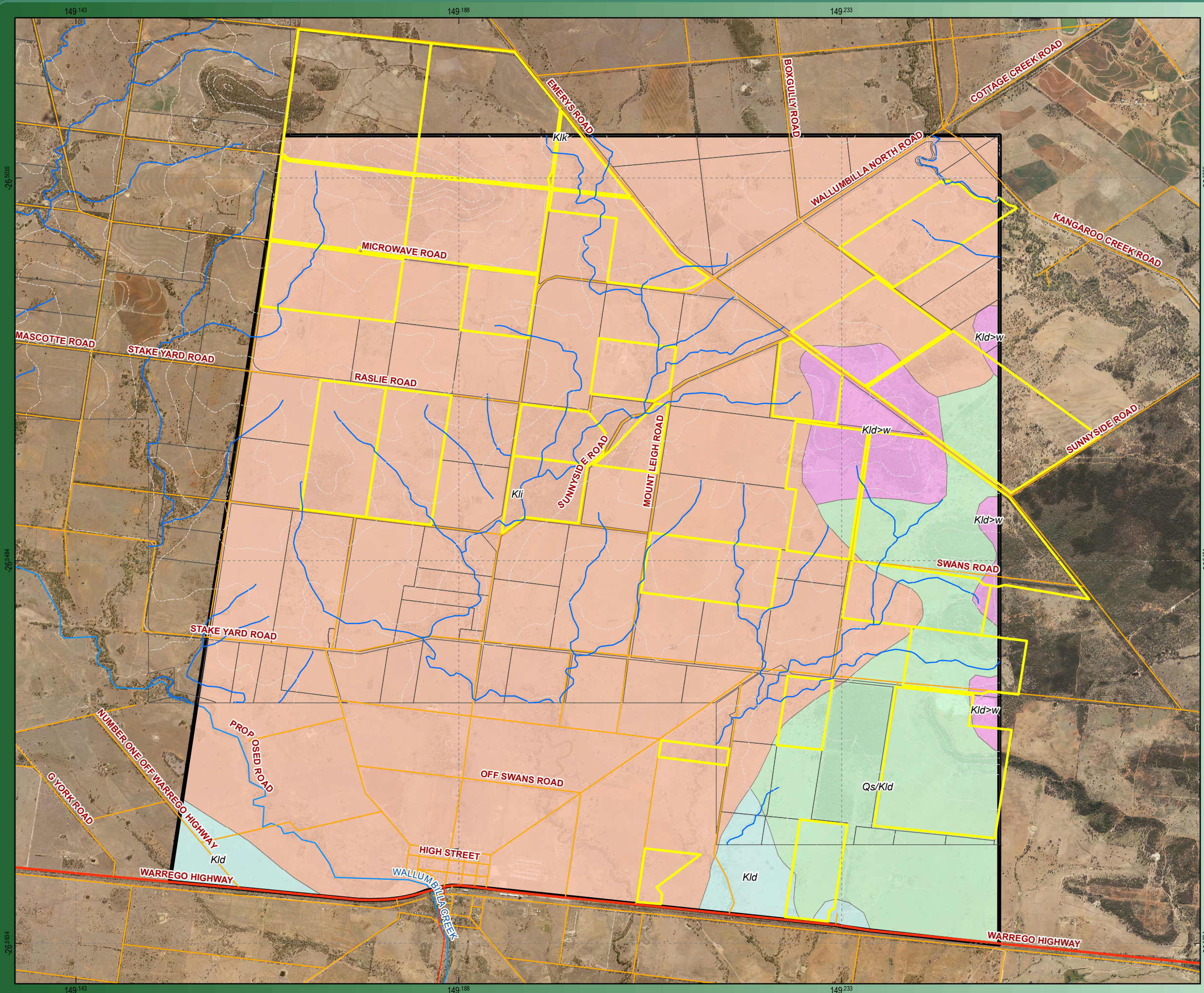


1:48,000 at A3

Horizontal Datum: GDA 1994  
 Grid: GCS GDA 1994

### Legend

- Localities
- Contour (10m)
- VM Watercourse
- ▭ PL310 properties
- State Controlled Roads**
- Highways
- Secondary roads
- Local connector roads
- Streets
- ▭ Cadastre
- ▭ Study
- Major watercourse
- Geology**
- ▭ Kld , Mudstone, some siltstone, quartzose sandstone and coquinite. Shelly fossils
- ▭ Kld>w , Km Not known
- ▭ Kli , Glauconitic lithic to quartzose sandstone, siltstone, mudstone, bioturbidites. Shelly fossils
- ▭ Klk , Clayey sandstone, carbonaceous mudstone
- ▭ Qs/Kld , Sand, gravel, soil with gravel



## Santos GLNG Detailed Regional Ecosystem Mapping PL310

Geology  
 PL310

# Figure 3

### 3.5. Regional Ecosystems Mapping

The detailed mapping produced by O2 Ecology over parts of the study area has identified discrepancies between the published RE map (v9.0) and our mapping. These discrepancies relate to both the remnant extent and attribution of REs. Errors in extent of remnant vegetation can arise through both the scale at which the mapping was undertaken and the misclassification of areas of regrowth vegetation as remnant. The publically available RE mapping (v9.0) was originally undertaken at 1:100,000 scale and involve interpretation of remotely sensed imagery, predominantly satellite imagery at various resolutions. As a consequence of this, the lines appearing on the publically available RE maps have an error factor of  $\pm 100$  m. Furthermore, the publically available RE mapping has a time lag associated with it: version 9.0 mapping is based on the extent of vegetation at 2013. Any clearing events that have taken place since 2013 will not be represented on the current versions. Errors in the attribution of RE polygons may arise through misinterpretation of land zone definitions or photo patterns.

Version 9.0 of the RE mapping (**Figure 4**) has mapped approximately 718 ha of remnant vegetation in the study area (**Table 5**). O2 Ecology's 1:10,000 RE mapping has increased the extent of remnant vegetation in the study area to 860 ha (**Table 5**). O2 Ecology has tended to err on the side of caution with respect to remnant versus non-remnant vegetation attribution. That is, if it was thought it could be remnant vegetation then it was mapped as such. Furthermore, the increase in mapped remnant area is due in part to the scale of the mapping which O2 Ecology undertook. At 1:10,000 scale and with high resolution aerial photography we could easily map small polygons (at 0.1 ha).

**Table 5 Comparison of the area in hectares of each RE mapped from the study properties represented in both version 9.0 RE map and O2 Ecology's map.**

RE	Biodiversity Status	V9.0 RE map (ha)	O2 Ecology map (ha)
11.3.2	OC	66.6696844	137.063276
11.3.17	E	1.0018828	25.263048
11.3.25	OC	235.295895	85.526655
11.5.1	NC	11.9527092	15.897106
11.7.2	NC	47.8108368	0
11.7.6	NC	134.9585512	0
11.9.5	E	167.0601976	45.584031
11.9.5a	E	3.1189668	98.654997
11.9.7	OC	0	92.17055
11.9.10	E	49.7208534	48.56704
11.10.3	NC	0	127.471541
11.10.7a	NC	0	74.726926
11.10.9	NC	0	54.795638
11.10.11	NC	0	54.363233
Non-remnant		8393.182025	8250.687564
Total (remnant)		717.58958	860.084041

Our interpretation of the land zones of the study area has changed some of the REs mapped as occurring over the study area. One of the major discrepancies between the certified RE mapping and the O2 Ecology map is the delineation of land zones particularly those land zones associated with deeply weathered



profiles. While the CSIRO (1974) land system mapping has all non-alluvial areas mapped as deeply weathered, this was not supported by the 1:250,000 surface geology mapping or the weathering intensity mapping. As stated previously, the Doncaster Member map unit (Kld>w) is described as deeply weathered and correlates well with the weathering intensity mapping. As such, where the weathering intensity mapping indicated that an area was subjected to intense weathering, it was decided to map as either land zone 5 or 7. However, O2 Ecology freely acknowledges that an intensely weathered area may not necessarily support a deeply weathered profile. This approach has significantly reduced the area of REs 11.7.2 and 11.7.6 mapped with some areas remapped as supporting 11.10.3 or 11.10.7a respectively.

Another major discrepancy was the allocation of land zones 9 and 10 to the various sedimentary geologies present in the study area. Many of the sedimentary units were composed of complexes of fine and coarse grained sediments, e.g. “Quartzose to labile sandstone, some clayey”. As a consequence, the geology mapping alone was not sufficient to allow allocation of a land zone. The rocks associated with land zones 9 and 10 weather to form different land forms. The general “soft” nature of fine grained sedimentary rocks and labile to sublabile sandstone weather to form very gently undulating to undulating clay plains while the more coarse grained sedimentary rocks tend to form undulating to steep rises and hills, plateaus, and precipitous cliffs and scarps (Wilson & Taylor 2012). As such, the aerial imagery supplied by Santos, 10 m contour lines, and Google Earth imagery, with maximum elevation exaggeration, were utilised to differentiate land forms across the study area. It was decided that the lowland undulating sedimentary areas would fit best with land zone 9 while areas of steep rises and hills would correspond with land zone 10.

Furthermore, the original v9.0 RE map represented alluvial areas as heterogeneous polygons of REs 11.3.25/11.3.2. These two REs tend to occur in different parts of the alluvial landscape. RE 11.3.25 occurs predominantly on fringing levees and banks of major rivers and drainage lines of alluvial plains while RE 11.3.2 occurs on alluvial plains. As such, those areas of riparian forest occurring along stream lines were determined to be RE 11.3.25 and those forests on alluvium away from the channels were mapped as RE 11.3.2.

### 3.6. Field Survey Results

A total of 49 RE type assessment sites were assessed across the study area with the Queensland Herbarium’s Regional Ecosystem map modification kit (Sheet D). A further 38 Quaternary level CORVEG sites were assessed to verify the extent and attribution of the mapped RE and regrowth and to assist with determination of remnant status. Details of the field survey sites are listed in **Table 6** with their location illustrated in **Figure 5**. Completed site forms and tabulated Quaternary sites are contained in **Appendix A**.

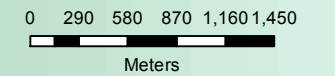
**Table 6 Comparison of the pre-field verified RE and verified RE from each of the study sites sampled on PL310.**

Site	Easting	Northing	v9.0 RE	O2 RE	Remnant
1	692536	7066808	non-remnant	11.3.25	Remnant
2	692559	7066692	non-remnant	11.9.7a	Regrowth
3	719934	7057263	11.3.2/11.3.17/11.3.25	11.3.25	Remnant
3A	721006	7057105	11.3.2/11.3.17/11.3.25	11.3.25	Remnant
4	718828	7063202	non-remnant	11.9.7a	Regrowth
5	718978	7063413	non-remnant	11.9.7	Regrowth
6	721745	7059858	non-remnant	11.3.2	Regrowth
8	718572	7062859	11.3.25/11.3.2	11.9.7	Remnant
9	718510	7062246	11.3.25/11.3.2	11.3.2	Remnant
10	719112	7062277	11.9.5/11.9.10	11.9.7	Remnant

