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FIELD VALIDATED REGIONAL ECOSYSTEM MAPPING OF IDP136, BEILBA AND HALLETT STATE FOREST SURVEY AREAS

Report prepared for

Santos GLNG Pty Ltd

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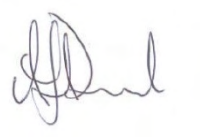

Dr Andrew Daniel
Managing Director

Date: 17 December 2015

FIELD VALIDATED REGIONAL ECOSYSTEM MAPPING OF IDP136, BEILBA AND HALLET STATE FOREST SURVEY AREAS

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Abbreviations

CSIRO	Commonwealth Scientific and Industrial Research Organisation
DEHP	Queensland Department of Environment and Heritage Protection
DoE	Commonwealth Department of the Environment
DSITIA	Queensland Department of Science, Information Technology, Innovation and the Arts
E	Endangered
EPBC Act	Commonwealth Environment Protection and Biodiversity Conservation Act 1999
GLNG	Gladstone Liquid Natural Gas project
ha	Hectare
LC	Least Concern
LZ	Land Zone
MNES	Matter of National Environmental Significance
NC	No Concern at Present
OC	Of Concern
PLA	Petroleum Lease Area
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
SEVT	Semi-evergreen vine thicket
TEC	Threatened Ecological Community
VM Act	Queensland's Vegetation Management Act 1999

1.0 INTRODUCTION

1.1. BACKGROUND AND PURPOSE

Santos GLNG require large scale accurate mapping of ecological constraints within its project tenements to facilitate infrastructure design and construction and development of their gas fields of Southern Queensland. The production of accurate regional ecosystem and fauna habitat values mapping will allow Santos GLNG to meet ecological obligations under their Environmental Authority (EA) *and Environment Protection and Biodiversity Conservation Act (1999)* (EPBC Act) approval conditions. To-this-end Terrestria Pty Ltd have been engaged to produce field validated high resolution mapping of regional ecosystems of the IDP136, Beilba and Hallett State forests survey areas (Study Area). The fauna habitat mapping was produced by Santos GLNG and Terrestria utilising the regional ecosystem data and the results of the fauna habitat assessment (See Section 3.3).

1.2. LOCATION OF STUDY AREA

The three survey areas within the Study Area include; Beilba and Hallett State forests, located within the vicinity of the Fairview gas fields and IDP136 which is located west of Woodduck State Forest in southern Queensland (**Figure 1.1**).

2.0 METHODOLOGY

2.1. REGIONAL ECOSYSTEM ASSESSMENT

The remnant/non-remnant status of native vegetation was determined using the methods set out in *Guideline for Conducting Vegetation Assessments: A Guide to using the 'Procedure for Conducting Vegetation Assessments' Document Number: 0007-650-GDE-0002* and Neldner et. al., (2012). The relative dominance of species in each strata were assigned as per the definitions in the August 2012 version of the Regional Ecosystem Map Assessment Kit (Queensland Herbarium, 2012) where:

- 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 is present in a stratum but does not contribute more than 10% of the total biomass of the stratum in which it occurs.

2.2. FUNCTIONAL REGIONAL ECOSYSTEM ASSESSMENT

Endangered (Biodiversity status) regional ecosystems that have not developed a Remnant (VMA, 1999) structure are assessed for their potential to provide for ecological functioning within the landscape. The Santos methodology "Functional Thresholds for Assessing Regional Ecosystem Functionality" was employed to assess whether these non-remnant vegetation patches reach a threshold of functionality. This method includes the assessment of the following criteria:

- Patch width
- Patch Size
- Non-native perennial vegetative cover
- Recruitment to the Ecologically Dominant Layer (EDL)

- Minimum median canopy height
- Presence of Large trees that are greater than 50% of the benchmark height of EDL
- Organic Litter cover as a percentage of the mean benchmark
- Coarse woody debris as a percentage of the mean benchmark

2.3. PRE-FIELD DESKTOP ASSESSMENT

Priority patches were identified for field verification based primarily of likely Biodiversity status and uncertainty of desktop attribution. That is, those polygons thought likely to contain remnant Endangered and Of Concern or 'functional[1]' endangered regional ecosystems were prioritised for field survey.

