Detailed Regional Ecosystem Mapping

PL281

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Important Note

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List of Abbreviations

Abbreviation	Definition
Biodiversity Status:	
E	Endangered
OC	Of Concern
NC	No Concern at Present
Conservation Class (VM Act):	
E	Endangered
OC	Of Concern
LC	Least Concern
CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEHP	Queensland Department of Environment and Heritage Protection
DNRM	Department of Natural Resources and Mines
DoE	Commonwealth Department of the Environment
DSITI	Queensland department of Science, Information Technology and Innovation
EDL	Ecologically Dominant Layer
ha	Hectare
km	Kilometre
PL	Petroleum Lease
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
SRTM DEM	Shuttle Radar Topography Mission Digital Elevation Model
VM Act	Queensland's *Vegetation Management Act 1999*

1. Introduction

O2 Ecology was engaged by Santos GLNG to produce a large scale and more robust Regional Ecosystem (RE) mapping layer over petroleum lease (PL) area 281. 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 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.

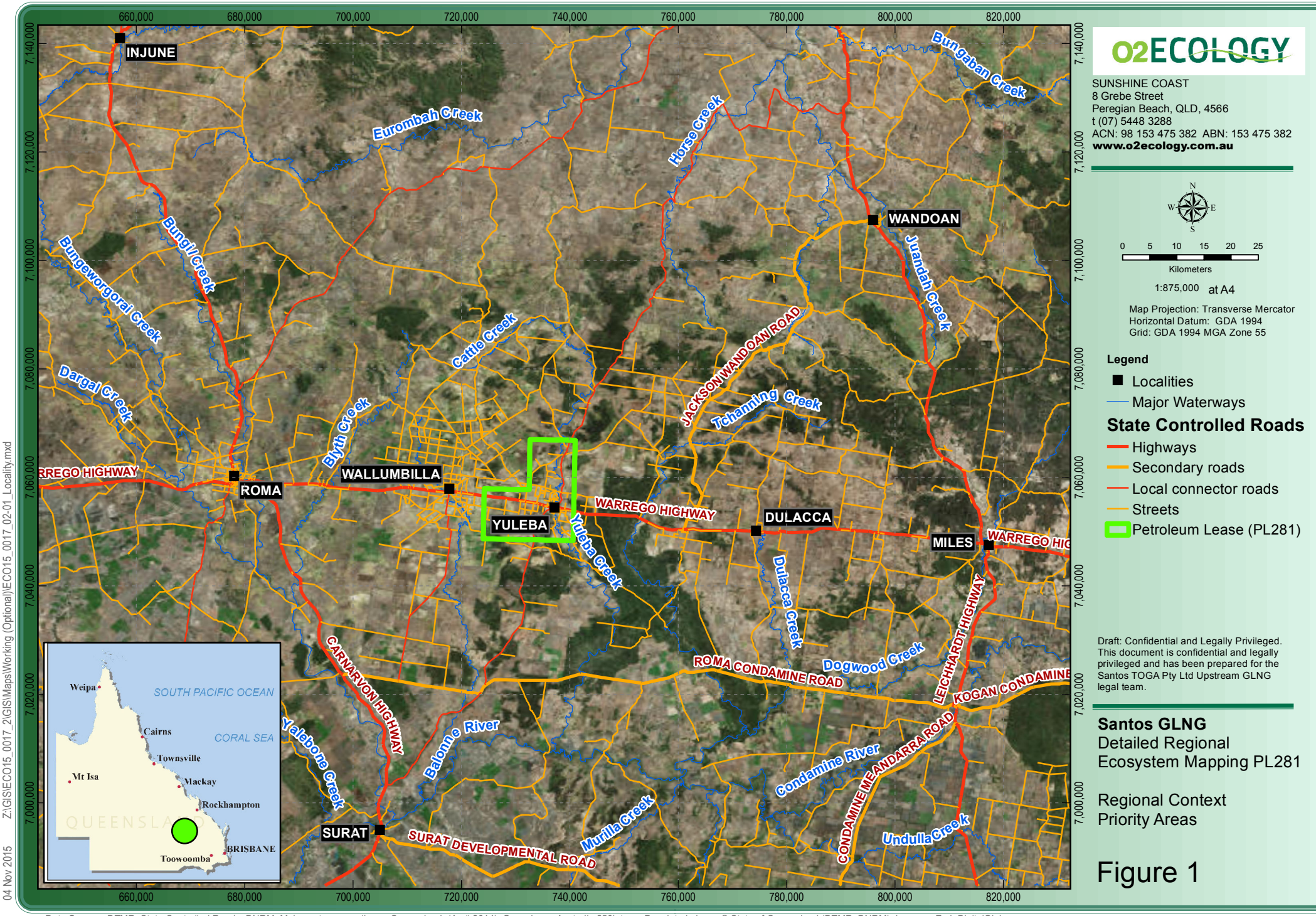
1.1. Objectives

The key objective for this project is to conduct a study over PL281 by producing large scale RE mapping solely based on high resolution imagery made available by Santos GLNG.

1.2. Location of Study Area

PL281 occurs immediately to the south of PL282, which has previously been mapped by O2 Ecology (2015). PL281 covers some 229 km² and is located approximately 50 km east of Roma. Refer to **Figure 1** for the location of PL281 study area.

A number of second order streams dissect the PL281 study area including Horse Gully, Humpy Creek, Kangaroo Creek, Four Mile Creek, Annaby Creek, Myall Creek, Sandy Creek, Rocky Creek, Carroll Creek, and Yuleba Creek.



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N
W E
S

0 5 10 15 20 25
Kilometers

1:875,000 at A4

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

Legend

- Localities
- Major Waterways

State Controlled Roads

- Highways
- Secondary roads
- Local connector roads
- Streets
- Petroleum Lease (PL281)

Santos GLNG
Detailed Regional Ecosystem Mapping PL281

Regional Context Priority Areas

Figure 1

04 Nov 2015 Z:\GIS\ECO15_0017_2\GIS\Maps\Working (Optional)\ECO15_0017_02-01_Locality.mxd

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 PL281. O2 Ecology was supplied with orthorectified high resolution imagery (25 cm) 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 PL281 area. 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)).

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 ±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 ±100 m.

It is important to note that initial mapping for the PL281 area was produced without the aid of any field survey results. This approach is not consistent with best practice but was applied in this study in order to test the capacity of O2 Ecology to produce mapping using only desktop assessment and interpretation of the remotely sensed imagery.

2.1. Field Survey

A field survey was conducted to validate the mapping produced by O2 Ecology. A number of sites were selected within the PL281 study area to ground-truth the O2 Ecology RE and regrowth mapping. Survey sites were selected to sample representative vegetation communities present in the PL281 area. Verification was 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 the PL281 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 72 field sites were assessed across the PL281 area with an additional 48 Quaternary sites undertaken on or adjacent the PL281 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. 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 PL281 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 km² 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 PL281 area as containing Quaternary alluvium (Qa), Tertiary aged deposits (T), and a number of Cretaceous aged sedimentary deposits. These geology units are described in more detail below in **Table 1**.

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

Table 1 Major surface geology units mapped from the PL281 study area (source: Roma 1:250,000 geology map)

Unit Name	Map Symbol	Age	Lithology Description
Quaternary Alluvium	Qa	Quaternary	Alluvium
	Qs/Klc	Quaternary	Sand, gravel, soil with gravel
	Qs/Kld	Quaternary	Sand, gravel, soil with gravel
	T	Tertiary	Quartzose sandstone, conglomerate
Coreena Member	Klc	Lower Cretaceous	Glauconitic siltstone, mudstone, very fine-grained sandstone. Shelly fossils.
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

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**.

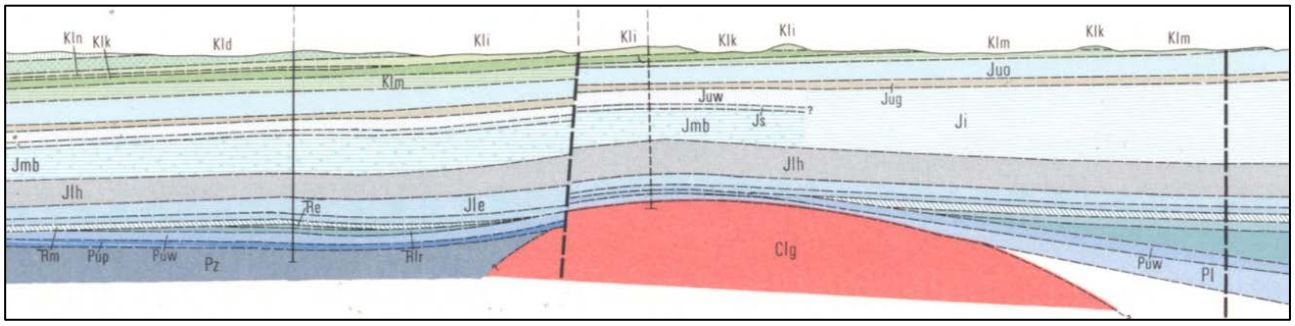


Figure 2 Geological stratigraphy illustrating the layering of the major surface geologies in the vicinity of the PL281 area (Source: Roma 1:250,000 geology map).

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 western extent on the PL area is described as deeply weathered and correlates well with the weathering intensity index. Looking at 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 PL281 study area.

Land systems mapped for the PL281 study area are listed in **Table 2** (CSIRO 1974). Land systems mapping was undertaken at a scale greater than 1:500,000.

Table 2 Land systems and dominant land units mapped for the PL281 study (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)rNi	20	Low rises with occasional outcrops	Narrow-leaved ironbark woodland with shrubs	Shallow, stony massive earths
(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)rBe	22	Rises, rolling terrain	Bendee open forest	Shallow 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 coils

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

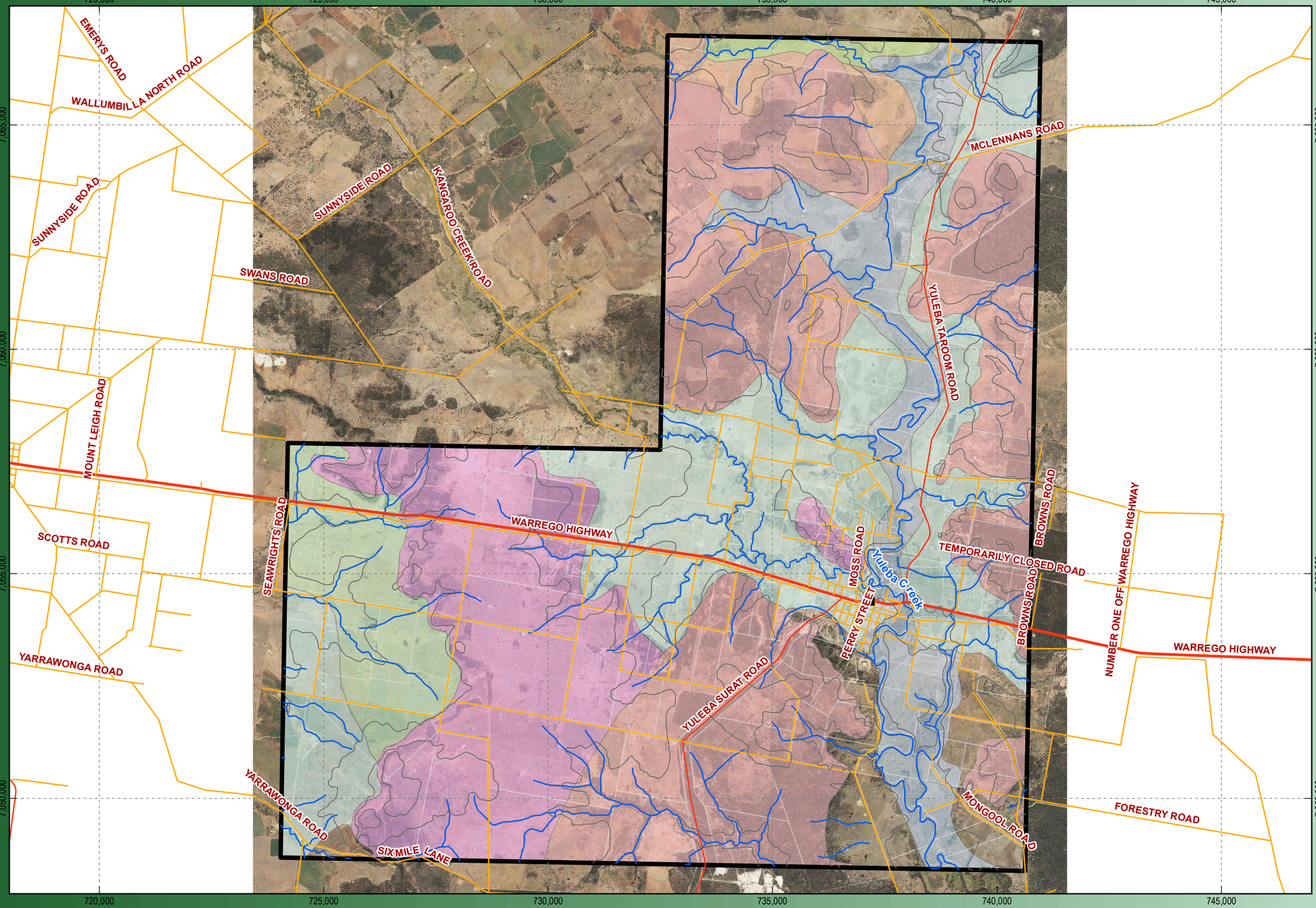
Land zones represent significant differences in geology and the associated landforms, soils and physical processes and generally correspond to broad geological and geomorphological categories and are a critical component of the RE classification scheme.