Site	Easting	Northing	v9.0 RE	O2 RE	Remnant
11	723945	7059887	11.9.5/11.9.10	11.5.1	Remnant
12	720194	7063566	11.3.25/11.3.2	11.3.17	Remnant
13	719813	7062951	11.3.25/11.3.2	11.9.5a	Remnant
15	719846	7065256	11.3.25/11.3.2	11.3.2	Remnant
16	722280	7056989	11.3.2/11.3.17/11.3.25	11.9.10	Remnant
17	721527	7060215	non-remnant	11.3.2	Remnant
18	718971	7059549	11.3.25/11.3.2	11.3.2	Remnant
19	720938	7065282	11.9.5/11.9.10	11.9.5	Remnant
20	718809	7064674	non-remnant	11.9.10	Remnant
21	716297	7065817	non-remnant	11.3.17	Regrowth
22	723434	7059554	11.9.5/11.9.10	11.10.3	Remnant
22A	723311	7059821	11.9.5/11.9.10	11.9.5	Remnant
23	723743	7060913	non-remnant	11.10.3	Remnant
24	722691	7064302	non-remnant	11.5.1	Remnant
25	723107	7063809	non-remnant	11.5.1	Regrowth
26	723337	7063800	non-remnant	11.9.5a	Regrowth
27	723621	7066500	11.3.25/11.3.2	11.3.2	Remnant
28	723171	7065747	non-remnant	11.9.5a	Remnant
29	723961	7061805	11.7.2/11.5.1	11.10.9	Remnant
29A	723118	7062154	non-remnant	11.9.5	Regrowth
30	722935	7062876	11.7.7	11.10.11	Remnant
31	723666	7060674	non-remnant	11.10.6	Regrowth
32	720262	7064391	11.3.25/11.3.2	11.3.25	Remnant
33	722144	7064165	11.7.6/11.9.5a	11.10.7a	Remnant
34	717578	7063105	non-remnant	11.9.5	Remnant
35	716177	7062759	11.9.5/11.9.10	11.9.7	Remnant
37	718092	7066168	11.7.6	11.10.3	Remnant
37A	717572	7065967	11.9.5/11.9.10	11.9.5	Regrowth
38	721219	7061438	non-remnant	11.9.10	Regrowth
39	722240	7063074	11.7.6/11.9.5a	11.10.11	Remnant
39A	722170	7063333	11.7.6/11.9.5a	11.10.3	Remnant
39B	722571	7063295	11.7.6/11.9.5a	11.10.7a	Remnant
40	719327	7066241	11.3.25/11.3.2	11.3.25	Remnant
41	722088	7059703	non-remnant	11.9.5	Remnant
42	721732	7057102	non-remnant	11.9.7	Regrowth
43	721937	7057472	non-remnant	11.9.7	Regrowth
45	720842	7059249	non-remnant	11.3.2	Remnant
47	717532	7066957	non-remnant	11.10.3	Remnant
48	718043	7066930	non-remnant	11.9.5	Regrowth
49	719389	7066611	11.3.25/11.3.2	11.3.17	Remnant

Of the 49 sites surveyed, 27 were determined to be incorrect and were remapped. These sites included errors related to scale of the State mapping and also errors in attribution. The remaining sites refined the mapping by allocating either a homogeneous RE to a previously heterogeneous polygon or attributing a regrowth RE to a non-remnant polygon. As stated previously, and like the PL281 and PL282 areas, much the PL310 study area supported complexes of sedimentary rock with surface rock units consisting of both coarse-grained and fine-grained sediments. It was decided during the desktop mapping phase to also interpret the land form by using contour lines and Google Earth. Low-lying, undulating to rolling hills were assigned to land zone 9 with comparatively steeper, hillier areas assigned to land zone 10. This decision seems supported by the field results.

**Figure 5** shows O2 Ecology's RE mapping based on the results of the ground-truthing survey.

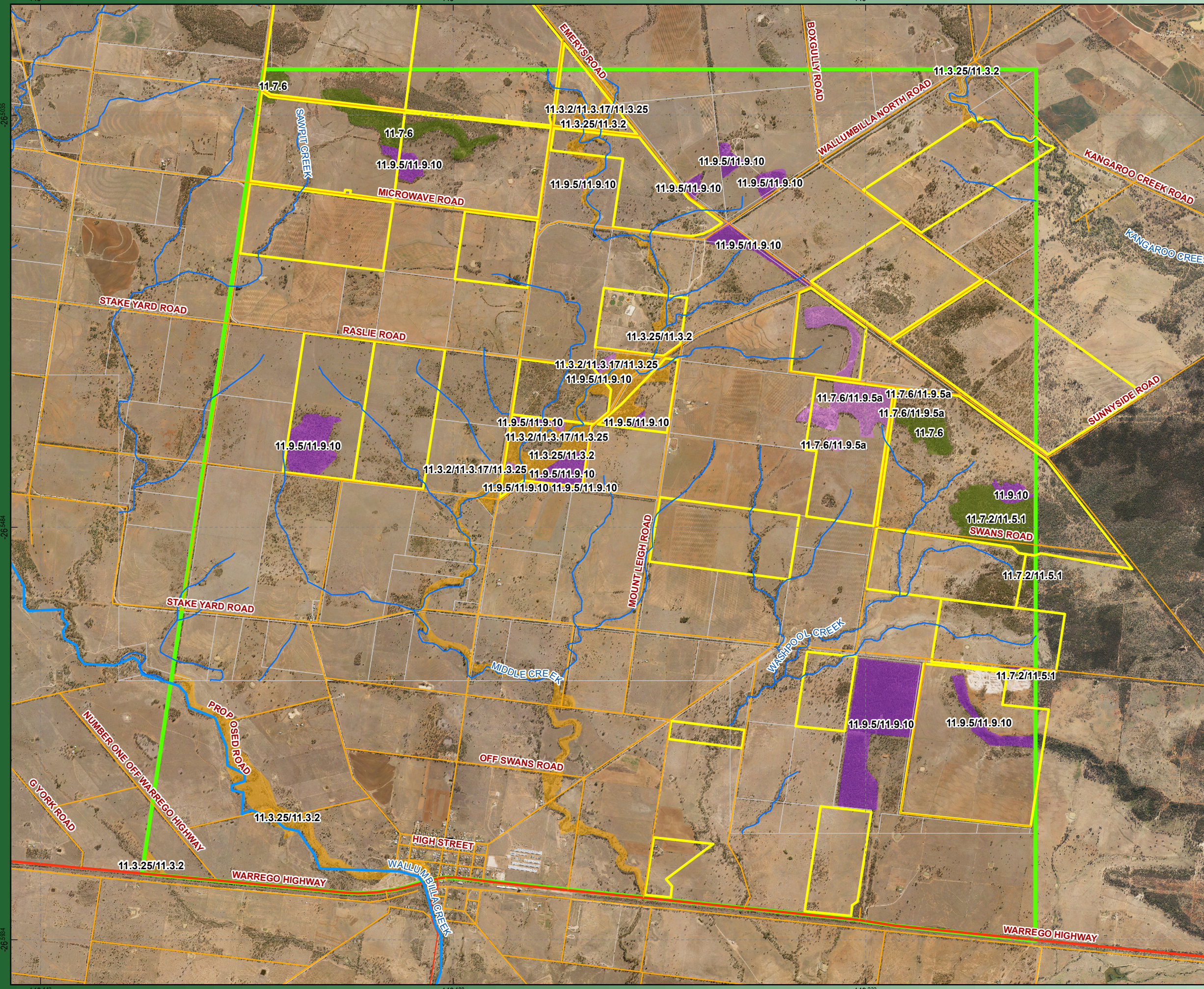


1:45,000 at A3

Horizontal Datum: GDA 1994  
 Grid: GCS GDA 1994

### Legend

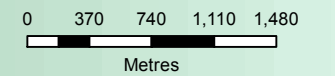
- Localities
- Major watercourse
- VM Watercourse
- State Controlled Roads**
  - Highways
  - Secondary roads
  - Local connector roads
  - Streets
- ▭ PL310 properties
- ▭ Study Area
- ▭ Cadastre
- Regional Ecosystem (v9)**
- Biodiversity Status**
  - ▭ Endangered
  - ▭ Endangered (Subdom)
  - ▭ Of Concern
  - ▭ Not of Concern



## Santos GLNG Detailed Regional Ecosystem Mapping

Regional Ecosystems v9  
 PL310

# Figure 4



1:45,000 at A3

Horizontal Datum: GDA 1994  
 Grid: GCS GDA 1994

### Legend

- ★ Field Sites
- ▲ Quat Site
- Localities
- Contour (10m)
- VM Watercourse
- Major watercourse

### State Controlled Roads

- Highways
- Secondary roads
- Local connector roads
- Streets
- ▭ PL310 properties
- ▭ Study Area
- ▭ Cadastre

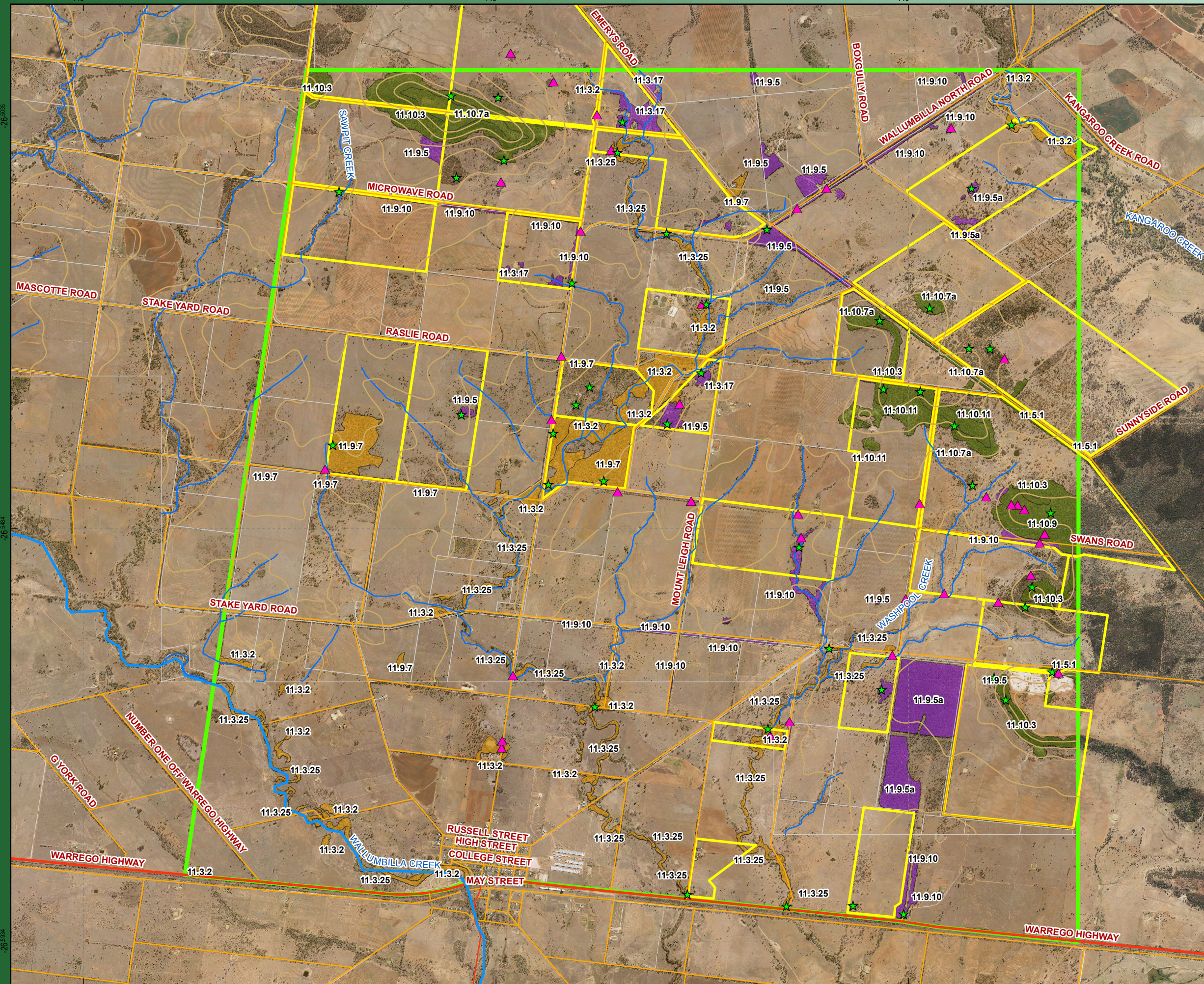
### O2 RE Mapping Biodiversity Status

- ▭ Endangered
- ▭ Of Concern
- ▭ Not of Concern

**Santos GLNG**  
 Detailed Regional  
 Ecosystem Mapping

O2 Ecology RE mapping  
 PL310

## Figure 5



15 Feb 2016 Z:\GIS\ECO15\_0017\_2\GIS\Maps\Working (Optional)\v2\ECO15\_0017\_03\_05\_preverified.mxd

## 4. Conclusion

The key objective for this project was to produce large scale RE mapping over the south-eastern portion of the PL310 area based on field surveys. The ground-truthing exercise produced more robust mapping with a greater understanding of the landscape including the vegetation than what is provided in a solely desk-top mapping exercise.