2.4. POST-FIELD REGIONAL ECOSYSTEM MAPPING

Field data was used in combination with aerial photographic interpretation and available spatially explicit information including geology, contours, soils and land systems to produce reliable fine scale mapping of regional ecosystems. Map polygons were attributed confidence ratings to indicate accuracy of both the polygon boundary and RE attribution for each polygon (as per (Neldner, et al., 2012)). Those patches that had been visited were attributed a high confidence rating. Patches that could be confidently attributed through the desktop assessment were given a medium confidence rating. Patches that were unable to be confidently attributed through the desktop assessment were given a low confidence rating. Areas with a low confidence rating require additional assessment prior to disturbance.

2.5. FIELD SURVEY

Due to the large amount of native vegetation occurring across the study area a combination of quaternary site data and Santos' Standard Vegetation Community Assessment Proforma's were used. Quaternary sites were used for confirmation of RE code and to locate boundaries between communities whilst standard sites were used to describe areas deemed representative of the photo image and to assist in assigning regional ecosystem codes to remotely mapped polygons. At each location, the HMAT from the *Santos GLNG Procedure for conducting Regulated Fauna Habitat Assessments* was also completed.

2.6. REGIONAL ECOSYSTEM

Orthorectified 25 cm high resolution aerial imagery supplied by Santos Pty Ltd was used to delineate native vegetation communities and areas of potential habitat across the survey area. Digital spatial data including; Herbarium RE mapping (version 8.0), 10m contours, waterways, Biodiversity Planning Assessment (BPA) mapping, specimen backed records, Geoscience Australia weathering intensity mapping and 250K geology were used to aid in the attribution of regional ecosystems to all mapped vegetation polygons and fauna habitat classification to areas of potential habitat. The amended RE mapping line work was produced at a nominal scale of 1:25,000, which has a minimum polygon size of approximately 0.25 ha, a minimum width for linear features of approximately 25 m, and polygon boundaries with spatial precision of ±25 m.

2.7. FAUNA SPECIES HABITAT

As with the field based regional ecosystem assessment, habitat assessments were undertaken in representative habitat patches. The field assessment were undertaken using the Habitat Mapping Assessment Tool (HMAT). A total of 25 HMAT assessments were undertaken across the three assessment areas. Preliminary assessment of the following factors was undertaken (at a desktop level) and recorded on the HMAT:

[1] 'Functional' communities refers to those communities that are deemed to be ecologically functional according to Santos' methodology (see Guideline for Conducting Vegetation Assessments: A Guide to using the 'Procedure for Conducting Vegetation Assessments' Document Number: 0007-650-GDE-0002

1. Tenement in which the Habitat Zone is located (Part A of HMAT);
2. Biodiversity Planning Assessment (BPA) Mapping (Part B of HMAT);
3. Proximity to water (Part C of HMAT);
4. Underlying vegetation type (Part D of HMAT); and,
5. Specimen backed records (Part E of HMAT).

The field assessment involved the completion of the HMAT. The field assessment involves two steps:

1. Review and confirm the results of the desktop assessment (Part A - E); and
2. Complete the microhabitat features assessment (Part F).

Once the data entry stage of the HMAT is complete, the HMAT will predict habitat classes of Unlikely, General, Essential or Core habitat for each of the significant species in the HMAT.

The results of the HMAT were then verified and the assessing ecologist documented whether they:

1. Agree and confirm the output of the HMAT; or
2. Disagree with output of the HMAT.

In addition to completing the above assessment process using HMAT, incidental observations of fauna species observed while completing the field based elements of HMAT were recorded as part of this assessment.

2.8. THREATENED FLORA

Santos GLNG have previously commissioned Boobook to provide the following for this assessment. Habitat mapping based on assumptions and rules with high level reasoning for 21 species of MNES flora. This data was reviewed to determine MNES flora species likely to occur within each of the three development areas. A summary of the review are shown in Table 2.1.