Land zones have been delineated across the study area based on the available surface geology mapping. Five land zones have been delineated from the PL281 area and are broadly consistent with the surface geology mapping (**Table 3**).

Table 3 Land zones and associated geologies occurring in the PL281 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)
4	Tertiary-early Quaternary clay deposits, usually forming level to gently undulating plains not related to recent Quaternary alluvial systems. Excludes clay plains formed in-situ on bedrock. Mainly Vertosols with gilgai microrelief, but includes thin sandy or loamy surfaced Sodosols and Chromosols with the same paleo-clay subsoil deposits.	Qs
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	Kld>w and other flat deeply weathered areas

Land zone	Description	Associated geology
	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.	
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.	Klk, Kln, Kly
10	Medium to coarse-grained sedimentary rocks, with little or no deformation, forming 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.	T, Kli, Klm



Legend

- Contour (10m)
- 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
- Qa , Alluvium
- Qs/Kld , Sand, gravel, soil with gravel
- T , Quartzose sandstone, conglomerate

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N W E S

0 0.75 1.5 2.25 3
Kilometers

1:90,000 at A3

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

Legend

- Localities
- VM Watercourse
- Contour (10m)

State Controlled Roads

- Highways
- Secondary roads
- Local connector roads
- Streets
- PL281
- Cadastre

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Geology
PL281

Figure 3

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Data Source: DNRM: Vegetation management watercourse map (1:100000 and 1:250000) - version 1.3, Cadastre 2015, Geology Roma 250k © State of Queensland (DNRM); Imagery: Supplied by Santos (25cm 2013)

3.5. Regional Ecosystems Mapping

The detailed mapping produced by O2 Ecology over the PL281 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 ±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 3993 ha of remnant vegetation in the PL281 study area (**Table 4**). O2 Ecology's 1:10,000 RE mapping has increased the extent of remnant vegetation in the study area by 315 ha (**Table 4**). 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 4 Comparison of the area in hectares of each RE mapped from the PL281 study area represented in both version 9.0 RE map and O2 Ecology's field verified map.

RE	Biodiversity Status	V9.0 RE map (ha)	O2 Ecology map – verified (ha)
11.3.2	OC	316.408	165.719
11.3.17	E		19.7
11.3.25	OC	566.089	418.485
11.4.3	E	116.958	6.872
11.4.7	E		1.332
11.5.1	NC	1007.597	140.304
11.5.5	NC	839.587	146.455
11.5.5a	NC		204.987
11.5.5b	NC		63.603
11.5.5c	NC		15.701
11.7.1x1	OC		5.985
11.7.2	NC	195.185	162.846
11.7.5	NC	37.375	
11.7.6	NC	619.358	
11.9.5	E	7.802	16.306
11.9.5a	E		0.455
11.9.7	OC		10.512
11.9.10	E	286.568	52.887
11.10.1	NC		

RE	Biodiversity Status	V9.0 RE map (ha)	O2 Ecology map – verified (ha)
11.10.3	NC		342.206
11.10.4a	NC		27.402
11.10.7	NC		683.623
11.10.7a	NC		410.541
11.10.9	NC		165.950
11.10.11	NC		1246.031
Non-remnant		18918.554	18603.579
Total (remnant)		3992.927	4307.902

Our interpretation of the land zones of the PL281 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 11.10.1 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 course 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 72 Regional Ecosystem type assessment sites were assessed across the PL281 area with the Queensland Herbarium’s Regional Ecosystem map modification kit (Sheet D). A further 48 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 5** with their location illustrated in **Figure 5**. Completed site forms and tabulated Quaternary sites are contained in **Appendix A**.

Table 5 Comparison of the mapped RE and O2 Ecology verified RE from each of the study sites sampled on PL281.

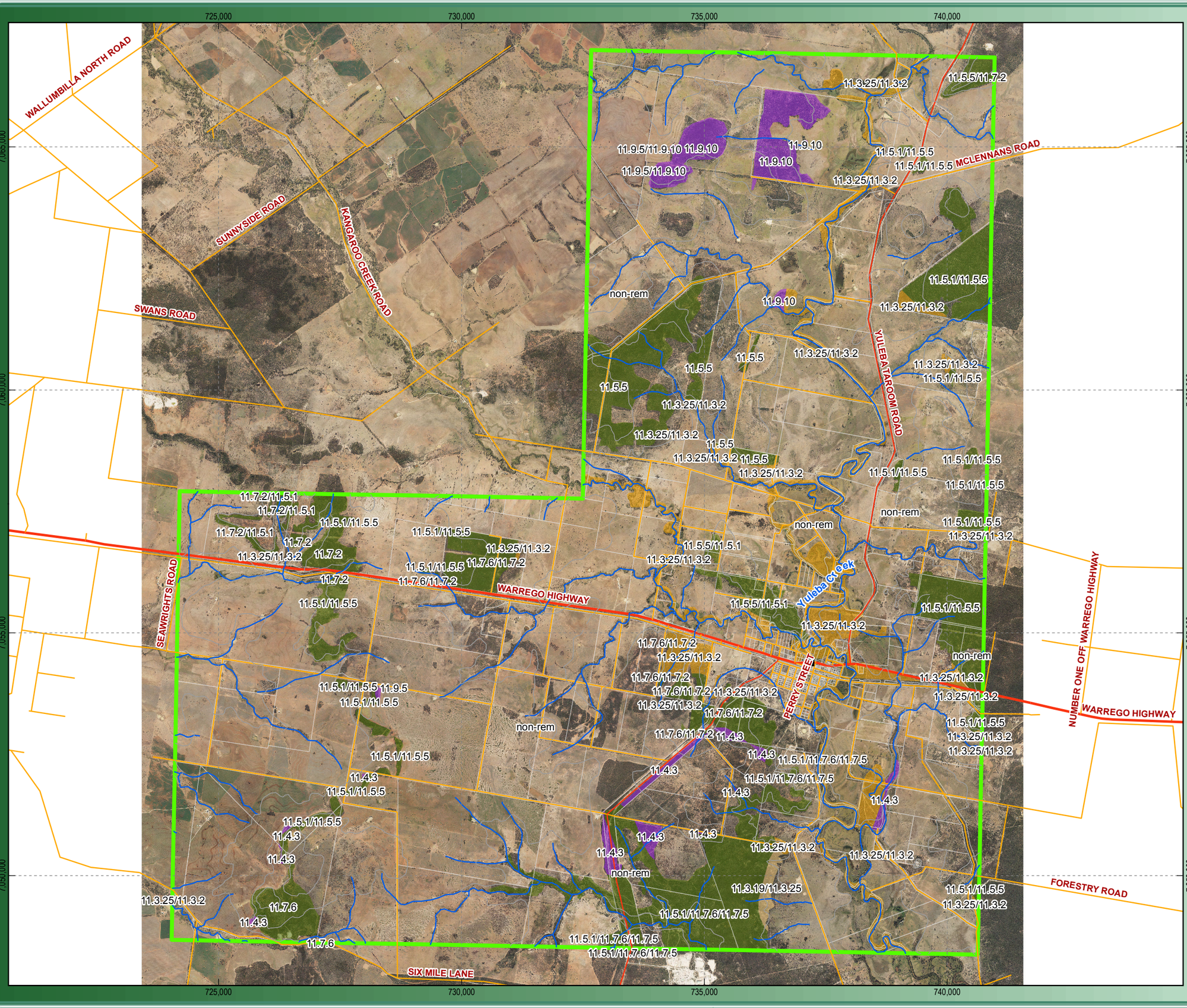
Site	Easting	Northing	v9.0 RE	O2 RE	Remnant
A1	734830	7056263	11.5.5/11.5.1	11.10.11	Remnant
A2	735045	7056699	11.5.5/11.5.1	11.10.11	Remnant
A3	735794	7055805	11.5.5/11.5.1	11.5.5	Remnant
A4	735744	7055831	11.5.5/11.5.1	11.5.5	Remnant
A5	735229	7055966	11.5.5/11.5.1	11.10.11	Remnant
A6	726763	7056878	11.7.2	11.5.1	Remnant
A8	727040.	7057212	11.7.2	11.7.2	Remnant
A9	727512	7057588	11.7.2	11.7.2	Remnant
A14	729131	7058120	non-rem	11.7.2	Remnant
A15	728766	7058105	non-rem	11.5.1	Remnant
A16	728187	7053656	11.5.1/11.5.5	11.5.5	Remnant
A17	728155	7053619	11.5.1/11.5.5	11.5.5	Remnant
A18	726043	7053748	non-rem	11.4.7	Remnant
A19	732618	7051252	non-rem	11.10.11	Remnant
A19A	732103	7051161	non-rem	11.10.11	Remnant
A20	730184	7051647	non-rem	non-rem	Regrowth
A21	728473	7052171	11.5.1/11.5.5	11.5.5	Remnant
A22	728334	7052924	11.5.1/11.5.5	11.7.2	Remnant
A23	727951	7053508	11.5.1/11.5.5	11.5.5	Remnant
A24	733879	7052219	non-rem	non-rem	Non-remnant
A25	726368	7048955	11.7.6	11.7.2	Remnant
A27	725932	7049159	11.7.6	11.7.1x1	Remnant
A28	726406	7050548	11.7.6	11.5.5	Remnant
A29	726663	7050965	11.5.1/11.5.5	11.5.5	Remnant
A30	727423	7051268	11.5.1/11.5.5	11.5.5	Remnant
A31	727242	7050044	non-rem	non-rem	Regrowth (11.5.5)
A32	727053	7049037	11.7.6	11.7.2	Remnant
A33	730770	7048222	non-rem	not mapped	Remnant (11.10.11)
A34	731011	7048226	non-rem	not mapped	Non-remnant (11.10.11)
A36	731311	7049530	non-rem	non-rem	Regrowth (11.10.3)
A38	736554	7050706	11.3.25/11.3.2	11.10.3	Remnant
A39	736310	7050792	11.5.1/11.7.6/11.7.5	11.10.7a	Remnant
A40	736031	7050828	11.5.1/11.7.6/11.7.5	11.10.3	Remnant
A41	735880	7050868	11.5.1/11.7.6/11.7.5	11.10.3	Remnant
A42	735681	7050822	11.5.1/11.7.6/11.7.5	11.10.3	Remnant
A43	734350	7052069	non-rem	non-rem	Regrowth (11.9.10)
A44	733813	7051140	non-rem	11.10.11	Remnant

Site	Easting	Northing	v9.0 RE	O2 RE	Remnant
A45	735015	7051639	non-rem	non-rem	Regrowth (11.9.10)
A46	735101	7051650	non-rem	non-rem	Regrowth (11.9.10)
A47	734458	7050938	non-rem	non-rem	Regrowth (11.10.11)
A48	733761	7051047	11.4.3	11.10.11	Remnant
A49	733355	7051111	11.5.1/11.7.6/11.7.5	11.10.11	Remnant
A50	734096	7050857	non-rem	non-rem	Regrowth (11.9.10)
A51	731373	7060813	11.5.5	11.10.7	Remnant
A52	731442	7060723	11.5.5	11.10.3	Remnant
A53	732422	7061187	11.9.5/11.9.10	11.10.7	Remnant
A53A	732336	7061188	11.9.5/11.9.10	11.9.10	Remnant
A54	732754	7061036	11.5.5	11.10.7	Remnant
A55	733376	7060653	11.5.5	11.10.7	Remnant
A55A	733114	7060748	11.5.5	11.10.7	Remnant
A56	733759	7060791	11.5.5	11.10.3	Remnant
A57	734759	7060668	11.5.5	11.10.7a	Remnant
A58	735782	7060394	11.5.5	11.10.9	Remnant
A58A	738713	7064146	non-rem	11.10.11	Remnant
A59A	734192	7054878	11.7.6/11.7.2	11.10.7	Remnant
A60	735484	7063016	non-rem	non-rem	Regrowth (11.9.10)
A60A	734880	7062921	non-rem	non-rem	Regrowth (11.3.2)
A61	735235	7064803	11.9.10	11.10.7a	Remnant
A62	735195	7064895	11.9.10	11.10.3	Remnant
A63	735993	7064508	11.9.10	11.5.5	Remnant
A64	737728	7066576	11.3.25	11.3.2	Remnant
A64A	738961	7066354	11.3.25/11.3.2	11.3.25	Remnant
A65	726840	7054668	non-rem	11.9.5	Remnant
A65A	726894	7054676	11.5.1/11.5.5	11.5.1	Remnant
A68	733311	7053763	non-rem	non-rem	Regrowth (11.10.3)
A70	733285	7053810	non-rem	non-rem	Regrowth (11.10.3)
A70A	732608	7053554	non-rem	11.9.7	Remnant
A71	731425	7054733	non-rem	non-rem	Regrowth (11.10.3)
A71A	731869	7054756	non-rem	non-rem	Regrowth (11.9.5)
A72	731786	7053782	non-rem	non-rem	Regrowth (11.10.3)
A73	732631	7053179	non-rem	non-rem	Regrowth (11.10.3)
A74	732385	7053513	non-rem	non-rem	Regrowth (11.10.3)

As stated previously, and like the PL282 area, much the PL281 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.