High resolution imagery supplied by Santos GLNG in combination with field survey results were utilised by O2 Ecology to produce large scale RE mapping over the study area. The benefits of large scale RE mapping include substantially higher spatial accuracy for polygon boundaries than the published RE mapping. As well as improved scale, the mapping by O2 Ecology identified several inconsistencies between the published RE mapping and geology mapping, resulting in significant changes to the land zones and REs in the study area.

## 5. Works Cited

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**Appendix A      Completed Field Assessment Sheets**



## Summary of Quaternary sites on or adjacent to PL310

Site	Easting	Northing	RE (v9)	O2_RE	Remnant	Notes
Q1	720057	7062019	non-remnant	11.9.5	Remnant	<i>Acacia harpophylla</i> over <i>Geijera parviflora</i>
Q2	719260	7062145	11.9.5/11.9.10	11.9.5	Remnant	End/start of <i>Acacia harpophylla</i> . <i>Eucalyptus populnea</i> towards west.
Q3	718086	7059942	non-remnant	11.3.25	Remnant	Between two waterways. <i>Eucalyptus camaldulensis</i> , <i>Eucalyptus populnea</i> .
Q4	717947	7059073	non-remnant	11.5.5	Regrowth	<i>Eucalyptus melanophloia</i> , <i>Callitris glaucophylla</i> , <i>Angophora leiocarpa</i> , <i>Acacia salicina</i> .
Q5	722211	7060118	non-remnant	11.9.10	Regrowth	<i>Eucalyptus populnea</i> , <i>Casuarina cristata</i> , <i>Eremophila mitchellii</i> , <i>Geijera parviflora</i>
Q6	721594	7065775	non-remnant	11.9.5	Remnant	<i>Acacia harpophylla</i> , <i>Casuarina cristata</i> over <i>Geijera parviflora</i> , <i>Eremophila mitchellii</i> on top of low rise.
Q7	721268	7065537	non-remnant	11.9.5	Remnant	<i>Casuarina cristata</i> over <i>Geijera parviflora</i>
Q8	719953	7063195	non-remnant	11.9.7	Remnant	<i>Eucalyptus populnea</i> over <i>Eremophila mitchellii</i> and <i>Geijera parviflora</i>
Q9	722960	7066480	non-remnant	11.9.5	Remnant	Patch of <i>Casuarina cristata</i>
Q10	723494	7063681	non-remnant	11.9.5	Regrowth	<i>Casuarina cristata</i> , <i>Acacia harpophylla</i>
Q11	723025	7063035	11.7.6	11.10.7a	Remnant	<i>Eucalyptus crebra</i> (emergent) over <i>Callitris glaucophylla</i> on sandy soil on slope
Q12	722541	7061944	non-remnant	11.9.5	Remnant	<i>Casuarina cristata</i> and some <i>Acacia harpophylla</i> next to road
Q13	722369	7060797	non-remnant	11.9.7	Remnant	<i>Eucalyptus populnea</i> over <i>Geijera parviflora</i> and <i>Eremophila mitchellii</i>
Q14	720216	7064395	non-remnant	11.3.2	Regrowth	Undulating plain above drainage line. <i>Eucalyptus populnea</i> , <i>Acacia excelsa</i> , <i>Callitris glaucophylla</i>
Q15	723677	7061855	11.7.2/11.5.1	11.10.11	Remnant	<i>Eucalyptus exserta</i> , <i>Acacia catenulata</i> , <i>Callitris glaucophylla</i> on pale red sands on top of low hill. Occasional <i>Acacia shirleyi</i> , <i>Corymbia clarksoniana</i>
Q16	723605	7061912	11.7.2/11.5.1	11.10.3	Remnant	<i>Acacia shirleyi</i> on rocky slope
Q17	723536	7061920	11.7.2/11.5.1	11.10.9	Remnant	<i>Callitris glaucophylla</i> and <i>Angophora leiocarpa</i> on sandy slope
Q17A	723265	7062013	non-remnant	11.9.5	Regrowth	<i>Acacia harpophylla</i>
Q18	723734	7061059	non-remnant	11.9.5	Regrowth	<i>Casuarina cristata</i> , <i>Acacia harpophylla</i> on lower slopes
Q19	723835	7061448	11.7.2/11.5.1	11.9.10	Remnant	<i>Eucalyptus populnea</i> , <i>Casuarina cristata</i> over <i>Geijera parviflora</i> and <i>Eremophila mitchellii</i> . Some <i>Callitris glaucophylla</i> upslope.
Q20	723894	7061552	11.7.2/11.5.1	11.10.9	Remnant	<i>Callitris glaucophylla</i> and <i>Eucalyptus crebra</i> on sandy slope
Q21	724012	7059874	11.9.5/11.9.10	11.10.3	Remnant	<i>Acacia shirleyi</i> on slope with emergent <i>Eucalyptus crebra</i>
Q22	722786	7060853	non-remnant	11.3.2	Remnant	<i>Eucalyptus populnea</i> , <i>Acacia excelsa</i> , <i>Eremophila mitchellii</i> in low lying area near rocky slope on sandy soil
Q23	723373	7060740	non-remnant	11.9.5	Regrowth	<i>Acacia harpophylla</i> / <i>Casuarina cristata</i> regrowth

Site	Easting	Northing	RE (v9)	O2_RE	Remnant	Notes
Q24	721244	7061560	non-remnant	11.9.10	Regrowth	Small patch of <i>Acacia harpophylla</i> around channel
Q25	721215	7061841	non-remnant	11.9.10	Regrowth	<i>Acacia harpophylla</i> , <i>Casuarina cristata</i> , <i>Eucalyptus populnea</i> near channel
Q26	718056	7065912	non-remnant	11.9.5	Regrowth	<i>Acacia harpophylla</i>
Q27	719262	7066272	11.3.25/11.3.2	11.3.25	Remnant	<i>Eucalyptus camaldulensis</i> around dam
Q28	721079	7059334	non-remnant	11.9.5a	Remnant	Strip of <i>Eucalyptus populnea</i> , <i>Casuarina cristata</i> and some <i>Acacia harpophylla</i>
Q29	720864	7059172	non-remnant	11.3.2	Remnant	<i>Eucalyptus populnea</i> over <i>Eremophila mitchellii</i> on plain
Q30	716087	7062471	non-remnant	11.9.5a	Remnant	<i>Acacia harpophylla</i> , <i>Casuarina cristata</i> occasional <i>Eucalyptus populnea</i> over <i>Geijera parviflora</i> and <i>Eremophila mitchellii</i>
Q31	718647	7067113	non-remnant	11.9.5	Regrowth	<i>Casuarina cristata</i> on gentle slope
Q32	719113	7066707	non-remnant	11.9.7	Regrowth	<i>Eucalyptus populnea</i> over <i>Geijera parviflora</i> and <i>Eremophila mitchellii</i> . Occasional <i>Casuarina cristata</i>
Q33	718912	7065305	non-remnant	11.9.10	Remnant	<i>Casuarina cristata</i> with <i>Eucalyptus populnea</i>
Q34	718678	7063793	non-remnant	11.9.5	Regrowth	<i>Acacia harpophylla</i> over <i>Eremophila mitchellii</i>
Q35	718558	7063025	non-remnant	11.3.2	Regrowth	<i>Eucalyptus populnea</i> + <i>Acacia pendula</i>
Q36	717957	7059158	non-remnant	11.10.9	Regrowth	<i>Callitris glaucophylla</i> and <i>Corymbia tessellaris</i>
Q37	718189	7067461	non-remnant	11.9.5	Regrowth	<i>Acacia harpophylla</i> regrowth over <i>Eremophila mitchellii</i>

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 01 Recorder: A.J.Franks Day/Date: 16 NOV 2015  
 Purpose Regional Ecosystem Assessment  
 Locality: (inc. distance/direction to nearest town) Retreat (lot 177 on WAL53463)  
 GPS: GDA94 

5	5	0	6	9	2	5	3	6	7	0	6	6	8	0	8
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 UTM:

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11	10 - 12	S
T2	5	4 - 6	V
T3			
S1	1.5	1.2 - 1.8	X
S2	0.5	0.4 - 0.6	X
G	0.3	0.2 - 0.4	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus camaldulensis</i>
T1	A	<i>Eucalyptus populnea</i>
T1	A	<i>Brachychiton populneus</i>
T2	D	<i>Geijera parviflora</i>
T2	A	<i>Acacia salicina</i>
S1	C	<i>Acacia excelsa</i>
S1	C	<i>Geijera parviflora</i>
S2	D	<i>Sida sp.</i>
S2	A	<i>Carissa ovata</i>
S2	A	<i>*Vachellia farnesiana</i>
G	C	Native Poaceae
G	S	<i>Lomandra longifolia</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K  
 Geology code and rock types: Kln - quartzose to sublabile sandstone  
 Land system: (S)uBl  
 Landform: Ephemeral drainage line  
 Soils: Pale sandy alluvium  
 Field observation and notes: Some brigalow on bank @ E: 692583 N: 7066693  
 Site has *\*Lycium ferocissimum* Landzone: 3

RE code changes

Existing RE code: non-remnant  
 Proposed RE code: 11.3.25

END

*Regional Ecosystem Assessment – August 2012*



**Site 01 facing north**



**east**



**Site 01 facing south**



**west**



**Site 01 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 02 Recorder: A.J.Franks Day/Date: 16 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Retreat (lot 177 on WAL53463)

GPS: GDA94 

5	5
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0	6	9	2	5	5	9
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7	0	6	6	6	9	2
---	---	---	---	---	---	---

 UTM: 

--	--	--	--	--	--	--	--	--	--

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9	8 - 10	X
T2	5	5 - 8	V-S
T3	4	3 - 5	M
S1	1.5	1.2 - 1.8	X
S2		-	
G	0.4	0.3 - 0.6	M
Structural formation: (including height)			
Low very open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T1	A	<i>Eucalyptus melanophloia</i>
T2	D	<i>Acacia excelsa</i>
T2	A	<i>Atalaya hemiglauca</i>
T3	D	<i>Eremophila mitchellii</i>
S1	D	<i>Acacia excelsa</i>
S1	C	<i>Geijera parviflora</i>
G	D	<i>*Cenchrus ciliaris</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kln - Quartzose to sublabile sandstone, siltstone, mudstone

Land system: (S)uBl

Landform: Rolling low hills adjacent to waterway

Soils: Red sandy loam

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.9.7a)

END

*Regional Ecosystem Assessment – August 2012*



**Site 01 facing north**



**east**



**Site 01 facing south**



**west**



**Site 01 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 03 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Roadside near Nasby Farm

GPS: GDA94 

5	5	0	7	1	9	9	3	4	7	0	5	7	2	6	3
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	16	14 - 17	S
T2	10	8 - 12	V
T3		-	
S1	2.5	1.5 - 3.0	S-M
S2	0.8	0.5 - 0.9	V
G	0.1	0.1 - 0.2	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus camaldulensis</i>
T1	S	<i>Eucalyptus populnea</i>
T2	D	<i>Angophora melanoxylon</i>
T2	A	<i>Acacia excelsa</i>
S1	D	<i>Eremophila mitchellii</i>
S2	D	<i>Acacia excelsa</i>
G	D	* <i>Cenchrus ciliaris</i>
G	S	<i>Lomandra longifolia</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uXB

Landform: Waterway

Soils: Dark grey clay

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: 11.3.2/11.3.17/11.3.25

Proposed RE code: 11.3.25

END

*Regional Ecosystem Assessment – August 2012*



**Site 03 facing north**



**west**



**Site 03 Soil surface**



Sheet D – regional ecosystem type assessment site

**Location**

Site No. 03A Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town)

GPS: GDA94 

5	5
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0	7	2	1	0	0	6
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7	0	5	7	1	0	5
---	---	---	---	---	---	---

 UTM

**Vegetation structure**

Median height of the EDL is to be measured

**Plant species**

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	14	13 - 16	S
T2	8	6 - 10	S
T3		-	
S1	2.5	1.5 - 3.0	V
S2	0.5	0.4 - 0.6	V
G	0.2	0.1 - 0.4	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus camaldulensis</i>
T1	A	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus camaldulensis</i>
T2	S	<i>Acacia pendula</i>
T2	A	<i>Casuarina cristata</i>
S1	D	<i>Eremophila mitchellii</i>
S2	C	<i>Eremophila mitchellii</i>
S2	C	<i>*Lycium ferocissimum</i>
G	C	Poaceae

**Geology, landform, soils**

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kld - Mudstone, siltstone, quartzose sandstone

Land system: (S)uXB

Landform: Drainage line

Soils: Alluvial

Field observation and notes:

Landzone: 3

**RE code changes**

Existing RE code: 11.3.2/11.3.17/11.3.25

Proposed RE code: 11.3.25

END

*Regional Ecosystem Assessment – August 2012*



Site 03A facing north



east



Site 03A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. 04 Recorder: A.J.Franks Day/Date: 17 NOV 2015  
 Purpose Regional Ecosystem Assessment  
 Locality: (inc. distance/direction to nearest town) Evian (lot368 on WAL53427)  
 GPS: GDA94 

5	5	0	7	1	8	8	2	8	7	0	6	3	2	0	2
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 UTM:

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9	8 - 10	V
T2	6	5 - 7	V
T3	4	3 - 5	M
S1	2	1.5 - 2.5	S-M
S2	1.2	1.0 - 1.5	S
G	0.4	0.3 - 0.5	M
Structural formation: (including height) <u>Low open woodland</u>			
Ecologically dominant layer:			<u>T1</u>

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Acacia excelsa</i>
T2	A	<i>Acacia pendula</i>
T3	D	<i>Eremophila mitchellii</i>
S1	C	<i>Eremophila mitchellii</i>
S1	C	<i>Geijera parviflora</i>
S2	D	<i>Apophyllum anomalum</i>
S2	S	<i>Eremophila mitchellii</i>
S2	S	<i>Geijera parviflora</i>
G	D	<i>Enteropogon</i> sp.
G	S	* <i>Verbena bonariensis</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K  
 Geology code and rock types: Kli  
 Land system: (S)uBl  
 Landform: Very gently sloping  
 Soils: Red sandy loam  
 Field observation and notes: Some evidence of thinning  
 Landzone: 9

RE code changes

Existing RE code: non-remnant  
 Proposed RE code: non-remnant (11.9.7)

END

*Regional Ecosystem Assessment – August 2012*



**Site 04 facing north**



**east**



**Site 04 facing south**



**west**



**Site 04 Soil surface**

Sheet D – regional ecosystem type assessment site

**Location**

Site No. 05 Recorder: A.J.Franks Day/Date: 17 NOV 2015  
 Purpose Regional Ecosystem Assessment  
 Locality: (inc. distance/direction to nearest town) Evian (lot 368 on WAL53427)  
 GPS: GDA94 

5	5	0	7	1	8	9	7	8	7	0	6	3	4	1	3
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 UTM:

**Vegetation structure**

Median height of the EDL is to be measured

**Plant species**

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	8	7 - 9	V
T2	5	3 - 7	M
T3		-	
S1	2.5	1.0 - 2.0	S
S2	0.8	0.5 - 1.0	V
G	0.4	0.1 - 0.5	M
Structural formation: (including height) <u>Low open woodland</u>			
Ecologically dominant layer:			<u>T1</u>

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T1	A	<i>Acacia pendula</i>
T2	D	<i>Eremophila mitchellii</i>
T2	A	<i>Acacia excelsa</i>
S1	D	<i>Eremophila mitchellii</i>
S1	S	<i>Apophyllum anomalum</i>
S1	A	<i>Acacia pendula</i>
S1	A	<i>Geijera parviflora</i>
S2	D	<i>Eremophila mitchellii</i>
G	C	<i>Themeda triandra</i>
G	C	<i>*Cenchrus ciliaris</i>
G	C	<i>Ancistrachne uncinata</i>

**Geology, landform, soils**

Geology map/scale/year: Roma (SG5\_12)/250K  
 Geology code and rock types: Kli  
 Land system: (S)uBl  
 Landform: Very gently undulating  
 Soils: Red sandy loam  
 Field observation and notes: Some evidence of thinning  
 Landzone: 9

**RE code changes**

Existing RE code: non-remnant  
 Proposed RE code: non-remnant (11.9.7)

END

*Regional Ecosystem Assessment – August 2012*



**Site 05 facing north**



**east**



**Site 05 facing south**



**west**



**Site 05 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 06 Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Kundabung (lot 111 on WAL53367)

GPS: GDA94 

5	5
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0	7	2	1	7	4	5
---	---	---	---	---	---	---

7	0	5	9	8	5	8
---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	11 - 14	V
T2	9	7 - 10	S
T3	5	3 - 6	S-M
S1	2	1.5 - 3.0	S
S2	0.6	0.4 - 1.2	V
G	0.2	0.1 - 0.3	S-M
Structural formation: (including height)			
Open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Acacia pendula</i>
T3	C	<i>Eremophila mitchellii</i>
T3	C	<i>Eucalyptus populnea</i>
T3	S	<i>Acacia excelsa</i>
S1	D	<i>Eremophila mitchellii</i>
S1	A	<i>Citrus glauca</i>
S1	A	<i>Geijera parviflora</i>
S2	D	<i>Eremophila mitchellii</i>
G	C	Native Poaceae
G	S	* <i>Cenchrus ciliaris</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Gently undulating area near watercourse

Soils: Red sandy clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.3.2)

END

*Regional Ecosystem Assessment – August 2012*



**Site 06 facing north**



**east**



**Site 06 facing south**



**west**



**Site 06 Soil surface**



Sheet D – regional ecosystem type assessment site

**Location**

Site No.	08	Recorder:	A.J.Franks	Day/Date:	17 NOV 2015												
Purpose	Regional Ecosystem Assessment																
Locality: (inc. distance/direction to nearest town)	Mascotte (Lot 301 on WV1331)																
GPS: GDA94	5	5	0	7	1	8	5	7	2	7	0	6	2	8	5	9	Uat :um:

**Vegetation structure**

Median height of the EDL is to be measured

**Plant species**

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	9 - 12	S
T2	7	6 - 9	V
T3	4	3 - 5	S-M
S1	2.0	1.5 - 3.0	S
S2	0.8	0.6 - 1.1	V
G	0.3	0.2 - 0.5	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Acacia excelsa</i>
T3	D	<i>Eremophila mitchellii</i>
S1	D	<i>Eremophila mitchellii</i>
S1	A	<i>Geijera parviflora</i>
S1	A	<i>Citrus glauca</i>
S1	A	<i>Apophyllum anomalum</i>
S2	D	<i>Geijera parviflora</i>
T3	A	<i>Acacia excelsa</i>
G	C	<i>Chloris variegata</i>
G	C	<i>Themeda triandra</i>
G	C	<i>Paspalidium sp.</i>

**Geology, landform, soils**

Geology map/scale/year:	Roma (SG5_12)/250K
Geology code and rock types:	Kli
Land system:	(S)uBI
Landform:	Flat area
Soils:	Clay loam
Field observation and notes:	Some historic thinning
Landzone:	9

**RE code changes**

Existing RE code:	11.3.25/11.3.2
Proposed RE code:	11.9.7

END

*Regional Ecosystem Assessment – August 2012*



**Site 08 facing north**



**east**



**Site 08 facing south**



**west**



**Site 08 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 09 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Mascotte (Lot 301 on WV1331)

GPS: GDA94 

5	5
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0	7	1	8	9	7	1
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7	0	5	9	5	4	9
---	---	---	---	---	---	---

 UTM:

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum;  
**d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11	10 - 12	S
T2	8	6 - 10	V
T3	4	3 - 6	V
S1	1.0	0.9 - 1.5	V
S2		-	
G	0.8	0.5 - 1.0	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus camaldulensis</i>
T1	S	<i>Eucalyptus populnea</i>
T1	S	<i>Callitris glaucophylla</i>
T2	C	<i>Eucalyptus populnea</i>
T2	C	<i>Eucalyptus camaldulensis</i>
T2	A	<i>Eucalyptus melanophloia</i>
T2	A	<i>Acacia pendula</i>
T2	A	<i>Callitris glaucophylla</i>
T3	D	<i>Geijera parviflora</i>
T3	A	<i>Acacia excelsa</i>
S1	D	<i>Callitris glaucophylla</i>
G	C	<i>Themeda triandra</i>
G	C	<i>Lomandra longifolia</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBI

Landform: Flat area near drainage line

Soils: Clay loam

Field observation and notes: Channel @ E: 718519 N: 7062215

Landzone: 3

RE code changes

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.3.2

END

*Regional Ecosystem Assessment – August 2012*



**Site 09 facing north**



**east**



**Site 09 facing south**



**west**



**Site 09 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 10 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Mascotte (lot 301 on WV1331)

GPS: GDA94 

5	5	0	7	1	9	1	1	2	7	0	6	2	2	7	7
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	11 - 15	V
T2	10	9 - 11	V
T3	4	3 - 5	S-M
S1	2	1.5 - 3.0	S
S2	1	0.8 - 1.5	V
G	0.3	0.2 - 0.5	M
Structural formation: (including height)			
Open woodland			
Ecologically dominant layer:			T1

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Acacia excelsa</i>
T2	A	<i>Casuarina cristata</i>
T2	A	<i>Owenia acidula</i>
T3	D	<i>Eremophila mitchellii</i>
T3	A	<i>Geijera parviflora</i>
S1	C	<i>Eremophila mitchellii</i>
S1	C	<i>Geijera parviflora</i>
S1	A	<i>Casuarina cristata</i>
S2	C	<i>Apophyllum anomalum</i>
S2	C	<i>Eremophila mitchellii</i>
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Gentle rise, near top of low hill

Soils: Red sandy clay loam

Field observation and notes: Some evidence of thinning

Landzone: 9

RE code changes

Existing RE code: 11.9.5/11.9.10

Proposed RE code: 11.9.7

END

*Regional Ecosystem Assessment – August 2012*



**Site 10 facing north**



**east**



**Site 10 facing south**



**west**



**Site 10 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 11 Recorder: A.J.Franks Day/Date: 18 NOV 2015  
 Purpose Regional Ecosystem Assessment  
 Locality: (inc. distance/direction to nearest town) Road reserve  
 GPS: GDA94 

5	5	0	7	2	3	9	4	5	7	0	5	9	8	8	7
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

 UTM:

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	10 - 14	S
T2	8	6 - 10	M
T3		-	
S1	1.5	1.0 - 2.0	S
S2		-	
G	0.5	0.1 - 0.8	M
Structural formation: (including height) <u>Open woodland</u>			
Ecologically dominant layer:			<u>T1</u>

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus crebra</i>
T1	A	<i>Casuarina cristata</i>
T2	C	<i>Eucalyptus crebra</i>
T2	C	<i>Casuarina cristata</i>
T2	S	<i>Acacia shirleyi</i>
S1	D	<i>Eucalyptus crebra</i> (saplings)
S1	S	<i>Acacia shirleyi</i>
S1	A	<i>Casuarina cristata</i>
S1	A	<i>Eucalyptus populnea</i> (saplings)
G	D	<i>Ancistrachne uncinata</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K  
 Geology code and rock types: Kld(w)  
 Land system: (S)uBu  
 Landform: Gentle slope  
 Soils: Sandy clay loam  
 Field observation and notes: Evidence that T1 has been thinned  
 Landzone: 5

RE code changes

Existing RE code: 11.9.5/11.9.10  
 Proposed RE code: 11.5.1

END

*Regional Ecosystem Assessment – August 2012*



**Site 11 facing north**



**east**



**Site 11 facing south**



**west**



**Site 11 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 12 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Harries (lot 15 on WV1414)

GPS: GDA94 

5	5	0	7	2	0	1	9	4	7	0	6	3	5	6	6
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

 UTM:

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	11 - 14	S
T2	7	6 - 10	V
T3	4	3 - 5	M
S1	1.5	1.0 - 2.0	V
S2	0.6	0.4 - 0.8	V
G	0.2	0.1 - 0.4	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Casuarina cristata</i>
T3	D	<i>Eremophila mitchellii</i>
T3	S	<i>Geijera parviflora</i>
S1	C	<i>Casuarina cristata</i>
S1	C	<i>Citrus glauca</i>
S2	D	<i>Casuarina cristata</i>
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Low lying area near dam