Additionally, a portion towards the south west of the PL281 area is mapped as a complex of surface geologies of Quaternary aged sand, gravel, and soil with gravel with lower Cretaceous mudstone, siltstone, very fine grained sandstone (Qs/Kld or Qs/Klc). This area is problematic in that areas of Qs would align with land zone 4 while areas of Kld or Klc would equate with land zone 9. It was difficult to interpret the evolution of the landscape in this area and whether the predominately undulating plain of clay soils developed in situ (land zone 9) or whether it had been deposited by paleo-stream activity (land zone 4).

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



O2ECOLOGY

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N W E S

0 250 500 1,000 1,500 2,000 2,500
Meters

1:75,000 at A3

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

Legend

- Localities
- Contour (10m)
- Major Waterways
- VM Watercourse

State Controlled Roads

- Highways
- Secondary roads
- Local connector roads
- Streets
- PL281
- Cadastre

Regional Ecosytem (v9)

Biodiversity Status

- Endangered
- Of Concern
- Of Concern (Subdom)
- Not of Concern

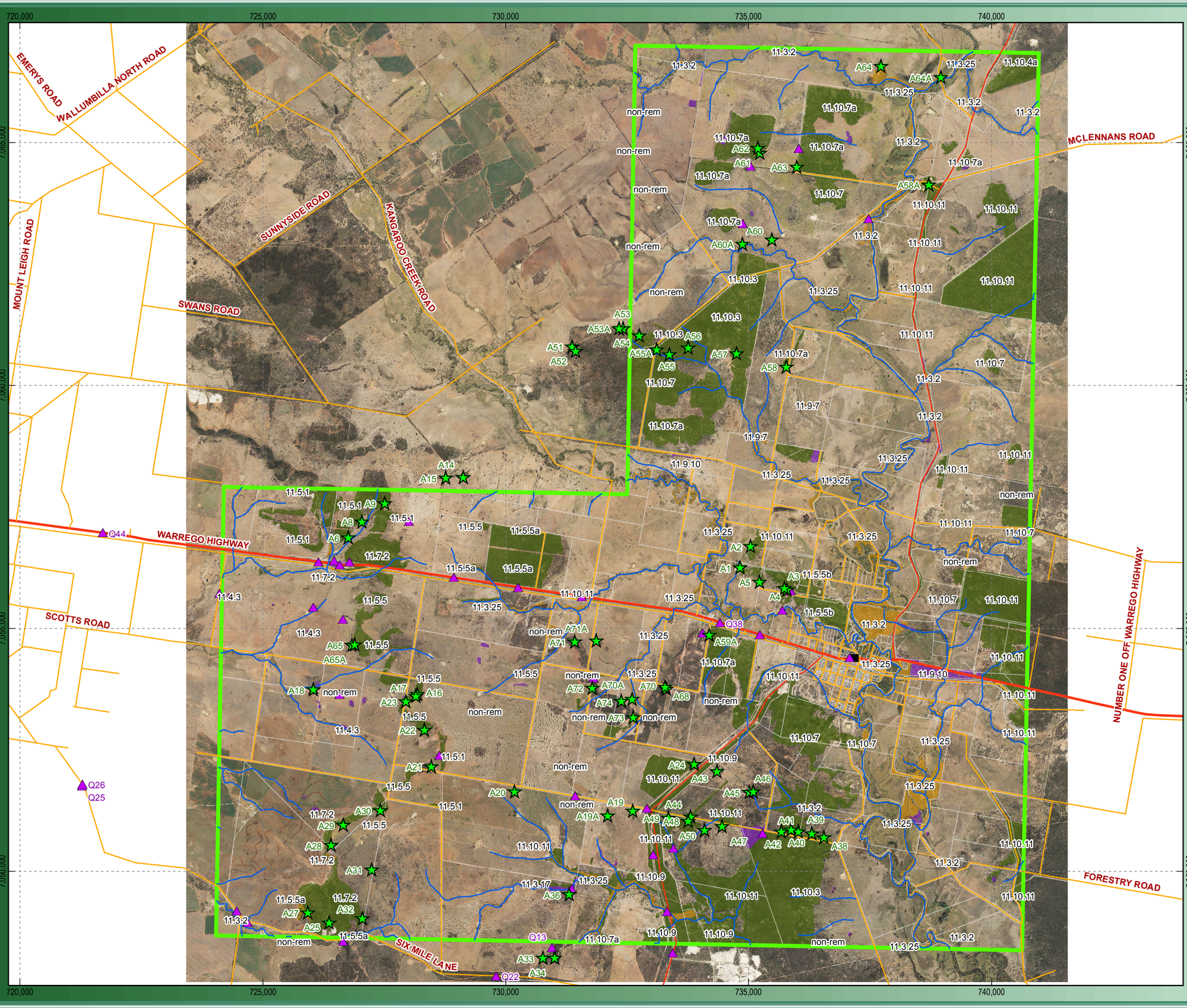
Santos GLNG
Detailed Regional Ecosystem Mapping

Regional Ecosystems v9
PL281

Figure 4

04 Nov 2015 Z:\GIS\ECO15_0017_2\GIS\Maps\Working (Optional)\ECO15_0017_02_04_re9.mxd

Data Source: DNRM: Regional Ecosystems v9.0, Vegetation management watercourse map (1:100000 and 1:250000) - version 1.3, Cadastre 2015 © State of Queensland (DERM, DNRM); Imagery: Supplied by Santos (25cm 2013)



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N W E S

0 0.5 1 1.5 2
Kilometers

1:75,000 at A3

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

Legend

- Field Sites
- Quat Site
- Localities
- Major Waterways
- VM Watercourse

State Controlled Roads

- Highways
- Secondary roads
- Local connector roads
- Streets
- PL281
- Cadastre

O2 RE Mapping Revised

Biodiversity Status

- Endangered
- Of Concern
- Not of Concern

Santos GLNG
Detailed Regional Ecosystem Mapping

O2 Ecology RE mapping PL281

Figure 5

15 Feb 2016 Z:\GIS\ECO15_0017_2\GISMaps\Working (Optional)\v2\ECO15_0017_02_05_mappingrevised.mxd

Data Source: DNRM: Vegetation management watercourse map (1:100000 and 1:250000) - version 1.3, Cadastre 2014 O2 Ecology: RE Survey 2014, Regrowth May 2015 © State of Queensland (DERM, DNRM); Imagery: Supplied by Santos (25cm 2013)

4. Conclusion

High resolution imagery supplied by Santos GLNG was utilised by O2 Ecology to produce large scale RE mapping over PL281, covering some 22,911 ha. 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.

The key objective for this project was to produce large scale RE mapping over PL281 based solely on high resolution imagery made available by Santos GLNG. Limited ground-truthing of the produced map resulted in greater understanding of the landscape including the vegetation than what is provided in a solely desk-top mapping exercise. While the allocation of land zones from geology, land systems mapping and interpretation of the land forms over the PL281 study area was reasonably accurate, the attribution of polygons with vegetation communities proved less than ideal.

5. Works Cited

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Appendix A Completed field assessment sheets

Sheet D – regional ecosystem type assessment site

Location

Site No. A01 **Recorder:** A.J.Franks **Day/Date:** 19 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) The Lagoons (lot 26 on RP891652)

GPS: GDA94 55 0734830 7056263 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	11	10 - 12	S
T2	8	7 - 10	M
T3			
S1	4	3 - 5	S
S2	0.3	0.1 – 0.6	S
G	0.5	0.1 – 0.6	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	*Eucalyptus melanophloia*
T1	A	*Eucalyptus populnea*
T2	D	*Callitris glaucophylla*
T3	D	*Geijera parviflora*
T3	A	*Acacia excelsa*
S1	D	*Geijera parviflora*
S2	D	*Acacia* sp.
G	D	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

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

Land system: (S)rNi

Landform: Mid-slope of low hill

Soils: Sandy loam with surface rock

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.5/11.5.1

Proposed RE code: 11.10.11

END

Site A01 facing north

east

Site A01 facing south

west

Site A01 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A02 **Recorder:** A.J.Franks **Day/Date:** 19 Oct 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0735045 7056699 Units

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	8	9 – 10	S
T2	6	5 – 7	M
T3	4	3 – 5	S
S1			
S2			
G	0.5	0.1 – 0.8	S

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	*Eucalyptus melanophloia*
T2	D	*Allocasuarina luehmannii*
T2	S	*Callitris glaucophylla*
S1	D	*Petalostigma pubescens*
S1	A	*Grevillea striata*
G	C	*Aristida* sp.
G	A	*Dianella longifolia*
G	A	**Cenchrus ciliaris*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

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

Land system: (S)rNi

Landform: Mid-slope of low hill

Soils: Pale sandy loam. Rockiness increases upslope of point.

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.5/11.5.1

Proposed RE code: 11.10.11

END

Site A02 facing north

east

Site A02 facing south

west

Site A02 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A03 **Recorder:** A.J.Franks **Day/Date:** 19 Oct 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Welklans (Cragg) (lot 112 on Y2219)

GPS: GDA94 55 0735794 7055805 Units: 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	11	10 – 12	S
T2	9	8 – 10	M
T3		-	
S1	1	0.5 – 1.5	S
S2			
G	0.3	0.1 – 0.5	S

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	*Eucalyptus chloroclada*
T2	D	*Callitris glaucophylla*
T2	A	*Acacia harpophylla*
S1	C	*Eucalyptus chloroclada* (juveniles)
S1	C	*Leucopogon*
G	C	*Aristida* sp.
G	A	*Lomandra confertifolia*
G	A	*Aristida caput-medusae*
G	A	*Eragrostis* sp.
G	A	*Laxmannia*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)rNi

Landform: Mid-slope of low hill

Soils: Pale sandy loam.

Field observation and notes:

Landzone: 5

RE code changes

Existing RE code: 11.5.5/11.5.1

Proposed RE code: 11.5.5

END

Site A03 facing north

east

Site A03 facing south

west

Site A03 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A04 **Recorder:** A.J.Franks **Day/Date:** 19 Oct 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Welklans (Cragg) (lot 112 on Y2219)

GPS: GDA94 55 0735744 7055831 Units: 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	8	7 - 9	S
T2	7	6 – 8	D
T3		-	
S1	1.5	1 – 2	V
S2			
G	0.3	0.1 – 0.5	S

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	*Eucalyptus chloroclada*
T2	D	*Callitris glaucophylla*
S1	C	*Callitris glaucophylla* (juveniles)
G	C	*Aristida* sp.
G	A	*Oxalis*
G	A	*Laxmannia*
G	A	*Einadia nutans*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)rNi

Landform: Mid- to lower-slope of low hill

Soils: Pale sandy loam.

Field observation and notes: Towards south on other side of easement is *Callitris* with *Eucalyptus populnea*.

Landzone: 5

RE code changes

Existing RE code: 11.5.5/11.5.1

Proposed RE code: 11.5.5

END

Site A04 facing north

east

Site A04 facing south

west

Site A04 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A05 **Recorder:** A.J.Franks **Day/Date:** 19 Oct 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Welklans (Cragg) (lot 112 on Y2219)

GPS: GDA94 55 0735229 7055966 Units

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	8	6 – 10	M
T2	5	4 – 6	S
T3		-	
S1	0.5	0.2 – 0.6	V
S2			
G	0.2	0.1 – 0.4	S

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	*Callitris glaucophylla*
T1	S	*Eucalyptus chloroclada*
T1	A	*Eucalyptus populnea*
T2	D	*Callitris glaucophylla*
S1	D	*Sida* sp.
G	D	*Dichanthium sericeum*
G	S	**Cenchrus ciliaris*
G	A	*Portulaca pilosa*
G	A	*Chrysopogon fallax*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld

Land system: (S)rNi

Landform: Lower-slope of low hill

Soils: Pale sandy loam.

Field observation and notes: Heavily grazed

Landzone: 9

RE code changes

Existing RE code: 11.5.5/11.5.1

Proposed RE code: 11.9.5

END

Site A05 facing north

east

Site A05 facing south

west

Site A05 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A08 **Recorder:** A.J.Franks **Day/Date:** 19 Oct 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	2	7	0	4	0		7	0	5	7	2	1	2	Unit

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	10 - 12	S
T2	8	7 – 9	M
T3		-	
S1	0.5	0.2 – 0.6	V
S2			
G	0.2	0.1 – 0.4	V

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	*Angophora leiocarpa*
T1	S	*Eucalyptus crebra*
T2	D	*Acacia shirleyi*
T2	A	*Callitris glaucophylla*
G	A	*Aristida* spp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)rBe

Landform: Low hill

Soils: Rocky/skeletal

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.7.2

Proposed RE code: 11.10.7a

END

Site A08 facing north

east

Site A08 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A09 **Recorder:** A.J.Franks **Day/Date:** 19 Oct 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0727512 7057588 Unit:

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	M
T2	7	6 – 8	S
T3		-	
S1	2	1 – 3	S
S2	1	0.2 – 1.0	V
G	0.2	0.1 – 0.5	S

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	D	*Acacia shirleyi*
T1	S	*Corymbia tessellaris??*
T1	S	*Eucalyptus crebra*
T2	D	*Acacia shirleyi*
T2	A	*Psydrax oleifolia*
S1	D	*Geijera parvifolia*
S2	D	*Solanum* sp.
S2	A	*Psydrax oleifolia*
S2	A	*Hovea longipes*
G	D	*Ancistrachne uncinata*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBu

Landform: Near top of rise

Soils: Grey sandy loam with some surface rock

Field observation and notes:

Landzone: 7

RE code changes

Existing RE code: 11.7.2

Proposed RE code: 11.7.2

END

Site A09 facing north

east

Site A09 facing south

west

Site A09 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A14 **Recorder:** A.J.Franks **Day/Date:** 19 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Reuben Downs (lot 638 on WV1528)

GPS: GDA94

5	5		0	7	2	9	1	3	1		7	0	5	8	1	2	0	Unit:

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	6	5 – 7	M
T2	4	3 – 5	S
T3			
S1	0.3	0.2 – 0.4	V
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	*Acacia shirleyi*
T1	A	*Eucalyptus decorticans?*
T2	D	*Acacia shirleyi*
S1	D	*Solanum* sp.
G	C	Native Poaceae
G	A	*Cheilanthes distans*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uX

Landform: Top of low hill

Soils: Red sandy loam. A lot of leaf litter and coarse woody debris. Very minor surface rock

Field observation and notes:

Landzone: 7

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.7.2

END

Site A14 facing north

east

Site A14 facing south

west

Site A14 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A15 **Recorder:** A.J.Franks **Day/Date:** 19 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Reuben Downs (lot 638 on WV1528)

GPS: GDA94 55 0728766 7058105 Units: 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	14	12 - 16	S
T2	8	7 - 10	M
T3			
S1	5	3 - 6	S
S2	1.0	0.5 – 1,5	S
G	0.5	0.1 – 0.6	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	*Eucalyptus populnea*
T1	S	*Eucalyptus crebra*
T2	D	*Eucalyptus populnea*
T2	A	*Alphitonia excelsa*
S1	D	*Eucalyptus populnea*
S1	S	*Acacia catenulata*
S1	A	*Acacia excelsa*
S1	A	*Geijera parviflora*
S2	D	*Carissa ovata*
G	D	**Cenchrus ciliaris*
		some occasional *Callitris glaucophylla and Allocasuarina luehmannii*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)rBe

Landform: Narrow incised gully

Soils: Reddish sandy loam

Field observation and notes:

Landzone: 5

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.5.1

END

Site A15 facing north

east

Site A15 facing south

west

Site A15 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A17 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Glenray (lot 279 on WV914)

GPS: GDA94 55 0728155 7053619 Units: 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	11	10 – 12	S
T2	6	5 – 7	V
T3	4	3 – 5	S
S1	3	2 – 3	S
S2	1	0.5 – 2	S
G	0.5	0.1-0.6	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	C	*Eucalyptus crebra*
T1	C	*Eucalyptus melanophloia*
T2	C	T1 species
T3	C	*Bursaria spinosa*
T3	C	*Allocasuarina luehmannii*
T3	A	*Acacia catenulata*
T3	A	*Geijera parviflora*
S1	C	*Bursaria spinosa*
S1	C	*Hovea longipes*
S2	D	*Carissa ovata*
G	C	Native Poaceae inc. *Ancistrachne*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Near top of low hill

Soils: Clay loam

Field observation and notes: More bendee towards top of hill and becomes more rocky

A16 (728187, 7053656): Bendee with emergent *Eucalyptus crebra*. Not rocky **Landzone:** 5

RE code changes

Existing RE code: 11.5.1/11.5.5

Proposed RE code: 11.5.5

END

Site A17 facing north

east

Site A17 facing south

west

Site A17 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A19A **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Glenray (lot 279 on WV914)

GPS: GDA94 | 5 | 5 | | 0 | 7 | 3 | 2 | 1 | 0 | 3 | | 7 | 0 | 5 | 1 | 1 | 6 | 1 | Unit:

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	8	7 – 10	S
T2	6	5 – 7	M
T3		-	
S1	1.5	1 – 2	S
S2	0.3	0.1 – 0.5	S
G	0.2	0.1 – 0.5	M

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	*Eucalyptus populnea*
T1	S	*Eucalyptus melanophloia*
T2	D	*Allocasuarina luehmannii*
T2	A	*Eucalyptus populnea*
T2	A	*Psydrax oleifolius*
S1	D	*Geijera parviflora*
S1	A	*Allocasuarina luehmannii*
S2	D	*Sclerolaena birchii*
S2	A	*Enchylaena tomentosa*
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Undulating plain

Soils: Orange-grey clay loam

Field observation and notes: A19: same as A19A with a bit more *Eucalyptus melanophloia*

Landzone: 9

RE code changes

Existing RE code: non-rem (preclear: 11.4.3)

Proposed RE code: 11.10.11

END

Site A19A facing north

east

Site A19A facing south

west

Site A19A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A20 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Glenray (lot 279 on WV914)

GPS: GDA94 55 0730184 7051647 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	6 – 8	M
T2	5	4 – 6	S
T3		-	
S1	0.8	0.3 – 1.0	V
S2		-	
G	0.3	0.2 – 0.5	S

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	*Acacia harpophylla*
T2	D	*Acacia harpophylla*
T2	A	*Casuarina cristata*
S1	D	*Alectryon diversifolia*
S1	S	*Geijera parviflora*
S1	A	*Chenopodium* sp.
S2	D	*Sclerolaena birchii*
S2	A	*Enchylaena tomentosa*
G	D	**Cenchrus ciliaris*
G	A	*Enteropogon* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBl

Landform: Gently undulating plain, with gilgai

Soils: Grey clay

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem (preclear: 11.9.5)

Proposed RE code: non-rem (regrowth 11.9.5)

END

Site A20 facing north

east

Site A20 facing south

west

Site A20 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A21 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Glenray (lot 279 on WV914)

GPS: GDA94 55 0728473 7052171 Units: 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	8	7 - 9	S
T2	6	5 - 7	M
T3		-	
S1	3	1 - 5	S
S2		-	
G	0.2	0.1-0.5	S

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	*Eucalyptus crebra*
T1	A	*Eucalyptus populnea*
T2	D	*Acacia catenulata*
T2	A	*Eucalyptus crebra*
S1	D	*Acacia catenulata*
S1	S	*Geijera parviflora*
S2	D	*Hovea longipes*
G	D	*Ancistrachne uncinata*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBu

Landform: Undulating

Soils: Reddish sandy loam with surface stone

Field observation and notes:

Landzone:

RE code changes

Existing RE code: 11.5.1/11.5.5

Proposed RE code: 11.5.5

END

Site A21 facing north

east

Site A21 facing south

west

Site A21 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A22 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Glenray (lot 279 on WV914)

GPS: GDA94 55 0728334 7052924 Units

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 - 12	S
T2	7	6 - 8	M
T3	4	3 - 6	S-M
S1	1	0.8 - 1.5	S
S2		-	
G	0.3	0.1-0.5	V

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	*Eucalyptus crebra*
T2	D	*Acacia shirleyi*
T3	D	*Acacia shirleyi*
S1	D	*Acacia shirleyi*
S1	A	*Solanum* sp.
G	D	*Ancistrachne uncinata*
G	A	*Aristida caput-medusae*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBu (near boundary of (S)uBl

Landform: Mid-slope of low hill

Soils: Grey clay loam with surface stone

Field observation and notes:

Landzone: 7

RE code changes

Existing RE code: 11.5.1/11.5.5

Proposed RE code: 11.7.2

END

Site A22 facing north

east

Site A22 facing south

west

Site A22 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A23 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Glenray (lot 279 on WV914)

GPS: GDA94 55 0727951 7053508 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	12	10 – 14	S
T2	8	6 – 10	S
T3	4	3 – 5	S
S1	2	1 – 3	S-M
S2	1	0.5 – 1	S
G	0.2	0.1-0.5	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	*Eucalyptus crebra*
T2	D	*Eucalyptus crebra*
T2	A	*Eucalyptus melanophloia*
T3	C	*Psydrax oleifolius*
T3	C	*Geijera parviflora*
T3	A	*Eremophila mitchellii*
S1	C	*Croton phebalioides*
S1	C	*Hovea longipes*
S1	A	*Psydrax* sp.
S2	D	*Carissa ovata*
G	D	*Ancistrachne uncinata*
G	A	**Cenchrus ciliaris*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBu

Landform: Near top of low hill

Soils: Reed sandy loam with surface stone

Field observation and notes:

Landzone: 5

RE code changes

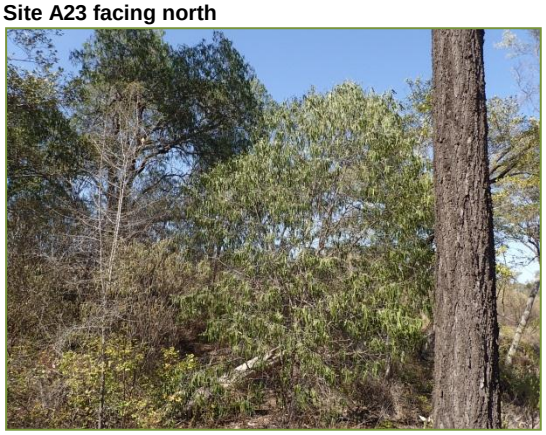
Existing RE code: 11.5.1/11.5.5

Proposed RE code: 11.5.5

END

Site A23 facing north

east



Site A23 facing south

west

Site A23 Soil surface

Site A27 *Brachychiton rupestris*

Sheet D – regional ecosystem type assessment site

Location

Site No. A25 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	2	6	3	6	8		7	0	4	8	9	5	5	Unit:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	11	10 – 12	V
T1	7	6 – 8	M
T2	4	3 – 5	S
T3		-	
S1	1	0.6 – 1.1	V
S2		-	
G	0.5	0.1 – 0.6	M

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
E	D	*Eucalyptus crebra*
T1	D	*Acacia shirleyi*
T1	A	*Eucalyptus crebra*
T2	C	*Eremophila mitchellii*
T2	C	*Psydrax oleifolius*
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)rNi

Landform: Edge of jump-up

Soils: Skeletal

Field observation and notes:

Landzone: 7

RE code changes

Existing RE code: 11.7.6

Proposed RE code: 11.7.2

END

Sheet D – regional ecosystem type assessment site

Location

Site No. A27 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0725932 7049158 Unit:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	12	10 – 13	V
T1	7	6 – 8	M-D
T2	2	1.5 – 3	M
T3		-	
S1	1	0.8 – 1.5	S
S2	0.6	0.4 – 0.8	S
G	0.2	0.1-0.5	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
E	D	*Brachychiton rupestris*
T1	D	*Geijera parviflora*
T1	A	*Geijera salicifolia.*
T1	A	*Diospyros humilis* + SEVT spp
T2	D	*Alectryon diversifolius*
S1	C	*Croton phebalioides*
S1	C	*Acalypha eremorum*
S2	D	*Carissa ovata*
S2	A	*Spartothamnella* sp.
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)rNi

Landform: Lower slope of jump-up

Soils: Rocky

Field observation and notes: *Acacia harpophylla* on lower edge

Landzone: 7

RE code changes

Existing RE code: 11.7.6

Proposed RE code: 11.7.1x1

END

Site A27 facing north

east

Site A27 facing south

west

Site A27 Soil surface

Site A27 *Brachychiton rupestris*

Sheet D – regional ecosystem type assessment site

Location

Site No. A28 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0726406 7050548 Unit:

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 – 10	V
T2	6	5 – 7	M
T3		-	
S1	1.8	1 – 2	M
S2			
G	0.2	0.1-0.5	S-M

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	*Eucalyptus melanophloia*
T2	D	*Acacia catenulata*
S1	D	*Acacia catenulata*
G	C	*Eragrostis* sp.
G	C	*Aristida* sp.
G	A	*Themeda triandra*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)rNi

Landform: Top of scarp

Soils: Reed sandy loam with surface gravel

Field observation and notes:

Landzone: 5

RE code changes

Existing RE code: 11.7.2

Proposed RE code: 11.5.5

END

Site A28 facing north

east

Site A28 facing south

west

Site A28 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A29 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0726663 7050965 Unit:

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	8	9 – 11	S
T2	6	5 – 7	M
T3		-	
S1	2	1.5 – 3	S
S2			
G	0.2	0.1-0.5	S-M