Soils: Reddish clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.3.17

END

*Regional Ecosystem Assessment – August 2012*



**Site 12 facing north**



**east**



**Site 12 facing south**



**west**



**Site 12 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 13 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Harries (lot 15 on WV1414)

GPS: GDA94 

5	5	0	7	1	9	8	1	3	7	0	6	2	9	5	1
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 UTM: 

50	62	95	11	58	50
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Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9	7 - 10	V
T2	6	5 - 7	M
T3		-	
S1	2.5	2 - 4	S
S2	1.2	1.0 - 1.5	V
G	0.2	0.1 - 0.3	S-M
Structural formation: (including height)			
Low open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Casuarina cristata</i>
T1	A	<i>Eucalyptus populnea</i>
T1	A	<i>Acacia harpophylla</i>
T2	D	<i>Casuarina cristata</i>
S1	C	<i>Geijera parviflora</i>
S1	C	<i>Eremophila mitchellii</i>
S1	A	<i>Santalum lanceolatum</i>
S2	C	<i>Capparis mitchelliana</i>
S2	C	<i>Capparis lasiantha</i>
S2	S	<i>Geijera parviflora</i>
S2	A	<i>*Lycium ferocissimum</i>
G	D	<i>Chloris sp.</i>
G	A	<i>*Cenchrus ciliaris</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBI

Landform: Gentle slope

Soils: Red sandy loam

Field observation and notes: Some evidence of thinning

Landzone: 9

RE code changes

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.9.5a

END

*Regional Ecosystem Assessment – August 2012*



**Site 13 facing north**



**east**



**Site 13 facing south**



**west**



**Site 13 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 15 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Roadside

GPS: GDA94 

5	5
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0	7	1	9	8	4	6
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7	0	6	5	2	5	6
---	---	---	---	---	---	---

 Unit: Lat

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	10 - 14	S
T2	7	5 - 8	S
T3	4	2 - 5	M
S1		-	
S2		-	
G	0.5	0.4 - 0.6	D
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T3	D	<i>Geijera parviflora</i>
T3	A	<i>Eremophila mitchellii</i>
T3	A	<i>Brachychiton populnea</i>
G	D	* <i>Cenchrus ciliaris</i>
G	S	* <i>Verbena bonariensis</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Flat area near drainage line towards south

Soils: Clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.3.2

END

*Regional Ecosystem Assessment – August 2012*



**Site 15 facing north**



**east**



**Site 15 facing south**



**Site 15 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 16 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Near Rifle Club, Warrego Hwy

GPS: GDA94 

5	5	0	7	2	2	2	8	0	7	0	5	6	9	8	9
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9	8 - 10	S
T2	6	5 - 7	S
T3	4	3 - 5	
S1	0.8	0.5 - 0.9	S
S2		-	
G	0.5	0.1 - 0.6	M
Structural formation: (including height)			
Low woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Casuarina cristata</i>
T3	D	<i>Eremophila mitchellii</i>
T3	S	<i>Geijera parviflora</i>
S1	C	<i>Geijera parviflora</i>
S1	C	<i>Eremophila mitchellii</i>
S2	C	<i>Chenopodium desertorum</i>
S2	C	<i>Eremophila mitchellii</i>
G	D	<i>Enteropogon acicularis</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kld - Mudstone, siltstone, quartzose sandstone

Land system: (S)uXB

Landform: Flat, low lying area

Soils: Fine sandy loam, soft underfoot

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: 11.3.2/11.3.17/11.3.25

Proposed RE code: 11.9.10

END

*Regional Ecosystem Assessment – August 2012*



**Site 16 facing north**



**east**



**Site 16 facing south**



**west**



**Site 16 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 17 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Roadside

GPS: GDA94 

5	5
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0	7	2	1	5	2	7
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7	0	6	0	2	1	5
---	---	---	---	---	---	---

 Unit: Lat

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	15	14 - 17	S
T2	12	10 - 13	S
T3	5	4 - 6	M
S1	3	2 - 4	S
S2	1	0.8 - 1.2	V
G	0.2	0.1 - 0.3	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	S	<i>Acacia pendula</i>
T2	A	<i>Casuarina cristata</i>
T3	D	<i>Eremophila mitchellii</i>
S1	D	<i>Geijera parviflora</i>
S1	A	<i>Eremophila mitchellii</i>
S2	C	<i>Apophyllum anomalum</i>
S2	C	<i>Eremophila mitchellii</i>
S2	A	* <i>Lycium ferocissimum</i>
G	D	* <i>Cenchrus ciliaris</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Flat area near creek line

Soils: Dark sandy loam

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.3.2

END

*Regional Ecosystem Assessment – August 2012*



**Site 17 facing east**



**west**



**Site 17 Soil surface**

Sheet D – regional ecosystem type assessment site

**Location**

Site No. 18 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town)

GPS: GDA94 

5	5
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0	7	1	8	9	7	1
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7	0	5	9	5	4	9
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 UTM: 

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**Vegetation structure**

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	14	13 - 15	S
T2	9	8 - 10	S
T3	5	3 - 6	S
S1	1.5	1.0 - 1.8	V
S2		-	
G	0.6	0.1 - 0.8	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

**Plant species**

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus camaldulensis</i>
T1	S	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	S	<i>Acacia excelsa</i>
T3	D	<i>Geijera parviflora</i>
T3	A	<i>Corymbia tessellaris</i>
S1	D	<i>Geijera parviflora</i>
G	C	<i>Lomandra longifolia</i>
G	C	<i>*Megathyrsus maximus</i>

**Geology, landform, soils**

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Flat area near drainage line

Soils: Fine alluvium

Field observation and notes:

Landzone: 3

**RE code changes**

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.3.25

END

*Regional Ecosystem Assessment – August 2012*



**Site 18 facing north**



**east**



**Site 18 facing south**



**west**



**Site 18 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 19 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town)

GPS: GDA94 

5	5
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0	7	2	0	9	3	8
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7	0	6	5	2	8	2
---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum;  
**d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	8 - 11	M
T2	7	5 - 8	M
T3	4	3 - 5	M
S1	1.0	0.8 - 1.5	V
S2	0.2	0.1 - 0.4	M
G	0.1	0.1 - 0.3	S-M
Structural formation: (including height)			
Open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Casuarina cristata</i>
T2	D	<i>Casuarina cristata</i>
T3	C	<i>Eremophila mitchellii</i>
T3	C	<i>Geijera parviflora</i>
T3	A	* <i>Opuntia sp.</i>
S1	D	<i>Geijera parviflora</i>
S2	C	<i>Chenopodium sp.</i>
S2	C	<i>Enchylaena tomentosa</i>
G	D	<i>Paspalidium caespitosum</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Flat area, gently undulating

Soils: Grey clay loam

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: 11.9.5/11.9.10

Proposed RE code: 11.9.5

END

*Regional Ecosystem Assessment – August 2012*



**Site 19 facing north**



**east**



**Site 19 facing south**



**west**



**Site 19 Soil surface**

Sheet D – regional ecosystem type assessment site

**Location**

Site No. 20 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Roadside

GPS: GDA94 

5	5
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0	7	1	8	8	0	9
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7	0	6	4	6	7	4
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 Unit: Lat

**Vegetation structure**

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	9 - 12	S
T2	8	6 - 9	M
T3	4	3 - 5	M
S1	2	1.5 - 3.0	M
S2		-	
G	0.6	0.4 - 0.7	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

**Plant species**

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	C	<i>Casuarina cristata</i>
T2	C	<i>Acacia pendula</i>
T2	A	<i>Alectryon oleifolius</i>
T3	C	<i>Casuarina cristata</i>
T3	C	<i>Geijera parviflora</i>
T3	S	<i>Eremophila mitchellii</i>
S1	D	<i>Geijera parviflora</i>
S1	A	* <i>Opuntia</i> sp.
G	D	* <i>Cenchrus ciliaris</i>

**Geology, landform, soils**

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Slope above drainage line

Soils: Dark brown clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 9

**RE code changes**

Existing RE code: non-remnant

Proposed RE code: 11.9.10

END

*Regional Ecosystem Assessment – August 2012*



**Site 20 facing north**



**west**



**Site 20 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 21 Recorder: A.J.Franks Day/Date: 17 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town)

GPS: GDA94 

5	5
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0	7	1	6	2	9	7
---	---	---	---	---	---	---

7	0	6	5	8	1	7
---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	10 - 14	V
T2	8	6 - 9	V
T3		-	
S1		-	
S2		-	
G	0.3	0.1 - 0.4	M-D
Structural formation: (including height)			
Open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	C	<i>Casuarina cristata</i>
T2	C	<i>Acacia harpophylla</i>
G	C	* <i>Urochloa mosambicensis</i>
G	C	* <i>Cenchrus ciliaris</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Low lying area. Wide drainage line

Soils: Clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.3.17)

END

*Regional Ecosystem Assessment – August 2012*



**Site 21 facing north**



**east**



**Site 21 facing south**



**Site 21 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 22 Recorder: A.J.Franks Day/Date: 18 NOV 2015  
 Purpose Regional Ecosystem Assessment  
 Locality: (inc. distance/direction to nearest town) Boonderoo (lot 2 on SP186195)  
 GPS: GDA94 

5	5	0	7	2	3	4	3	4	7	0	5	9	5	5	4
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	14	12 - 16	V
T1	10	9 - 11	V
T2	7	6 - 9	M
T3		-	
S1	2.0	1.0 - 2.5	S-M
S2		-	
G	0.3	0.2 - 0.5	S-M
Structural formation: (including height)			
Low open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
E	D	<i>Eucalyptus crebra</i>
T1	D	<i>Acacia shirleyi</i>
T1	A	<i>Casuarina cristata</i>
T2	D	<i>Geijera parviflora</i>
T2	A	<i>Geijera salicina</i>
T2	A	<i>Psyrax oleifolius</i>
S1	D	<i>Carissa ovata</i>
S1	S	<i>Alectryon diversifolius</i>
S1	A	<i>Jasminum sp.</i>
S1	A	<i>Olearia sp.</i>
G	D	<i>Ancistrachne uncinata</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K  
 Geology code and rock types: Qs/Kld  
 Land system: (S)uBl  
 Landform: Slope of jump-up. Moderately sloping  
 Soils: Sandy loam with surface rock  
 Field observation and notes: \_\_\_\_\_  
 Landzone: 10

RE code changes

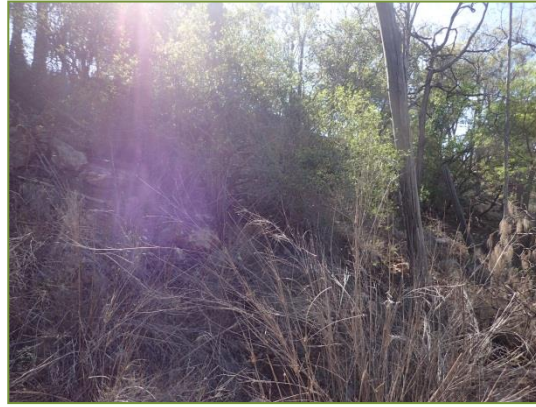
Existing RE code: 11.9.5/11.9.10  
 Proposed RE code: 11.10.3

END

*Regional Ecosystem Assessment – August 2012*



**Site 22 facing north**



**east**



**Site 22 facing south**



**west**



**Site 22 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 22A Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Boonderoo (lot 2 on SP186195)

GPS: GDA94 

5	5	0	7	2	3	6	6	6	7	0	6	0	6	7	4
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	9 - 11	M
T2	4	3 - 5	M
T3		-	
S1	2.0	1.5 - 3.0	S
S2	0.3	0.2 - 1.0	V
G	0.1	0.1 - 0.2	S
Structural formation: (including height)			
Low open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Casuarina cristata</i>
T1	S	<i>Acacia harpophylla</i>
T1	A	<i>Eucalyptus populnea</i>
T2	D	<i>Eremophila mitchellii</i>
T2	A	<i>Acacia harpophylla</i>
T2	A	<i>Atalaya hemiglauca</i>
S1	D	<i>Eremophila mitchellii</i>
S2	D	<i>Sclerolaena birchii</i>
S2	A	<i>Solanum sp.</i>
G	D	* <i>Cenchrus ciliaris</i>
G	A	<i>Einadia nutans</i>
G	S	<i>Ancistrachne uncinata</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Qs/Kld