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	*Eucalyptus melanophloia*
T1	A	*Corymbia clarksoniana*
T2	D	*Acacia catenulata*
S1	D	*Acacia catenulata*
S1	A	*Psydrax* sp.
G	D	**Cenchrus ciliaris*
G	S	*Ancistrachne uncinata*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)rNi

Landform: Top of scarp

Soils: Reed sandy loam

Field observation and notes: On scarp slope: *Owenia acidula, Alphitonia excelsa, Croton phebalioides, Acacia catenulata, Hovea longipes*. A30: same as A29

Landzone: 5

RE code changes

Existing RE code: 11.5.1/11.5.5

Proposed RE code: 11.5.5

END

Site A29 facing north

east

Site A29 facing south

west

Site A29 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A31 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	2	7	2	4	2		7	0	5	0	0	4	4	Unit:

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	3	2 - 4	M
T2		-	
T3		-	
S1			
S2			
G	0.2	0.1-0.5	S-M

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	*Acacia catenulata*
T1	A	*Eucalyptus melanophloia*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)rNi

Landform: Gently sloping

Soils: Red sandy loam

Field observation and notes:

Landzone: 5

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.5.5)

END

Site A31 facing north

east

Sheet D – regional ecosystem type assessment site

Location

Site No. A32 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0727053 7049037 Unit:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	10	8 – 12	V
T1	6	5 – 8	M
T2		-	
T3		-	
S1	2	1.5 – 3	S
S2			
G	0.2	0.1-0.5	S-M

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
E	D	*Eucalyptus crebra*
T1	D	*Acacia shirleyi*
T1	A	*Eucalyptus melanophloia*
S1	D	*Eucalyptus melanophloia*
S1	A	*Psydrax* sp.
G	D	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)rNi

Landform: Top of scarp

Soils: Reed sandy loam

Field observation and notes:

Landzone: 7

RE code changes

Existing RE code: 11.7.6

Proposed RE code: 11.7.2

END

Site A29 facing north

east

Site A29 facing south

west

Site A29 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A33 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	0	7	7	0		7	0	4	8	2	2	2	Unit:

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	12	10 – 14	S
T2	8	6 – 10	S
T3		-	
S1	4	3 – 5	S
S2	1.5	1 – 2	V
G	0.3	0.1-0.7	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	*Eucalyptus populnea*
T1	A	*Eucalyptus melanophloia*
T1	S	*Allocasuarina luehmannii*
T2	S	*Callitris glaucophylla*
S1	D	*Geijera parviflora*
S1	A	*Allocasuarina luehmannii*
S2	D	*Carissa ovata*
G	D	*Chrysopogon fallax*
G	A	*Aristida* sp.
G	A	**Cenchrus ciliaris*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)rNi or (S)uBu

Landform: Gently undulating plain, near incised gully

Soils: Pale red sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem (preclear: 11.4.3)

Proposed RE code: 11.10.11

END

Site A33 facing north

east

Site A33 facing south

west

Site A33 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A33 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	0	7	7	0		7	0	4	8	2	2	2	Unit:

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	12	10 – 14	S
T2	8	6 – 10	S
T3		-	
S1	4	3 – 5	S
S2	1.5	1 – 2	V
G	0.3	0.1-0.7	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	*Eucalyptus populnea*
T1	A	*Eucalyptus melanophloia*
T1	S	*Allocasuarina luehmannii*
T2	S	*Callitris glaucophylla*
S1	D	*Geijera parviflora*
S1	A	*Allocasuarina luehmannii*
S2	D	*Carissa ovata*
G	D	*Chrysopogon fallax*
G	A	*Aristida* sp.
G	A	**Cenchrus ciliaris*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)rNi or (S)uBu

Landform: Gently undulating plain, near incised gully

Soils: Pale red sandy loam

Field observation and notes:

Landzone: 7

RE code changes

Existing RE code: non-rem (preclear: 11.4.3)

Proposed RE code: 11.10.11

END

Site A33 facing north

east

Site A33 facing south

west

Site A33 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A36 **Recorder:** A.J.Franks **Day/Date:** 20 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	1	3	1	1		7	0	4	9	5	3	0	Unit:

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		-	M
T2		-	
T3		-	
S1		-	
S2		-	
G		-	

Structural formation: (including height)

Regrowth

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	*Acacia catenulata*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)rNi

Landform: Gently sloping

Soils: Pale clay loam with surface rock

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (Regrowth 11.10.3)

END

Site A36 facing north

east

Site A36 facing south

Site A36 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A38 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0736554 7050706 Unit:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	11	10 – 12	V
T1	8	6 – 10	M
T2	4	3 – 6	M
T3		-	
S1	1	0.8 – 1.5	S
S2		-	
G	0.2	0.1 – 0.5	V

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
E	D	*Eucalyptus crebra*
T1	D	*Acacia shirleyi*
T2	D	*Acacia shirleyi*
S1	D	*Philotheca* sp.
G	D	*Aristida caput-medusae*
G	A	*Lomandra confertifolia*
G	A	*Ancistrachne uncinata*
G	A	*Gahnia aspera*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: AX

Landform: Low hill

Soils: Sandy with surface rock/conglomerate

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.3.25

Proposed RE code: 11.10.3

END

Site A38 facing north

east

Site A38 facing south

west

Site A38 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A39 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

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

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	11	10 – 12	M
T2	7	6 – 8	M
T3	5	4 – 6	S
S1	1	0.8 – 1.5	S
S2		-	
G	0.3	0.2 – 0.6	S-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
T!	D	*Eucalyptus crebra*
T1	S	*Eucalyptus populnea*
T2	D	*Callitris glaucophylla*
T2	D	T1 spp.
T3	C	*Callitris glaucophylla*
T3	C	*Allocasuarina luehmannii*
S1	D	*Acacia* sp.
S1	A	*Allocasuarina luehmannii*
S1	A	*Dodonaea triquetra*
G	D	*Gahnia aspera*
G	S	*Aristida caput-medusae*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: AX

Landform: Lower slope of hill

Soils: Sandy clay loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.1/11.7.6/11.7.5

Proposed RE code: 11.10.7a

END

Site A39 facing north

east

Site A39 facing south

west

Site A39 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A40 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0736031 7050828 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	12	11 – 13	V
T1	8	7 – 9	M
T2	6	5 – 7	S
T3		-	
S1	3	2 – 4	V
S2	1.5	1 – 2	S-M
G	0.2	0.1 – 0.4	S-M

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
E	D	*Eucalyptus crebra*
T1	D	*Acacia shirleyi*
T1	A	*Eucalyptus crebra*
T2	D	*Acacia shirleyi*
T2	A	*Callitris glaucophylla*
T2	A	*Allocasuarina luehmannii*
S1	D	*Geijera parviflora*
S2	D	*Philotheca* sp.
G	D	*Ancistrachne uncinata*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)rNi

Landform: Mid slope of hill

Soils: Sandy with high quartz content. Stone on surface

Field observation and notes:

Landzone: 10

RE code changes

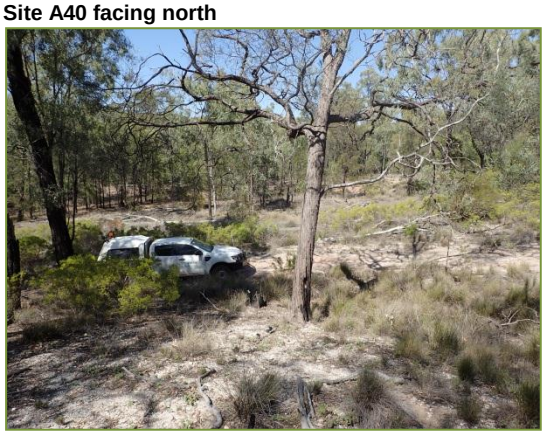
Existing RE code: 11.5.1/11.7.6/11.7.5

Proposed RE code: 11.10.3

END

Site A40 facing north

east



Site A40 facing south

west

Site A40 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A41 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 | 5 | 5 | | 0 | 7 | 3 | 5 | 8 | 8 | 0 | | 7 | 0 | 5 | 0 | 8 | 6 | 8 | Unit:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	12	10 – 14	V
T1	8	6 – 10	M
T2	5	4 - 6	S
T3		-	
S1	1	0.8 – 1.5	S-M
S2		-	
G	0.2	0.1 – 0.5	S-M

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
E	D	*Eucalyptus crebra*
T1	D	*Acacia shirleyi*
T1	A	*Corymbia clarksoniana*
T2	D	*Acacia shirleyi*
S1	D	*Philotheca* sp.
D	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)rNi

Landform: Top of hill

Soils: Sandy clay loam with surface rock

Field observation and notes: A42: (735681 7050822) Same as A41. To west, open up to more open with *Eucalyptus melanophloia* in T1 but mostly *Acacia shirleyi*. Flat upland area. **Landzone:** 10

RE code changes

Existing RE code: 11.5.1/11.7.6/11.7.5

Proposed RE code: 11.10.3

END

Site A41 facing north

east

Site A41 facing south

west

Site A41 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A43 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	4	3	5	0		7	0	5	2	0	6	9	Unit

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	6	5 – 7	V
T2	4	3 – 5	V
T3		-	
S1	2	1 – 3	V
S2	0.8	0.5 - -1	V
G	0.2	0.1 – 0.4	S-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	*Eucalyptus populnea*
T2	C	*Casuarina cristata*
T2	C	*Acacia harpophylla*
S1	D	*Acacia sp.*
S2	C	*Capparis mitchellii*
S2	C	*Pittosporum spinescens?*
G	D	**Cenchrus ciliaris*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Flat, very gently undulating plain

Soils: Pale orange sandy clay loam

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.9.10)

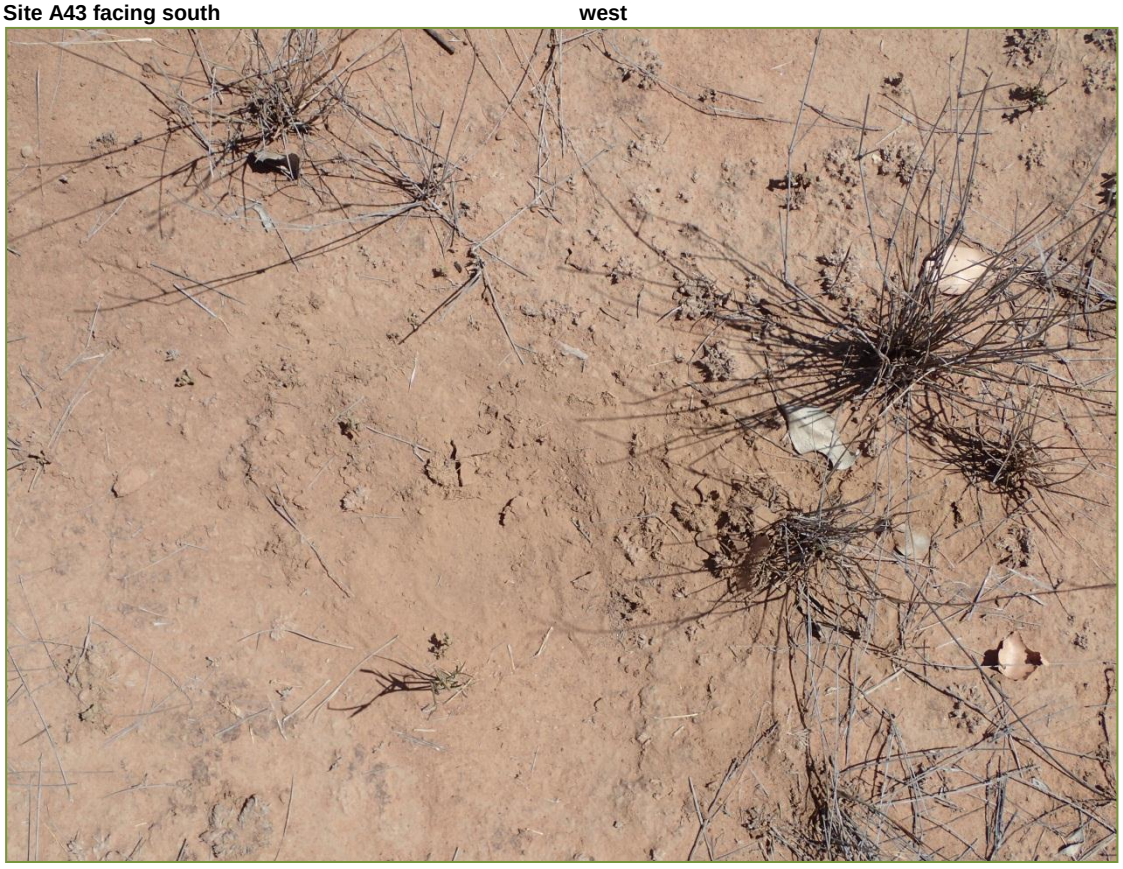
END

Site A43 facing north

east

Site A43 facing south

west



Site A43 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A44 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	3	8	1	3		7	0	5	1	1	4	0	Unit:

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	11	10 – 12	S
T2	8	7 – 10	M
T3	4	3 – 5	V
S1	2	1 – 3	V
S2		-	
G	0.2	0.1 – 0.5	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	*Eucalyptus melanophloia*
T1	A	*Eucalyptus populnea*
T2	D	*Allocasuarina luehmannii*
T2	A	*Callitris glaucophylla*
T3	C	*Eucalyptus melanophloia*
T3	C	*Allocasuarina luehmannii*
S1	D	*Acacia* sp.
G	C	*Chrysopogon fallax*
G	C	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Flat, very gently undulating plain

Soils: Sandy clay loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.10.11

END

Site A44 facing north

east

Site A44 facing south

west

Site A44 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A45 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	5	0	1	5		7	0	5	1	6	3	9	Unit

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	6 – 8	S
T2	5	4 – 6	M
T3		-	
S1		-	
S2		-	
G	0.2	0.1 – 0.3	S

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	*C*	*Eucalyptus populnea*
T1	*C*	*Casuarina cristata*
T2	*C*	T1 spp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Very gently undulating plain

Soils: Pale orange sandy clay loam

Field observation and notes:

Landzone: 9

RE code changes

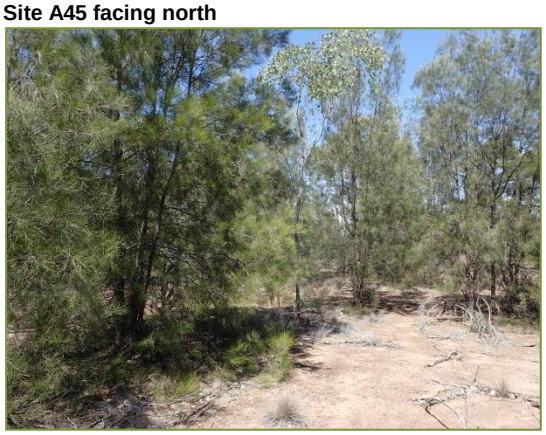
Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.9.10)

END

Site A45 facing north

east



Site A45 facing south

west

Site A45 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A46 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Lilyvale (lot 291 on WV459)

GPS: GDA94 | 5 | 5 | | 0 | 7 | 3 | 5 | 1 | 0 | 1 | | 7 | 0 | 5 | 1 | 6 | 5 | 0 | Unit:

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	6	5 – 8	M
T2	4	3 - 5	M
T3		-	
S1	2	1 – 3	V
S2		-	
G	0.2	0.1 – 0.3	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	*Casuarina cristata*
T2	D	*Casuarina cristata*
S1	D	*Geijera parviflora*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Plain

Soils: Pale orange sandy clay loam

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.9.10)

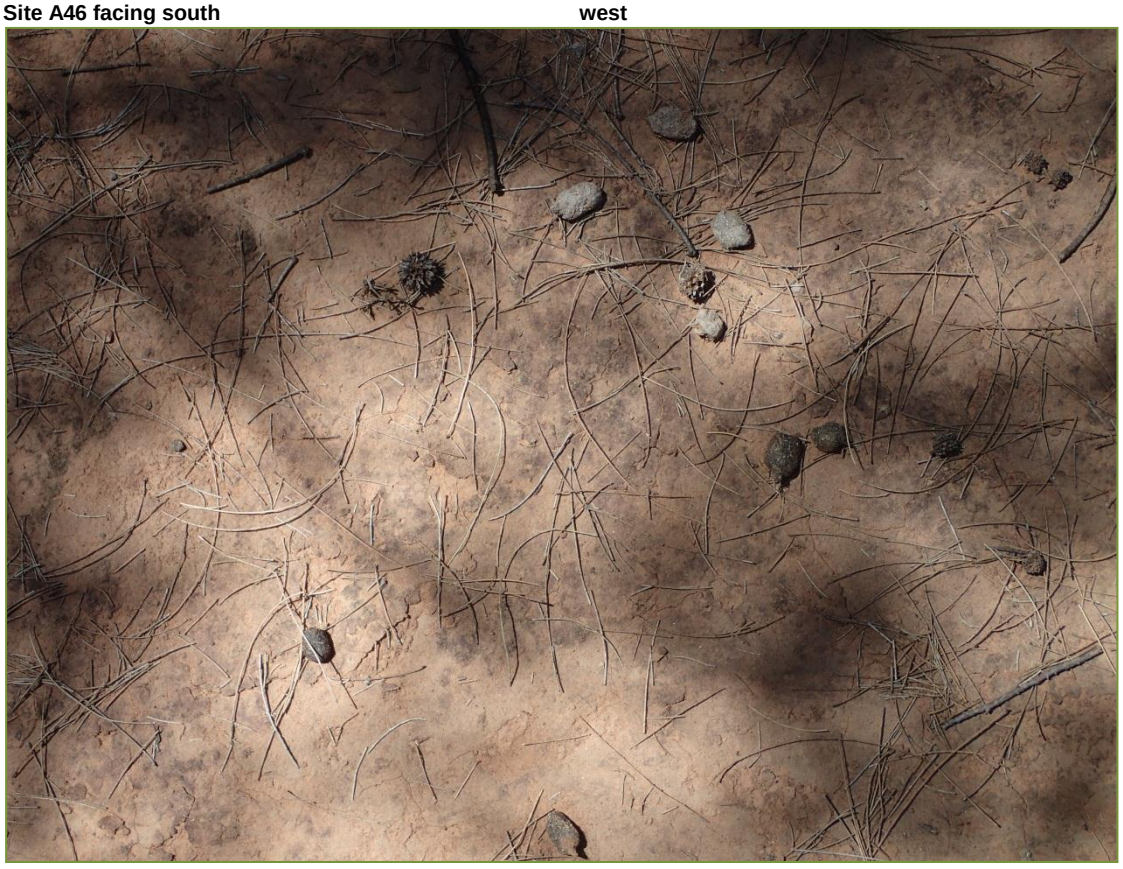
END

Site A46 facing north

east

Site A46 facing south

west



Site A46 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A47 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Pine Grove (lot 86 on WV795)

GPS: GDA94 55 0734458 7050938 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	5	4 – 6	S
T2		-	
T3		-	
S1	1.8	1.5 – 2.5	M
S2	0.5	0.2 – 0.6	V
G	0.2	0.1 – 0.5	M

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	*Eucalyptus melanophloia*
T2	D	*Acacia* sp.
T2	C	*Allocasuarina luehmannii*
T2	A	*Grevillea striata*
T2	A	*Dodonaea viscosa*
S1	D	*Sclerolaena birchii*
S1	A	*Sida* sp.
S1	A	*Acacia* sp.
G	D	*Aristida* spp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Flat, very gently undulating

Soils: Pale orange clay loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.10.11)

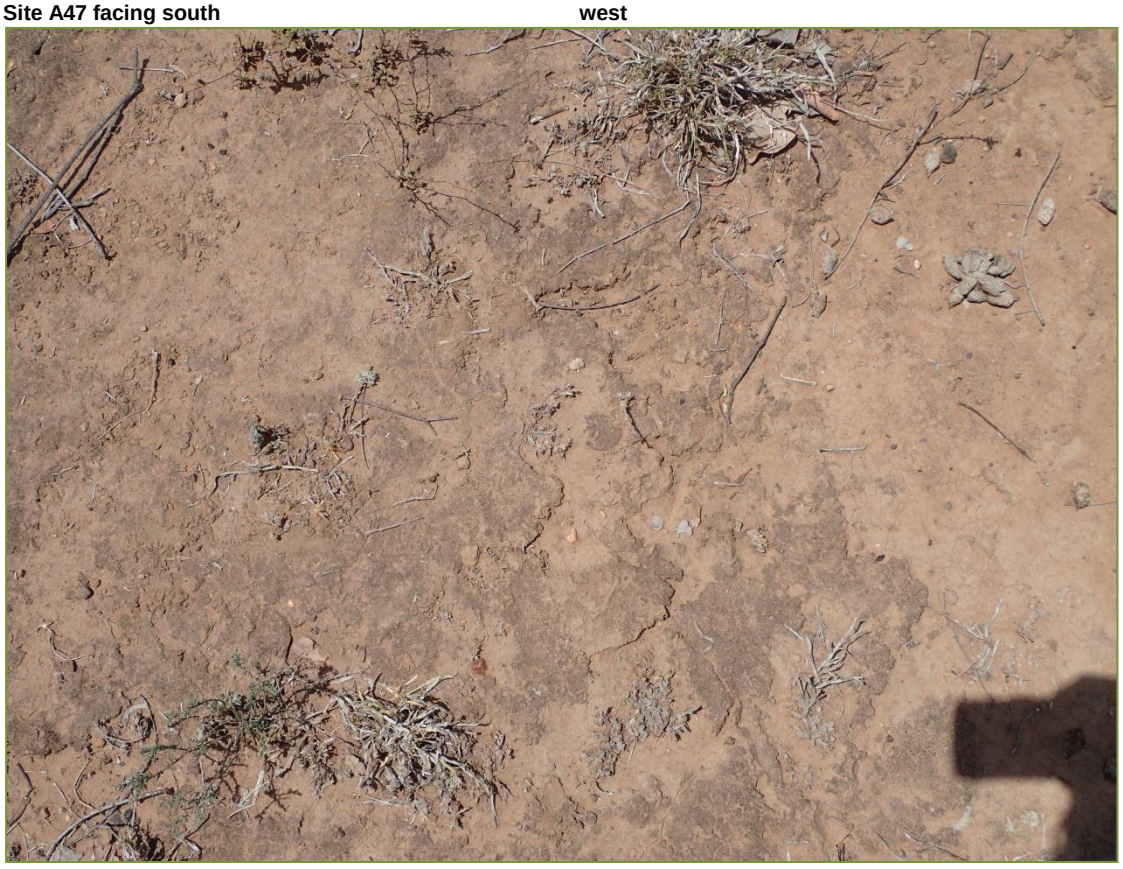
END

Site A47 facing north

east

Site A47 facing south

west



Site A47 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A48 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0733761 7051047 Unit:

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	11	10 – 12	V
T2	7	6 – 8	M
T3		-	
S1	2	1.5 – 2.5	S
S2		-	
G	0.2	0.1 – 0.5	S-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	*Eucalyptus melanophloia*
T1	A	*Eucalyptus populnea*
T2	C	*Allocasuarina luehmannii*
T2	C	*Callitris glaucophylla*
S1	C	*Allocasuarina luehmannii*
S1	C	*Acacia* sp.
G	D	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Flat, very gently undulating

Soils: Sandy clay loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.4.3

Proposed RE code: 11.10.11

END

Site A48 facing north

east

Site A48 facing south

west

Site A48 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A49 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	3	3	5	5		7	0	5	1	1	1	1

Unit:

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	12	11 – 13	S
T2	9	8 – 10	S
T3	5	4 – 7	M
S1	3	2 – 4	S
S2		-	
G	0.2	0.1 – 0.5	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	*Eucalyptus melanophloia*
T2	D	*Eucalyptus melanophloia*
T2	A	*Allocasuarina luehmannii*
T3	D	*Callitris glaucophylla*
S1	C	*Geijera parviflora*
S1	C	*Callitris glaucophylla*
S1	A	*Acacia sp.*
G	C	Native Poaceae incl. *Chrysopogon*
G	A	*Sida* sp.
G	A	*Laxmannia* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Very gently undulatin

Soils: Pale orange sandy clay loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.1/11.7.6/11.7.5

Proposed RE code: 11.10.11

END

Site A49 facing north

east

Site A49 facing south

west

Site A49 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A50 **Recorder:** A.J.Franks **Day/Date:** 21 OCT 2015

Purpose Regional Ecosystem Assessment

Locality: (inc. distance/direction to nearest town) Pine Grove (lot 86 on WV795)

GPS: GDA94 55 0734096 7050857 Unit

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 – 10	V
T2	7	6 – 8	M-D
T3		-	
S1		-	
S2		-	
G	0.2	0.1 – 0.3	S

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	*Eucalyptus melanophloia*
T1	A	*Eucalyptus populnea*
T2	D	*Casuarina cristata*
T2	A	*Eucalyptus populnea*
G	D	Native Poaceae inc. *Chrysopogon fallax*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Plain

Soils: Pale orange sandy clay loam

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.9.10)

END

Site A50 facing north

east

Site A50 facing south

west

Site A50 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A51 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0731 3733 7060 813 Datum:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	12	10 – 14	V
T1	6	5 – 8	M
T2	4	3 – 5	S
T3		-	
S1	2	1.5 – 3.0	S
S2		-	
G	0.4	0.1 – 0.6	S-M

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
E	D	*Eucalyptus crebra*
T1	C	*Eucalyptus crebra*
T1	C	*Acacia shirleyi*
T1	A	*Allocasuarina luehmannii*
T2	C	*Acacia shirleyi*
T2	C	*Eucalyptus crebra*
T2	C	*Allocasuarina luehmannii*
T2	A	*Callitris glaucophylla*
S1	D	*Geijera parviflora*
S1	A	*Dodonaea viscosa*
G	C	Native Poaceae
G	C	*Gahnia aspera*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Plain, gently undulating

Soils: Orange red sandy loam with surface rock

Field observation and notes: Some large trees logged

Landzone: 10

RE code changes

Existing RE code: 11.5.5

Proposed RE code: 11.10.7

END

Site A51 facing north

east

Site A51 facing south

west

Site A51 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A52 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

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

Datum:

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	8	7 – 10	M
T2	4	3 – 5	S
T3	2.2	1.8 – 2.5	V
S1		-	
S2		-	
G	0.4	0.1 – 0.6	S

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	*Acacia shirleyi*
T2	D	*Acacia shirleyi*
T2	A	*Callitris glaucophylla*
T2	A	*Eucalyptus crebra*
T3	C	*Eucalyptus crebra*
T3	C	*Alstonia constricta*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Sloping

Soils: Brown sandy loam with some surface rock

Field observation and notes: Lots of organic matter on soil surface.