Land system: (S)uBl

Landform: Lower footslopes of jump-up. Gently sloping

Soils: Clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: 11.9.5/11.9.10

Proposed RE code: 11.9.5

END

*Regional Ecosystem Assessment – August 2012*



**Site 22A facing north**



**east**



**Site 22A facing south**



**west**



**Site 22A Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 23 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 1 on RP892977)

GPS: GDA94 

5	5
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0	7	2	3	7	4	3
---	---	---	---	---	---	---

7	0	6	0	9	1	3
---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	7	5 - 8	M
T2	4	3 - 5	S
T3		-	
S1	1.5	1.0 - 2.0	S
S2		-	
G	0.1	0.1 - 0.2	V
Structural formation: (including height)			
Low open forest			
Ecologically dominant layer:			T1

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
T1	D	<i>Acacia shirleyi</i>
T1	A	<i>Callitris glaucophylla</i>
T2	D	<i>Acacia shirleyi</i>
T2	A	<i>Alphitonia excelsa</i>
T2	A	<i>Callitris glaucophylla</i>
T2	A	<i>Hakea lorea</i>
S1	D	<i>Callitris glaucophylla</i>
S1	A	<i>Solanum sp.</i>
G	D	<i>Aristida caput-medusae</i>
G	S	<i>Ancistrachne uncinata</i>
G	A	<i>Lomandra longifolia</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Qs/Kld

Land system: (S)uBu

Landform: Top of low hill

Soils: Sandy loam with some surface rock. A lot of organic matter on surface

Field observation and notes: \_\_\_\_\_

Landzone: 10

RE code changes

Existing RE code: non-remnant

Proposed RE code: 11.10.3

END

*Regional Ecosystem Assessment – August 2012*



**Site 23 facing north**



**east**



**Site 23 facing south**



**west**



**Site 23 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 24 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 75 on WV1887)

GPS: GDA94 

5	5
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0	7	2	2	6	9	1
---	---	---	---	---	---	---

7	0	6	4	3	0	2
---	---	---	---	---	---	---

 Unit: Lat

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	12 - 15	S
T2	5	4 - 6	S-M
T3	3	2 - 4	S
S1	1.5	0.8 - 2.0	S
S2		-	
G	0.2	0.1 - 0.3	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	C	<i>Eucalyptus populnea</i>
T1	C	<i>Eucalyptus crebra</i>
T1	A	<i>Eucalyptus melanophloia</i>
T2	D	<i>Callitris glaucophylla</i>
T2	S	<i>Eucalyptus crebra</i>
T2	A	<i>Eucalyptus populnea</i>
T3	D	<i>Callitris glaucophylla</i>
T3	S	<i>Eremophila mitchellii</i>
T3	A	<i>Eucalyptus populnea</i>
S1	D	<i>Eremophila mitchellii</i>
S1	A	<i>Eucalyptus populnea</i>
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Very gentle slope

Soils: Pale orange sandy loam

Field observation and notes: \_\_\_\_\_

Landzone: 5

RE code changes

Existing RE code: non-remnant

Proposed RE code: 11.5.1

END

*Regional Ecosystem Assessment – August 2012*



**Site 24 facing north**



**east**



**Site 24 facing south**



**west**



**Site 24 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 25 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 76 on WV165)

GPS: GDA94 

5	5	0	7	2	3	1	0	7	7	0	6	3	8	0	9
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11	10 - 12	V
T2	8	6 - 10	S
T3	4	3 - 5	M
S1	2	1.5 - 3.0	S-M
S2	1	0.8 - 1.5	V
G	0.2	0.1 - 0.6	S-M
Structural formation: (including height)			
Open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	C	<i>Eucalyptus crebra</i>
T1	C	<i>Eucalyptus populnea</i>
T2	D	<i>Callitris glaucophylla</i>
T2	S	<i>Acacia harpophylla</i>
T2	A	<i>Owenia acidula</i>
T2	A	<i>Eucalyptus populnea</i>
T2	S	<i>Eucalyptus populnea</i>
T3	D	<i>Callitris glaucophylla</i>
T3	S	<i>Eremophila mitchellii</i>
S1	C	<i>Owenia acidula</i>
S1	C	<i>Eremophila mitchellii</i>
S2	D	<i>Bursaria spinosa</i>
G	D	<i>Chloris sp.</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Gentle slope

Soils: Pale orange sandy loam with some surface stone

Field observation and notes: \_\_\_\_\_

Landzone: 5

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.5.1)

END

*Regional Ecosystem Assessment – August 2012*



**Site 25 facing north**



**east**



**Site 25 facing south**



**west**



**Site 25 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 26 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 76 on WV165)

GPS: GDA94 

5	5	0	7	2	3	3	3	7	7	0	6	3	8	0	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9	8 - 10	S
T2	6	5 - 7	M
T3	4	3 - 5	S-M
S1	0.7	0.5 - 1.0	V
S2		-	
G	0.2	0.1 - 0.4	V
Structural formation: (including height)			
Low woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Casuarina cristata</i>
T2	D	<i>Casuarina cristata</i>
T3	S	<i>Eucalyptus populnea</i>
T3	D	<i>Casuarina cristata</i>
T3	S	<i>Eremophila mitchellii</i>
S1	D	<i>Bursaria spinosa</i>
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5\_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Gentle slope

Soils: Pale sandy loam with occasional surface stone

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.9.5a)

END

*Regional Ecosystem Assessment – August 2012*



**Site 26 facing north**



**east**



**Site 26 facing south**



**west**



**Site 26 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 27 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 79 on WV171)

GPS: GDA94 

5	5	0	7	2	3	6	2	1	7	0	6	6	5	0	0
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	16	15 - 18	S
T2	10	8 - 12	S
T3		-	
S1	2	1.5 - 3.5	V
S2	0.6	0.4 - 0.8	V
G	0.1	0.1 - 0.3	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus camaldulensis</i>
T1	S	<i>Eucalyptus populnea</i>
T1	A	<i>Eucalyptus melanophloia</i>
T2	D	<i>Eucalyptus camaldulensis</i>
T2	A	<i>Eucalyptus populnea</i>
T2	A	<i>Eucalyptus melanophloia</i>
T2	S	<i>Casuarina cristata</i>
S1	D	<i>Eucalyptus camaldulensis</i> (juv)
S2	D	<i>Maireana microphylla</i>
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Stranded oxbow, separate from main channel

Soils: Loamy alluvium

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.3.2

END

*Regional Ecosystem Assessment – August 2012*



**Site 27 facing north**



**east**



**Site 27 facing south**



**west**



**Site 27 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 28 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 79 on WV171)

GPS: GDA94 

5	5	0	7	2	3	1	7	1	7	0	6	5	7	4	7
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	8 - 11	S
T2	5	4 - 7	S-M
T3		-	
S1	2.5	2.0 - 3.0	V
S2	1.5	0.8 - 1.8	V
G	0.2	0.1 - 0.4	M
Structural formation: (including height)			
Low open woodland			
Ecologically dominant layer:			T1

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
T1	D	<i>Casuarina cristata</i>
T1	A	<i>Eucalyptus populnea</i>
T1	A	<i>Acacia harpophylla</i>
T2	D	<i>Casuarina cristata</i>
T2	A	<i>Acacia excelsa</i>
T2	A	<i>Acacia harpophylla</i>
T2	A	<i>Eremophila mitchellii</i>
S1	D	<i>Eremophila mitchellii</i>
S2	D	<i>Casuarina cristata</i>
G	C	<i>Sclerolaena birchii</i>
G	C	<i>Paspalidium caespitosum</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: AX

Landform: Sloping

Soils: Pale orange sandy clay loam with surface rock

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.9.5a

END

*Regional Ecosystem Assessment – August 2012*



**Site 28 facing north**



**east**



**Site 28 facing south**



**west**



**Site 28 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 29 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 139 on CP892978)

GPS: GDA94 

5	5	0	7	2	3	9	6	1	7	0	6	1	8	0	5
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	14	12 - 15	V
T1	9	7 - 11	M
T2			
T3		-	
S1	3	1.5 - 4	S
S2		-	
G	0.1	0.1 - 0.2	S - M
Structural formation: (including height)			
Open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
E	D	<i>Eucalyptus populnea</i>
T1	D	<i>Callitris glaucophylla</i>
T1	A	<i>Corymbia clarksoniana</i>
T1	A	<i>Angophora leiocarpa</i>
T1	A	<i>Eucalyptus exserta</i>
T2	D	<i>Callitris glaucophylla</i>
T2	A	<i>Petalostigma pubescens</i>
S1	D	<i>Callitris glaucophylla</i>
S1	A	<i>Eucalyptus populnea</i> (saplings)
G	D	<i>Aristida caput-medusae</i>
G	A	<i>Laxmannia gracilis</i>
G	A	<i>Calotis cuneifolia</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Qs/Kld

Land system: (S)uBl

Landform: Upper slopes of hill. Moderate slope

Soils: Pale red sandy loam

Field observation and notes: \_\_\_\_\_

Landzone: 10

RE code changes

Existing RE code: 11.7.2/11.5.1

Proposed RE code: 11.10.9

END

*Regional Ecosystem Assessment – August 2012*



**Site 29 facing north**



**east**



**Site 29 facing south**



**west**



**Site 29 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 29A Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 139 on CP892978)

GPS: GDA94 

5	5	0	7	2	3	1	1	8	7	0	6	2	1	5	4
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	6	5 - 7	M
T2	4	3 - 5	S
T3	2	1.5 - 3	M
S1	0.8	0.5 - 1.2	S
S2		-	
G	0.1	0.1 - 0.2	S
Structural formation: (including height)			
Low open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Acacia harpophylla</i>
T2	D	<i>Acacia harpophylla</i>
T2	A	<i>Santalum lanceolatum</i>
T3	C	<i>Eremophila mitchellii</i>
T3	C	<i>Geijera parviflora</i>
S1	D	<i>Geijera parviflora</i>
S1	A	<i>Citrus glauca</i>
G	D	<i>Paspalidium caespitosum</i>
G	A	<i>Portulaca pilosa</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Qs/Kld

Land system: (S)uBl

Landform: Gentle slope

Soils: Reddish brown clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.9.5)

END

*Regional Ecosystem Assessment – August 2012*



**Site 29A facing north**



**east**



**Site 29A facing south**



**west**



**Site 29A Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 30 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 139 on CP892978)

GPS: GDA94 

5	5
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0	7	2	2	9	3	5
---	---	---	---	---	---	---

7	0	6	2	8	7	6
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	14	12 - 15	S
T2	10	9 - 11	S-M
T3	6	5 - 7	S-M
S1	2	1.5 - 2.5	V
S2	0.9	0.5 - 1.2	S
G	0.2	0.1 - 0.4	S-M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	C	<i>Eucalyptus populnea</i>
T1	C	<i>Eucalyptus moluccana</i>
T1	A	<i>Eucalyptus crebra</i>
T2	D	<i>Allocasuarina luehmannii</i>
T3	D	<i>Callitris glaucophylla</i>
T3	A	<i>Psyrax oleifolius</i>
S1	D	<i>Eremophila mitchellii</i>
S1	A	<i>Geijera parviflora</i>
S2	D	<i>Carissa ovata</i>
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Lower slope of low hill

Soils: Sandy loam

Field observation and notes: Some evidence of logging

Landzone: 10

RE code changes

Existing RE code: 11.7.6

Proposed RE code: 11.10.11

END

*Regional Ecosystem Assessment – August 2012*



**Site 30 facing north**



**east**



**Site 30 facing south**



**west**



**Site 30 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 31 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 150 on WV192)

GPS: GDA94 

5	5	0	7	2	3	6	6	6	7	0	6	0	6	7	4
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	7	6 - 8	S
T2	5	4 - 6	M
T3	2	1.4 - 4	S
S1		-	
S2		-	
G	0.5	0.4 - 0.7	S
Structural formation: (including height)			
Low open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Angophora leiocarpa</i>
T2	D	<i>Callitris glaucophylla</i>
T3	D	<i>Callitris glaucophylla</i>
G	D	<i>Lomandra confertifolia</i>
G	A	<i>Ancistrachne uncinata</i>
G	S	<i>Aristida caput-medusae</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Qs/Kld

Land system: (S)uBu

Landform: Moderate rocky slope

Soils: Sandy clay loam with surface rock

Field observation and notes: \_\_\_\_\_

Landzone: 10

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.10.6)

END

*Regional Ecosystem Assessment – August 2012*



**Site 31 facing north**



**east**



**Site 31 facing south**



**west**



**Site 31 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 32 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Wilgavale (lot 351 on WAL53452)

GPS: GDA94 

5	5	0	7	2	0	2	6	2	7	0	6	4	3	9	1
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	15	14 - 16	S
T2	6	5 - 8	S
T3		-	
S1	1.0	0.8 - 1.5	V
S2	0.6	0.4 - 0.8	V
G	0.2	0.1 - 0.4	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus camaldulensis</i>
T1	A	<i>Eucalyptus melanophloia</i>
T2	D	<i>Eucalyptus camaldulensis</i>
T2	S	<i>Geijera parviflora</i>
T2	A	<i>Acacia excelsa</i>
S1	D	<i>Acacia</i> sp.
S2	D	<i>Carissa ovata</i>
G	D	<i>Lomandra longifolia</i>
G	S	<i>Themeda triandra</i>
G	S	* <i>Cenchrus ciliaris</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Drainage line with standing water

Soils: Pale orange clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.3.25

END

*Regional Ecosystem Assessment – August 2012*



**Site 32 facing north**



**east**



**Site 32 facing south**



**west**



**Site 32 Soil surface**

Sheet D – regional ecosystem type assessment site

**Location**

Site No. 33 Recorder: A.J.Franks Day/Date: 18 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Beauview (lot 355 on WV290)

GPS: GDA94 

5	5
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0	7	2	2	1	4	4
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7	0	6	4	1	6	5
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 Unit: Lat

**Vegetation structure**

Median height of the EDL is to be measured

**Plant species**

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	10 - 14	S
T2	6	5 - 8	S-M
T3	4	3 - 5	S
S1	2	1.5 - 2.5	V
S2		-	
G	0.2	0.1 - 0.4	S-M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus crebra</i>
T2	D	<i>Callitris glaucophylla</i>
T2	A	<i>Bursaria incana</i>
T3	D	<i>Bursaria incana</i>
T3	S	<i>Callitris glaucophylla</i>
T3	A	<i>Geijera parviflora</i>
S1	D	<i>Acacia sp.</i>
S1	S	<i>Bursaria incana</i>
G	D	<i>Ancistrachne uncinata</i>
G	A	<i>Chrysopogon fallax</i>

**Geology, landform, soils**

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Top of low hill

Soils: Sandy clay loam with surface rock

Field observation and notes: Some evidence of historical thinning

Landzone: 10

**RE code changes**

Existing RE code: 11.7.6/11.9.5a

Proposed RE code: 11.10.7a

END

*Regional Ecosystem Assessment – August 2012*



**Site 33 facing north**



**east**



**Site 33 facing south**



**west**



**Site 33 Soil surface**

Sheet D – regional ecosystem type assessment site

**Location**

Site No. 34 Recorder: A.J.Franks Day/Date: 19 NOV 2015  
 Purpose Regional Ecosystem Assessment  
 Locality: (inc. distance/direction to nearest town) Oakery (lot 371 on WV33)  
 GPS: GDA94 

5	5	0	7	1	7	5	7	8	7	0	6	3	1	0	5
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 UTM:

**Vegetation structure**

Median height of the EDL is to be measured

**Plant species**

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	10	9 - 11	S
T2	6	5 - 8	V
T3	4	3 - 5	S
S1	2.0	1.5 - 3.0	S
S2	0.8	0.6 - 1.0	V
G	0.2	0.1 - 0.4	M
Structural formation: (including height) <u>Low woodland</u>			
Ecologically dominant layer:			<u>T1</u>

Str.	Rel. dom.	Scientific Name
T1	D	<i>Casuarina cristata</i>
T2	A	<i>Atalaya hemiglauca</i>
T2	D	<i>Casuarina cristata</i>
T3	D	<i>Eremophila mitchellii</i>
T3	S	<i>Geijera parviflora</i>
T3	A	<i>Atalaya hemiglauca</i>
S1	D	<i>Eremophila mitchellii</i>
S2	D	<i>Carissa ovata</i>
S2	A	<i>Capparis lasiantha</i>
G	D	<i>*Cenchrus ciliaris</i>

**Geology, landform, soils**

Geology map/scale/year: Roma (SG55\_12)/250K  
 Geology code and rock types: Kli  
 Land system: (S)uBl  
 Landform: Towards top of low rise  
 Soils: Red sandy soil  
 Field observation and notes: \_\_\_\_\_  
 Landzone: 9

**RE code changes**

Existing RE code: non-remnant  
 Proposed RE code: 11.9.5

END

*Regional Ecosystem Assessment – August 2012*



**Site 34 facing north**



**east**



**Site 34 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 35 Recorder: A.J.Franks Day/Date: 19 NOV 2015  
 Purpose Regional Ecosystem Assessment  
 Locality: (inc. distance/direction to nearest town) Oakery (lot 373 on WV33)  
 GPS: GDA94 

5	5	0	7	1	6	1	7	7	7	0	6	2	7	5	9
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum;  
**d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	14	12 - 16	S
T2	10	8 - 11	V
T3	5	3 - 6	M
S1	1.0	0.8 - 1.8	S
S2		-	
G	0.6	0.2 - 0.8	M
Structural formation: (including height) <u>Woodland</u>			
Ecologically dominant layer:			<u>T1</u>

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Atalaya hemiglauca</i>
T3	D	<i>Eremophila mitchellii</i>
T3	A	<i>Brachychiton rupestris</i>
T3	A	<i>Geijera parviflora</i>
T3	A	<i>Geijera salicina</i>
S1	D	<i>Carissa ovata</i>
S1	A	<i>Alectryon diversifolius</i>
G	D	<i>Ancistrachne uncinata</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K  
 Geology code and rock types: Kli  
 Land system: (S)uBl  
 Landform: Gently undulating sandy plain  
 Soils: Reddish clay loam  
 Field observation and notes: \_\_\_\_\_  
 Landzone: 9

RE code changes

Existing RE code: 11.9.5/11.9.10  
 Proposed RE code: 11.9.7

END

*Regional Ecosystem Assessment – August 2012*



**Site 35 facing north**



**east**



**Site 35 facing south**



**west**



**Site 35 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 37 Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Sans Pariel (lot 554 on WV239)

GPS: GDA94 

5	5	0	7	1	8	0	9	2	7	0	6	6	1	6	8
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 UTM: 50

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9	8 - 10	M
T2	6	5 - 7	M
T3		-	
S1	2.0	1.5 - 2.5	V
S2	0.8	0.6 - 1.2	S
G	0.2	0.1 - 0.5	S
Structural formation: (including height)			
Low open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Acacia shirleyi</i>
T1	S	<i>Eucalyptus crebra</i>
T2	D	<i>Acacia shirleyi</i>
T2	A	<i>Hakea lorea</i>
S1	D	<i>Bursaria spinosa</i>
S2	D	<i>Philotheca</i> sp.
S2	A	<i>Hovea longipes</i>
G	D	<i>Ancistrachne uncinata</i>
G	A	* <i>Bryophyllum delagoense</i>
G	S	<i>Aristida caput-medusae</i>
G	A	<i>Lomandra confertiflora</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Moderately steep rocky slope.

Soils: Sandy loam with surface rock (sandstone)

Field observation and notes: \_\_\_\_\_

Landzone: 10

RE code changes

Existing RE code: 11.7.6

Proposed RE code: 11.10.3

END

*Regional Ecosystem Assessment – August 2012*



**Site 37 facing north**



**east**



**Site 37 facing south**



**west**



**Site 37 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 37A Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Sans Pariel (lot 554 on WV239)

GPS: GDA94 

5	5	0	7	1	7	5	7	2	7	0	6	5	9	6	7
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	8	7 - 9	V
T1	5	4 - 6	M
T2	3	2 - 4	S
T3		-	
S1	0.6	0.5 - 1.2	S-M
S2		-	
G	0.3	0.1 - 0.4	S-M
Structural formation: (including height)			
Low open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
E	D	<i>Eucalyptus populnea</i>
T1	D	<i>Acacia harpophylla</i>
T2	D	<i>Acacia harpophylla</i>
S1	D	<i>Carissa ovata</i>
S1	A	<i>Eremophila mitchellii</i>
S1	A	<i>Geijera parviflora</i>
G	D	<i>Enteropogon acicularis</i>
G	S	<i>Paspalidium caespitosum</i>
G	S	<i>Ancistrachne uncinata</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Slope.

Soils: Reddish sandy clay loam, possibly duplex

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: 11.9.5/11.9.10

Proposed RE code: non-remnant (11.9.5)

END

*Regional Ecosystem Assessment – August 2012*



**Site 37A facing north**



**east**



**Site 37A facing south**



**west**



**Site 37A Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 38 Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Springtime (lot 403 on WV290)

GPS: GDA94 

5	5	0	7	2	1	2	1	9	7	0	6	1	4	3	8
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 UTM:

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	14	12 - 16	V
T2	9	6 - 10	V
T3	4	2 - 5	S-M
S1	1.0	0.8 - 1.2	V
S2		-	
G	0.2	0.1 - 0.4	M-D
Structural formation: (including height)			
Open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T1	A	<i>Casuarina cristata</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Acacia harpophylla</i>
T2	A	<i>Casuarina cristata</i>
T3	C	<i>Eremophila mitchellii</i>
T3	C	<i>Geijera parviflora</i>
T3	A	<i>Acacia harpophylla</i>
T3	A	<i>Acacia excelsa</i>
S1	D	<i>Citrus glauca</i>
S1	A	<i>Apophyllum anomalum</i>
G	D	* <i>Cenchrus ciliaris</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Gentle slope of wide depression near small drainage line

Soils: Red sandy loam

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.9.10)

END

*Regional Ecosystem Assessment – August 2012*



**Site 38 facing north**



**east**



**Site 38 facing south**



**west**



**Site 38 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 39 Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Springtime (lot 361 on WV290)

GPS: GDA94 

5	5	0	7	2	2	2	4	0	7	0	6	3	0	7	4
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Uat

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	14	12 - 15	S
T2	10	7 - 11	V
T3	6	5 - 7	V
S1	1.2	1.0 - 1.5	S
S2	0.5	0.4 - 0.8	S-M
G	0.2	0.1 - 0.4	M
Structural formation: (including height)			
Open forest			
Ecologically dominant layer:			T1

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
T1	C	<i>Eucalyptus crebra</i>
T1	C	<i>Eucalyptus moluccana</i>
T2	D	<i>Eucalyptus crebra</i>
T2	A	<i>Hakea lorea</i>
T2	A	<i>Bursaria spinosa</i>
T3	D	<i>Geijera parviflora</i>
S1	D	<i>Hovea longipes</i>
S2	D	<i>Carissa ovata</i>
S2	A	<i>Bursaria spinosa</i>
G	D	<i>Ancistrachne uncinata</i>
G	S	<i>Aristida sp.</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Mid-slope of low hill

Soils: Rocky sandy loam

Field observation and notes: \_\_\_\_\_

Landzone: 10

RE code changes

Existing RE code: 11.7.7/11.9.5a

Proposed RE code: 11.10.11

END

*Regional Ecosystem Assessment – August 2012*



**Site 39 facing north**



**east**



**Site 39 facing south**



**west**



**Site 39 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No.	39A	Recorder:	A.J.Franks	Day/Date:	19 NOV 2015												
Purpose	Regional Ecosystem Assessment																
Locality: (inc. distance/direction to nearest town)	Springtime (lot 361 on WV290)																
GPS: GDA94	5	5	0	7	2	2	1	7	0	7	0	6	3	3	3	3	Lat