Landzone: 10

RE code changes

Existing RE code: 11.5.5

Proposed RE code: 11.10.3

END

Site A52 facing north

east

Site A52 facing south

west

Site A52 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A53 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0732422 7061187 Datum:

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	S-M
T2	4	3 – 8	S
T3		-	
S1	2.5	2 – 3	M
S2		-	
G	0.2	0.1 – 0.4	S

Structural formation: (including height)

Low woodland to 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	*Eucalyptus crebra*
T1	S	*Eucalyptus populnea*
T1	A	*Casuarina cristata*
T2	C	*Callitris glaucophylla*
T2	C	*Eucalyptus crebra*
S1	D	*Geijera parviflora*
S1	A	*Dodonaea viscosa*
S1	A	*Atalaya hemiglauca*
S1	A	*Acacia* sp.
S1	A	*Callitris glaucophylla*
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Gently undulating plain

Soils: Pale grey clay

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.9.5/11.9.10

Proposed RE code: 11.10.7

END

Site A53 facing north

east

Site A53 facing south

west

Site A53 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A53A **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0732336 7061188 Datum:

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	8	7 – 10	M
T2	6	5 – 7	M
T3		-	
S1	2	1.5 – 2.5	M
S2		-	
G	0.1	0.1 – 0.2	S-M

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	*Casuarina cristata*
T1	A	*Eucalyptus populnea*
T1	A	*Eucalyptus crebra*
T2	D	*Casuarina cristata*
S1	D	*Acacia* sp.
S1	A	*Owenia acidula*
S1	A	*Geijera parviflora*
G	D	*Paspalidium caespitosum*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Gently undulating plain

Soils: Pale clay

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: 11.9.5/11.9.10

Proposed RE code: 11.9.10

END

Site A53A facing north

east

Site A53A facing south

west

Site A53A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A54 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 | 5 | 5 | | 0 | 7 | 3 | 2 | 7 | 5 | 4 | | 7 | 0 | 6 | 1 | 0 | 3 | 6 | Datum:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	12	10 – 14	V
T1	7	6 – 8	S
T2	3	2 - 4	S
T3		-	
S1	1.8	1.5 – 2.0	V
S2		-	
G	0.2	0.1 – 0.3	M

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
E	D	*Eucalyptus crebra*
T1	D	*Eucalyptus crebra*
T1	S	*Allocasuarina luehmannii*
T2	D	*Geijera parviflora*
T2	A	*Grevillea striata*
S1	D	*Geijera parviflora*
S1	A	*Eremophila mitchellii*
S1	A	*Petalostigma pubescens*
G	D	*Aristida* sp.
G	A	*Gahnia aspera*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Gently sloping

Soils: Pale orange sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.5

Proposed RE code: 11.10.7

END

Site A54 facing north

east

Site A54 facing south

west

Site A54 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A55 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0733376 7060653 Datum:

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	12	10 – 14	S
T2	6	5 – 8	M
T3		-	
S1	2.5	1.5 – 3.0	S
S2		-	
G	0.3	0.1 – 0.5	S-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	C	*Eucalyptus crebra*
T1	C	*Eucalyptus populnea*
T1	A	*Angophora leiocarpa*
T2	D	*Callitris glaucophylla*
T2	S	*Allocasuarina luehmannii*
T2	A	*Geijera parviflora*
T2	A	*Eremophila mitchellii*
S1	D	*Geijera parviflora*
S1	A	*Eremophila mitchellii*
G	C	*Aristida* sp.
G	C	*Gahnia aspera*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Gently undulating

Soils: Pale orange sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.5

Proposed RE code: 11.10.7

END

Site A55 facing north

east

Site A55 facing south

west

Site A55 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A55A **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0733114 7060748 Datum:

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	12	10 – 14	S
T2	6	5 – 7	S
T3	4	3 – 5	S
S1	2	1 – 3	S
S2		-	
G	0.3	0.1 – 0.5	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	*Eucalyptus crebra*
T1	A	*Eucalyptus populnea*
T2	C	*Allocasuarina luehmannii*
T2	C	*Callitris glaucophylla*
T3	C	T2 spp.
S1	C	*Allocasuarina luehmannii*
S1	C	*Petalostigma pubescens*
G	C	*Gahnia aspera*
G	C	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Gently sloping

Soils: Pale orange sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.5

Proposed RE code: 11.10.7

END

Site A55A facing north

east

Site A55A facing south

west

Site A55A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A56 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	3	7	5	9		7	0	6	0	7	9	1	Datum:

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	8	7 – 9	M
T2	6	5 – 7	M
T3		-	
S1	2	1.5 – 2.5	X
S2		-	
G	0.2	0.1 – 0.3	S-M

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	*Acacia shirleyi*
T1	A	*Eucalyptus crebra*
T2	D	*Acacia shirleyi*
S1	D	*Geijera parviflora*
G	C	Native Poaceae
G	A	*Gahnia aspera*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Gently slope

Soils: Pale orange sandy loam with lots of organic matter

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.5

Proposed RE code: 11.10.3

END

Site A56 facing north

east

Site A56 facing south

west

Site A56 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A57 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0734759 7060668 Datum:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	11	10 – 13	V
T1	6	5 - 7	M
T2	4	3 – 5	S
T3		-	
S1	2	1.5 – 2.5	V
S2		-	
G	0.2	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
E	D	*Eucalyptus crebra*
T1	D	*Callitris glaucophylla*
T1	A	*Eucalyptus crebra*
T1	A	*Corymbia clarksoniana*
T2	D	*Callitris glaucophylla*
S1	C	*Geijera parviflora*
S1	C	*Eremophila mitchellii*
G	D	*Aristida caput-medusae*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Gently slope

Soils: Pale orange sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.5

Proposed RE code: 11.10.7a

END

Site A57 facing north

east

Site A57 facing south

west

Site A57 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A58 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0735782 7060394 Datum:

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	12	10 – 14	S
T2	9	8 – 10	M
T3	6	4 – 8	S
S1	1	0.8 – 1.2	V
S2		-	
G	0.2	0.1 – 0.4	S-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	*Corymbia tessellaris*
T1	A	*Corymbia clarksoniana*
T2	D	*Callitris glaucophylla*
T2	A	*Corymbia clarksoniana*
T3	D	*Callitris glaucophylla*
S1	D	*Solanum* sp.
G	C	**Cenchrus ciliaris*
G	C	*Aristida sp.*
G	A	*Einadia nutans*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Gently slope

Soils: Pale orange sand. Very sandy

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.5

Proposed RE code: 11.10.9

END

Site A58 facing north

east

Site A58 facing south

west

Site A58 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A58A **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	8	7	1	3		7	0	6	4	1	4	6	Datum:

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	12	10 - 14	S
T2	7	6 - 8	V
T3	5	4 - 6	S
S1	1.5	1 - 2	S-M
S2		-	
G	0.3	0.1 - 0.5	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	*Eucalyptus populnea*
T2	C	*Eucalyptus populnea*
T2	C	*Casuarina cristata*
T2	A	*Callitris glaucophylla*
T3	D	*Eremophila mitchellii*
T3	S	*Geijera parviflora*
T3	A	*Acacia excelsa*
S1	C	*Geijera parviflora*
S1	C	*Acacia excelsa*
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Qa (near Kld)

Land system: (S)uBu

Landform: Plain, gently undulating

Soils: Red brown sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.10.11

END

Site A58A facing north

east

Site A58A facing south

west

Site A58A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A59A **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 | 5 | 5 | | 0 | 7 | 3 | 4 | 1 | 9 | 2 | | 7 | 0 | 5 | 4 | 8 | 7 | 8 | Datum:

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	11	10 – 12	S
T2	8	6 – 10	S
T3	5	4 - 6	S
S1	1.5	1 – 2	S
S2		-	
G	0.2	0.1 – 0.4	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	*Eucalyptus melanophloia*
T1	S	*Eucalyptus populnea*
T2	C	*Eucalyptus melanophloia*
T2	C	*Callitris glaucophylla*
T3	D	*Callitris glaucophylla*
S1	C	*Geijera parviflora*
S1	C	*Callitris glaucophylla*
G	D	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uX

Landform: Plain

Soils: Red sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.7.6/11.7.2

Proposed RE code: 11.10.7

END

Site A59A facing north

east

Site A59A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A60 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0735484 7063016 Datum:

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	8	7 – 9	X
T2	6	5 – 7	X
T3		-	
S1	2	1.5 – 3.0	X
S2		-	
G	0.1	0.1 – 0.3	M

Structural formation: (including height)

Cleared

Ecologically dominant layer:

Plant species

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

Str.	Rel. dom.	Scientific Name
T1	C	*Casuarina cristata*
T1	C	*Eucalyptus populnea*
T2	D	*Eucalyptus populnea*
S1	D	*Geijera parviflora*
S1	A	*Eucalyptus populnea*
G	D	**Cenchrus ciliaris*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Plain

Soils: Pale grey clay

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem (preclear 11.9.10)

Proposed RE code: non-rem (regrowth 11.9.10)

END

Site A60 facing north

east

Site A60 facing south

west

Site A60 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A60A **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

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

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	12	10 – 14	S
T2	8	7 – 9	S
T3	5	4 – 6m	S
S1	2	1.5 – 3.0	S
S2		-	
G	0.1	0.1 – 0.3	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	*Eucalyptus populnea*
T2	D	*Casuarina cristata*
T2	A	*Callitris glaucophylla*
T3	D	*Casuarina cristata*
T3	A	*Acacia excelsa*
S1	D	*Geijera parviflora*
S1	A	*Eremophila mitchellii*
S1	A	*Acacia excelsa*
S2	D	*Vachellia farnesiana*
G	D	*Chloris* sp.
G	A	*Themeda triandra*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Drainage line

Soils: Sandy alluvium

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.3.2

END

Site A60A facing north

east

Site A60A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A61 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0735235 7064803 Datum:

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 – 14	S
T2	7	6 – 8	M
T3	4	3 – 5	S
S1	2.5	1 – 3	S
S2		-	
G	0.2	0.1 – 0.4	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	*Eucalyptus crebra*
T1	A	*Corymbia clarksoniana*
T2	D	*Callitris glaucophylla*
T2	A	*Eucalyptus crebra*
T2	A	*Acacia catenulata*
T3	D	*Callitris glaucophylla*
T3	A	*Grevillea striata*
S1	D	*Geijera parviflora*
S1	C	*Callitris glaucophylla*
G	D	*Chrysopogon fallax*
G	A	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Gently slope

Soils: Pale grey sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.9.10

Proposed RE code: 11.10.7a

END

Site A61 facing north

east

Site A61 facing south

west

Site A61 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A62 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0735195 7064895 Datum:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	10	9 – 12	V
T1	6	5 – 7	M
T2	2.5	2 – 3	S
T3		-	
S1	1	0.8 – 1.5	V
S2		-	
G	0.2	0.1 – 0.4	M

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
E	D	*Eucalyptus crebra*
T1	D	*Acacia catenulata*
T1	A	*Callitris glaucophylla*
T2	D	*Callitris glaucophylla*
T2	A	*Hakea lorea*
S1	D	*Solanum sp.*
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBu

Landform: Plain

Soils: Pale sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.9.10

Proposed RE code: 11.10.3

END

Site A62 facing north

east

Site A62 facing south

west

Site A62 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A63 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0735993 7064508 Datum:

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 - 10	M
T2	5	4 - 6	V
T3		-	
S1	1.5	1 - 2	S
S2		-	
G	0.3	0.1 - 0.4	M

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	*Callitris glaucophylla*
T2	D	*Callitris glaucophylla*
S1	D	*Hovea longipes*
S1	C	*Acacia excelsa*
G	D	**Cenchrus ciliaris*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBl

Landform: Top of gentle sloping hill

Soils: Red sandy loam

Field observation and notes: Larger ironbarks rungout

Landzone: 5

RE code changes

Existing RE code: 11.9.10

Proposed RE code: 11.5.5

END

Site A63 facing north

east

Site A63 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A64 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0737728 7066576 Datum:

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	8	7 – 10	M
T3	5	4 – 6	V
S1	1	0.8 – 1.2	X
S2		-	
G	0.2	0.1 – 0.3	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	*Eucalyptus populnea*
T2	D	*Callitris glaucophylla*
T2	S	*Eucalyptus populnea*
T3	D	*Denhamia cunninghamii*
S1	D	*Geijera parviflora*
G	D	**Cenchrus ciliaris*
G	A	*Chrysopogon fallax*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Klk

Land system: (S)uBl

Landform: Plain

Soils: Fine alluvial

Field observation and notes: Some evidence of timber harvesting

Small patch of belah to north of site **Landzone:** 3

RE code changes

Existing RE code: 11.3.25/11.3.2

Proposed RE code: 11.3.2

END

Site A64 facing north

east

Site A64 facing south

west

Site A64 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A64A **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

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

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 – 12	S
T2	7	6 – 8	M
T3		-	
S1	3	2 – 4	M
S2		-	
G	0.2	0.1 – 0.3	S

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	*Eucalyptus camaldulensis*
T1	A	*Angophora floribunda*
T2	S	*Melaleuca trichostachya*
S1	D	*Melaleuca trichostachya*
G	D	*Lomandra longifolia*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Klk

Land system: (S)uBl

Landform: Drainage line

Soils: Fine alluvial

Field observation and notes: Channel largely bare. Some poplar box on flats to north.