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11	9 - 12	M
T2	5	3 - 6	V
T3		-	
S1	1.5	1.0 - 2.0	V
S2		-	
G	0.2	0.1 - 0.3	V
Structural formation: (including height)			
Open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Acacia shirleyi</i>
T1	A	<i>Eucalyptus crebra</i>
T2	D	<i>Acacia shirleyi</i>
T2	A	<i>Psydrax oleifolius</i>
S1	D	<i>Acacia sp.</i>
S1	A	<i>Alstonia constricta</i>
G	D	<i>Ancistrachne uncinata</i>
G	S	<i>Einadia hastata</i>
G	S	<i>Paspalidium caespitosum</i>
G	A	<i>Lomandra confertifolia</i>

Geology, landform, soils

Geology map/scale/year:	Roma (SG55_12)/250K
Geology code and rock types:	Kld(w)
Land system:	(S)uBl
Landform:	Slope of low hill
Soils:	Sandy loam with surface rock
Field observation and notes:	Evidence of past thinning and recent fire
	Landzone: 10

RE code changes

Existing RE code:	11.7.6/11.9.5a
Proposed RE code:	11.10.3

END

*Regional Ecosystem Assessment – August 2012*



**Site 39A facing north**



**east**



**Site 39A facing south**



**west**



**Site 39A Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 39B Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Springtime (lot 361 on WV290)

GPS: GDA94 

5	5	0	7	2	2	5	7	1	7	0	6	3	2	9	5
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 UTM:

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11	9 - 12	V
T2	8	7 - 9	M
T3	5	3 - 6	S
S1	1.5	1.2 - 2.0	V
S2	0.8	0.4 - 1.0	V
G	0.2	0.1 - 0.3	S-M
Structural formation: (including height)			
Open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	C	<i>Eucalyptus crebra</i>
T1	C	<i>Eucalyptus populnea</i>
T2	D	<i>Callitris glaucophylla</i>
T3	D	<i>Callitris glaucophylla</i>
S1	D	<i>Bursaria spinosa</i>
S2	D	<i>Carissa ovata</i>
S2	A	<i>Psydrax oleifolius</i>
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Flat area, top of hill

Soils: Reddish sandy loam

Field observation and notes: \_\_\_\_\_

Landzone: 10

RE code changes

Existing RE code: 11.7.6/11.9.5a

Proposed RE code: 11.10.7a

END

*Regional Ecosystem Assessment – August 2012*



**Site 39B facing north**



**east**



**Site 39B facing south**



**west**



**Site 39B Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 40 Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) The Pines (lot 555 on WV1441)

GPS: GDA94 

5	5	0	7	1	9	3	2	7	7	0	6	6	2	4	1
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	15	13 - 16	S
T2	7	5 - 8	S
T3	4	3 - 5	V
S1	1.5	1.2 - 2.0	X
S2		-	
G	0.3	0.1 - 0.4	M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	C	<i>Eucalyptus camaldulensis</i>
T1	C	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Eucalyptus camaldulensis</i>
T3	D	<i>Acacia excelsa</i>
S1	D	<i>Acacia excelsa</i>
S1	A	<i>Eremophila mitchellii</i>
G	D	<i>Themeda triandra</i>
G	S	* <i>Verbena bonariensis</i>
G	D	<i>Lomandra longifolia</i> (in channel)

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Flat area near dam and drainage line.

Soils: Grey loamy clay

Field observation and notes: \_\_\_\_\_

Landzone: 3

RE code changes

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.3.25

END

*Regional Ecosystem Assessment – August 2012*



**Site 40 facing north**



**east**



**Site 40 facing south**



**west**



**Site 40 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 41 Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Kundabung (lot 111 on WAL53367)

GPS: GDA94 

5	5
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0	7	2	2	0	8	8
---	---	---	---	---	---	---

7	0	5	9	7	0	3
---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	10 - 14	M
T2	6	4 - 7	S
T3		-	
S1	1.8	1.0 - 2.2	S
S2	0.4	0.3 - 0.6	V
G	0.2	0.1 - 0.3	M
Structural formation: (including height)			
Open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Casuarina cristata</i>
T1	S	<i>Eucalyptus populnea</i>
T1	A	<i>Acacia harpophylla</i>
T2	C	<i>Eremophila mitchellii</i>
T2	C	<i>Geijera parviflora</i>
S1	D	<i>Eremophila mitchellii</i>
S1	S	<i>Geijera parviflora</i>
S2	D	<i>Eremophila mitchellii</i>
S2	A	<i>Capparis lasiantha</i>
G	D	<i>Paspalidium caespitosum</i>
G	S	<i>Sclerolaena birchii</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Qs/Kld

Land system: (S)uBl

Landform: Gently sloping

Soils: Pale orange sandy clay loam with surface stone

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: non-remnant

Proposed RE code: 11.9.5

END

*Regional Ecosystem Assessment – August 2012*



**Site 41 facing north**



**east**



**Site 41 facing south**



**west**



**Site 41 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 42 Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Kundabung (lot 122 on WAL53367)

GPS: GDA94 

5	5
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0	7	2	1	7	3	2
---	---	---	---	---	---	---

7	0	5	7	1	0	2
---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11	10 - 13	V
T2	8	7 - 10	S
T3	5	4 - 6	S
S1	1.2	0.8 - 2.0	V
S2		-	
G	0.3	0.1 - 0.5	S-M
Structural formation: (including height)			
Open woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T3	D	<i>Eremophila mitchellii</i>
T3	S	<i>Psydrax oleifolius</i>
T3	S	<i>Geijera parviflora</i>
T3	A	<i>Acacia excelsa</i>
S1	D	<i>Eremophila mitchellii</i>
S1	S	<i>Psydrax oleifolius</i>
G	D	* <i>Cenchrus ciliaris</i>
G	S	<i>Chloris ventricosa</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kld

Land system: (S)uXB

Landform: Gently undulating

Soils: Fine silty loam

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.9.7)

END

*Regional Ecosystem Assessment – August 2012*



**Site 42 facing north**



**east**



**Site 42 facing south**



**west**



**Site 42 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 45 Recorder: A.J.Franks Day/Date: 19 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Kundabung (lot 132 on WV103)

GPS: GDA94 

5	5	0	7	2	0	8	4	2	7	0	5	9	2	4	9
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 UTM

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9	8 - 11	S
T2	6	5 - 7	V
T3		-	
S1	1.8	1.5 - 2.5	V
S2		-	
G	0.2	0.1 - 0.4	M-D
Structural formation: (including height)			
Low woodland			
Ecologically dominant layer:			T1

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T1	A	<i>Eucalyptus camaldulensis</i>
T1	A	<i>Eucalyptus melanophloia</i>
T1	A	<i>Casuarina cristata</i>
T1	A	<i>Acacia excelsa</i>
T2	D	<i>Eremophila mitchellii</i>
T2	S	<i>Geijera parviflora</i>
S1	D	<i>Eremophila mitchellii</i>
G	D	<i>Chloris</i> sp.
G	S	* <i>Verbena bonariensis</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Flat area near drainage line

Soils: Fine clay

Field observation and notes: Evidence of flood debris

Landzone: 3

RE code changes

Existing RE code: non-remnant

Proposed RE code: 11.3.2

END

*Regional Ecosystem Assessment – August 2012*



**Site 45 facing north**



**east**



**Site 45 facing south**



**west**



**Site 45 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 47 Recorder: A.J.Franks Day/Date: 20 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Macarra (lot 2 on RP168325)

GPS: GDA94 

5	5	0	7	1	7	5	3	2	7	0	6	6	9	5	7
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

 UTM:

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	11	9 - 13	V
T1	8	6 - 9	M
T2	4	3 - 5	S
T3		-	
S1	1.8	1.1 - 2.0	V
S2	0.4	0.3 - 0.6	V
G	0.2	0.1 - 0.4	S-M
Structural formation: (including height)			
Low open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
E	D	<i>Eucalyptus crebra</i>
T1	D	<i>Acacia shirleyi</i>
T2	D	<i>Acacia shirleyi</i>
T2	A	<i>Corymbia clarksoniana</i>
S1	C	<i>Acacia</i> sp.
S1	C	<i>Alstonia constricta</i>
S2	D	<i>Psydrax oleifolius</i>
G	D	<i>Ancistrachne uncinata</i>
G	S	<i>Aristida caput-medusae</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Slope of breakaway

Soils: Sandy loam with surface rock

Field observation and notes: \_\_\_\_\_

Landzone: 10

RE code changes

Existing RE code: non-remnant

Proposed RE code: 11.10.3

END

*Regional Ecosystem Assessment – August 2012*



**Site 47 facing north**



**east**



**Site 47 facing south**



**west**



**Site 47 Soil surface**



Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No. 48 Recorder: A.J.Franks Day/Date: 20 NOV 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Macarra (lot 2 on RP168325)

GPS: GDA94 

5	5	0	7	1	8	0	4	3	7	0	6	6	9	3	0
---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---

 UTM

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	10 - 14	M
T2	7	5 - 8	M
T3	4	3 - 5	S
S1	2	1.5 - 2.5	S
S2	0.8	0.6 - 1.2	V
G	0.4	0.2 - 0.6	M
Structural formation: (including height)			
Open forest			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Acacia harpophylla</i>
T1	A	<i>Eucalyptus populnea</i>
T2	D	<i>Acacia harpophylla</i>
T3	C	<i>Eremophila mitchellii</i>
T3	C	<i>Acacia harpophylla</i>
S1	D	<i>Eremophila mitchellii</i>
S1	S	<i>Geijera parviflora</i>
S2	D	<i>Carissa ovata</i>
S2	A	<i>Citrus glauca</i>
G	D	<i>Ancistrachne uncinata</i>
G	S	<i>Paspalidium caespitosum</i>
G	A	<i>Sclerolaena birchii</i>

Geology, landform, soils

Geology map/scale/year: Roma (SG55\_12)/250K

Geology code and rock types: Kli

Land system: (S)uBl

Landform: Gentle slope below jump-up

Soils: Fine grey clay loam

Field observation and notes: \_\_\_\_\_

Landzone: 9

RE code changes

Existing RE code: non-remnant

Proposed RE code: non-remnant (11.9.5)

END

*Regional Ecosystem Assessment – August 2012*



**Site 48 facing north**



**east**



**Site 48 facing south**



**west**



**Site 48 Soil surface**

Regional Ecosystem Assessment – August 2012

Sheet D – regional ecosystem type assessment site

Location

Site No.	49	Recorder:	A.J.Franks	Day/Date:	19 NOV 2015												
Purpose	Regional Ecosystem Assessment																
Locality: (inc. distance/direction to nearest town)	Shadowlands (lot 1 on RP168325)																
GPS: GDA94	5	5	0	7	1	9	3	8	9	7	0	6	6	6	1	1	Uat

Vegetation structure

Median height of the EDL is to be measured

Plant species

Record relative (numerical) dominance for each stratum; **d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11	9 - 12	S
T2	6	5 - 7	S
T3	3	2 - 4	V
S1	1.5	1.0 - 2.0	S
S2		-	
G	0.2	0.1 - 0.4	S-M
Structural formation: (including height)			
Woodland			
Ecologically dominant layer:			T1

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus populnea</i>
T2	D	<i>Eucalyptus populnea</i>
T2	A	<i>Acacia harpophylla</i>
T2	A	<i>Casuarina cristata</i>
T3	D	<i>Geijera parviflora</i>
T3	A	<i>Eremophila mitchellii</i>
S1	D	<i>Eremophila mitchellii</i>
S1	A	<i>Acacia</i> sp.
S1	A	* <i>Opuntia</i>
G	C	* <i>Cenchrus ciliaris</i>
G	C	<i>Chrysopogon fallax</i>

Geology, landform, soils

Geology map/scale/year:	Roma (SG55_12)/250K
Geology code and rock types:	Kli
Land system:	(S)uBl
Landform:	Flat low, lying area.
Soils:	Pale alluvium
Field observation and notes:	Not much brigalow/belah
Slope to west is red sands	Landzone: 3

RE code changes

Existing RE code:	11.3.25/11.3.2
Proposed RE code:	11.3.17

END

*Regional Ecosystem Assessment – August 2012*



**Site 49 facing north**



**east**



**Site 49 facing south**



**west**



**Site 49 Soil surface**