Landzone: 3

RE code changes

Existing RE code: 11.3.25

Proposed RE code: 11.3.25

END

Site A64A facing north

east

Site A64A facing south

west

Site A64A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A65 **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	2	6	8	4	0		7	0	5	4	6	6	8	Unit:

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	8	6 – 9	S
T2	4	3 – 5	S
T3		-	
S1	2	1 – 3	S
S2		-	
G	0.4	0.2 – 0.6	S-M

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	C	*Acacia harpophylla*
T1	C	*Casuarina cristata*
T1	A	*Eucalyptus crebra*
T2	D	*Eremophila mitchellii*
T2	A	*Acacia excelsa*
S1	D	*Geijera parviflora*
G	D	*Ancistrachne uncinata*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBu

Landform: Foot slope of hill

Soils: Clay loam with some surface rock

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.9.5

END

Site A65 facing north

east

Site A65 facing south

west

Site A65 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A65A **Recorder:** A.J.Franks **Day/Date:** 22 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0726894 7054676 Datum:

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	6	5 – 7	V
T3		-	
S1	1.8	1.5 – 2.5	S
S2		-	
G	0.5	0.2 – 0.6	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	*Eucalyptus crebra*
T1	S	*Eucalyptus populnea*
T2	D	*Eucalyptus crebra*
T2	S	*Eucalyptus melanophloia*
T2	A	*Acacia excelsa*
T2	A	*Alphitonia excelsa*
S1	D	*Croton phebalioides*
S1	S	*Hovea longipes*
S1	A	*Psydrax oleifolia*
G	D	*Ancistrachne uncinata*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uBu

Landform: Near top of low hill

Soils: Sandy loam with some surface rock

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: 11.5.1/11.5.5

Proposed RE code: 11.5.1

END

Site A65A facing north

east

Site A65A facing south

west

Site A65A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A68 **Recorder:** A.J.Franks **Day/Date:** 23 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	3	3	1	1		7	0	5	3	7	6	3	Datum:

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	5	3 – 6	M
T2	2	1.5 – 3	S
T3		-	
S1		-	
S2		-	
G	0.1	0.1 – 0.3	S-M

Structural formation: (including height)

Open scrub

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	*Acacia catenulata*
T2	D	*Acacia catenulata*
G	C	Native Poaceae
G	A	*Cheilanthes distans*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)uBe

Landform: Gentle slope

Soils: Pale orange red clay laom

Field observation and notes: Occasional Eucalyptus melanophloia

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.10.3)

END

Site A68 facing north

east

Site A68 facing south

west

Site A68 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A70 **Recorder:** A.J.Franks **Day/Date:** 23 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	3	2	8	5		7	0	5	3	8	1	0	Datum:

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	5	4 - 6	M
T2	3	2 - 4	M
T3		-	
S1	1	0.5 - 1.5	S
S2		-	
G	0.3	0.1 - 0.4	S-M

Structural formation: (including height)

Open scrub

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	*Eucalyptus crebra* (regrowth)
T1	C	*Acacia catenulata*
T2	D	*Acacia catenulata*
S1	D	*Acacia catenulata*
G	D	*Aristida sp.*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)rBe

Landform: Gentle slope

Soils: Pale orange red sandy laom

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.10.3)

END

Site A70 facing north

east

Site A70 facing south

Site A70 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A70A **Recorder:** A.J.Franks **Day/Date:** 23 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	2	6	0	8		7	0	5	3	5	5	4	Unit:

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	12	11 – 14	S
T2	10	9 – 11	S
T3		-	
S1	2.5	2 – 3	V
S2	1.0	0.8 – 1.5	V
G	0.2	0.1 – 0.4	S-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	*Eucalyptus populnea*
T1	A	*Eucalyptus melanophloia*
T1	A	*Eucalyptus camaldulensis*
T2	D	*Eucalyptus populnea*
T2	A	*Acacia aneura*
T2	A	*Casuarina cristata*
S1	D	*Geijera parviflora*
S1	A	*Eucalyptus populnea*
S2	D	*Acacia excelsa*
S2	A	*Dodonaea viscosa*
G	D	**Cenchrus ciliaris*
G	A	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld

Land system: (S)rBe

Landform: Flat area adjacent to incised drainage line

Soils: Pale sandy clay loam

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem

Proposed RE code: 11.9.7

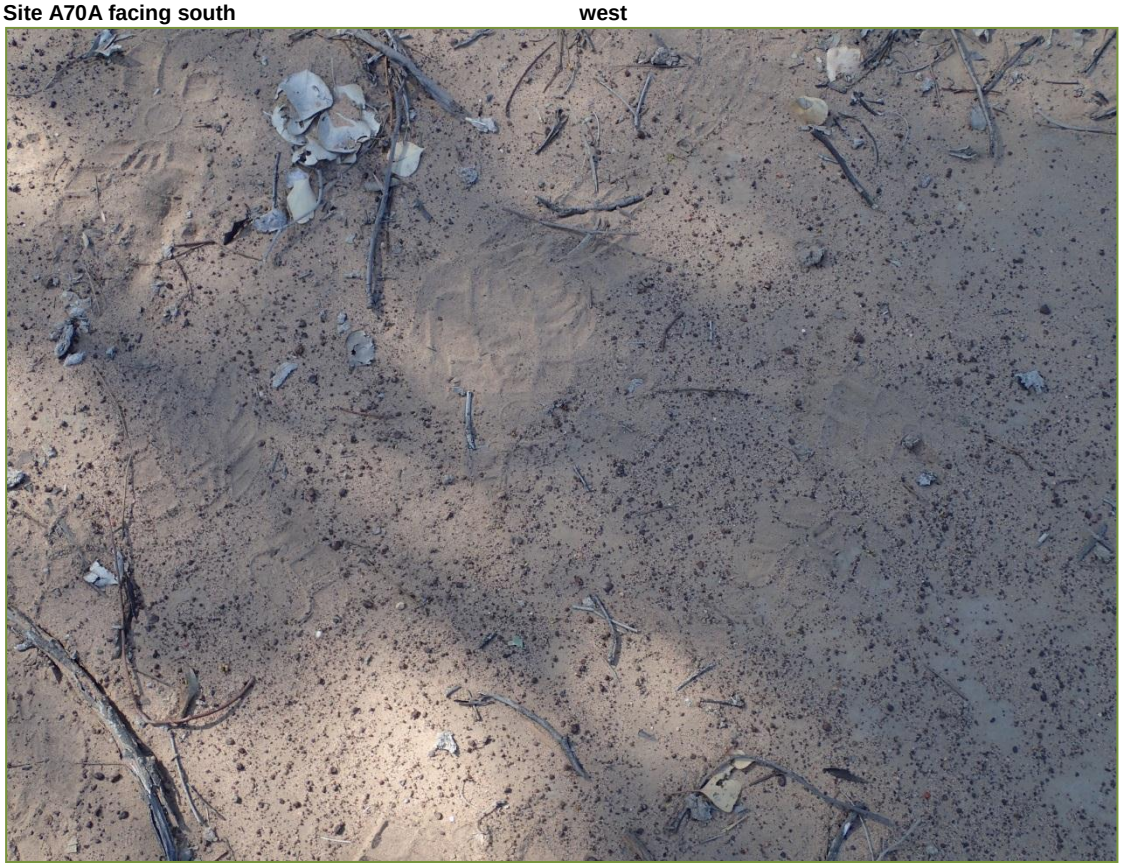
END

Site A70A facing north

east

Site A70A facing south

west



Site A70A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A71 **Recorder:** A.J.Franks **Day/Date:** 23 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94

5	5		0	7	3	1	4	2	5		7	0	5	4	7	3	3	Datum:

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	6	5 – 7	M
T2	3	2 – 4	S
T3		-	
S1	1.0	0.8 – 1.5	S-M
S2		-	
G	0.2	0.1 – 0.3	S-M

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	*Acacia catenulata*
T1	A	*Eucalyptus exserta*
T2	D	*Acacia catenulata*
S1	D	*Psydrax sp.*
G	C	Native Poaceae

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld

Land system: (S)uX

Landform: Near top of low hill

Soils: Red orange sandy loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.10.3)

END

Site A71 facing north

east

Site A71 facing south

west

Site A71 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A71A **Recorder:** A.J.Franks **Day/Date:** 23 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 | 5 | 5 | | 0 | 7 | 3 | 1 | 8 | 6 | 9 | | 7 | 0 | 5 | 4 | 7 | 5 | 6 | Datum:

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	5	4 – 6	M
T2	3	2 – 4	S
T3		-	
S1	2.0	1.5 – 2.0	S
S2	1.0	0.8 – 1.2	S
G	0.2	0.1 – 0.3	M

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	*Acacia harpophylla*
T1	A	*Eucalyptus populnea*
T2	D	*Acacia harpophylla*
S1	D	*Geijera parviflora*
S1	A	*Acacia harpophylla*
S2	D	*Eremophila deserti*
S2	A	*Senna* sp.
G	D	*Digitaria* sp.
G	S	**Cenchrus ciliaris*

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld

Land system: (S)uX

Landform: Plain, gently undulating

Soils: Clay loam. Some surface rock

Field observation and notes:

Landzone: 9

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.9.5)

END

Site A71A facing north

east

Site A71A facing south

west

Site A71A Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A72 **Recorder:** A.J.Franks **Day/Date:** 23 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 | 5 | 5 | | 0 | 7 | 3 | 1 | 7 | 8 | 6 | | 7 | 0 | 5 | 3 | 7 | 8 | 2 | Datum:

Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E	11	10 – 12	V
T1	6	5 – 8	M
T2	3	2 – 4	V
T3		-	
S1	1.0	0.8 – 1.5	X
S2		-	
G	0.3	0.1 – 0.5	S

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
E	D	*Eucalyptus melanophloia*
E	A	*Eucalyptus exserta*
T1	D	*Acacia catenulata*
T2	D	*Callitris glaucophylla*
T2	A	*Acacia catenulata*
S1	D	*Acacia catenulata*
G	D	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld(w)

Land system: (S)uX

Landform: Very gently sloping

Soils: Pale grey clay loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.10.3)

END

Site A72 facing north

east

Site A72 facing south

west

Site A72 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A73 **Recorder:** A.J.Franks **Day/Date:** 23 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 | 5 | 5 | | 0 | 7 | 3 | 2 | 6 | 3 | 1 | | 7 | 0 | 5 | 3 | 1 | 7 | 9 | Datum:

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	5	4 - 6	M
T2	3	2 - 4	S
T3		-	
S1		-	
S2		-	
G	0.3	0.2 - 0.5	M

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	*Acacia catenulata*
T1	A	*Eucalyptus exserta*
T2	D	*Acacia catenulata*
G	C	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: T

Land system: (S)rBe/(s)uBl

Landform: Flat, very gently undulating

Soils: Pale orange clay loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.10.3)

END

Site A73 facing north

east

Site A73 facing south

west

Site A73 Soil surface

Sheet D – regional ecosystem type assessment site

Location

Site No. A74 **Recorder:** A.J.Franks **Day/Date:** 23 OCT 2015

Purpose Regional Ecosystem Assessment

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

GPS: GDA94 55 0732385 7053513 Unit:

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	12	11 – 14	S
T2	7	6 – 8	M
T3		-	
S1	0.6	0.5 – 1.0	V
S2		-	
G	0.2	0.1 – 0.4	S-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	*Eucalyptus melanophloia*
T1	S	*Eucalyptus crebra*
T1	A	*Eucalyptus exserta*
T1	A	*Eucalyptus populnea*
T2	D	*Acacia catenulata*
T2	A	*Callitris glaucophylla*
T2	A	*Eucalyptus populnea*
S1	D	*Solanum* sp.
G	D	*Aristida* sp.

Geology, landform, soils

Geology map/scale/year: Roma (SG5_12)/250K

Geology code and rock types: Kld

Land system: (S)rBe

Landform: Flat, very gently undulating

Soils: Sandy clay loam

Field observation and notes:

Landzone: 10

RE code changes

Existing RE code: non-rem

Proposed RE code: non-rem (regrowth 11.10.3)

END

Site A74 facing north

east

Site A74 facing south

west

Site A74 Soil surface