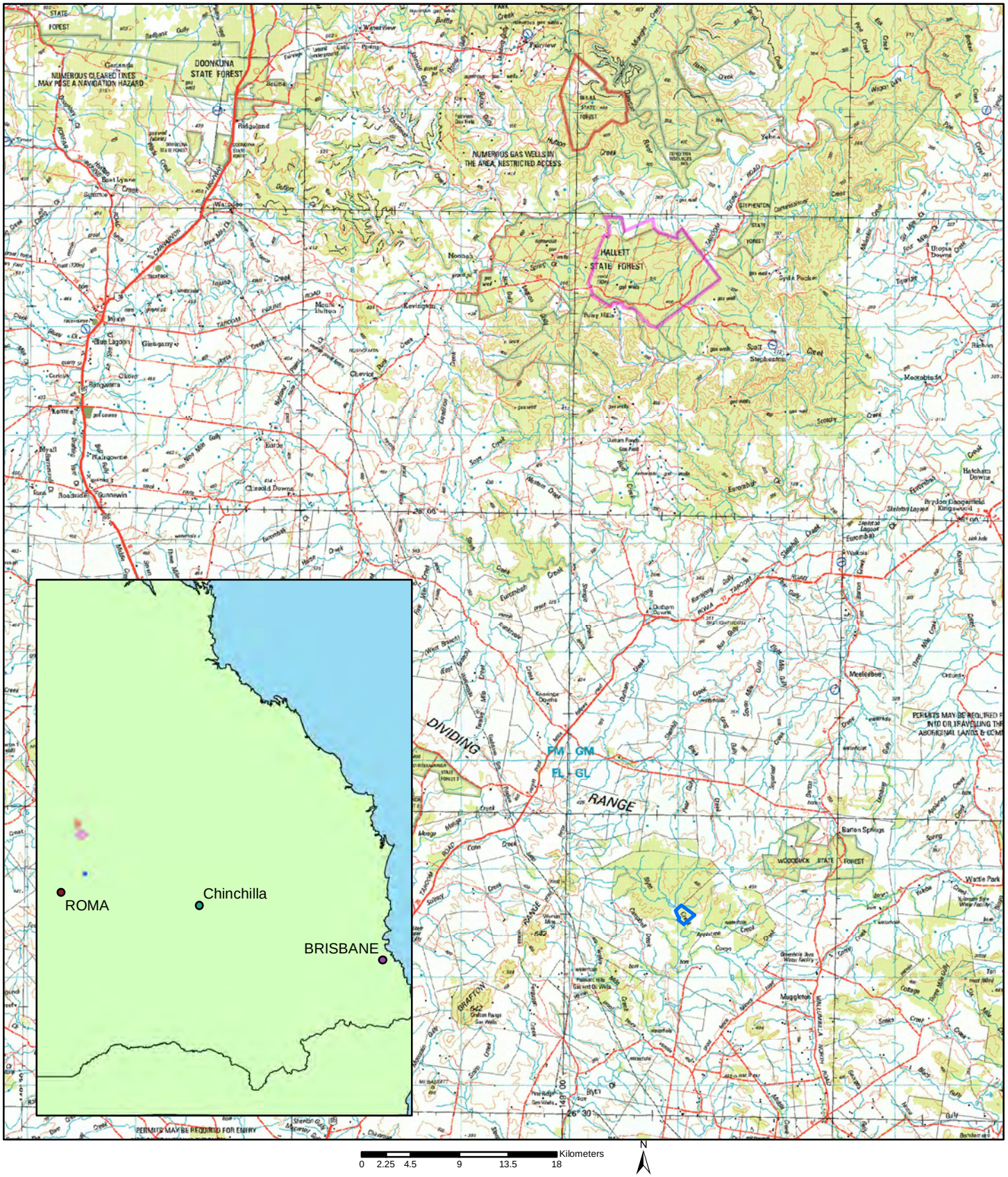
Table 2.1: Species distribution and habitat requirements within the assessment area

Species	Species distribution and habitat requirements within the assessment area		
	IDP 136	Hallet SF	Bielba SF
Acacia grandifolia	No	Yes	Yes
Bertya opponens	No	Yes	Yes
Daviesia discolor	No	Yes	Yes
Eucalyptus beaniana	No	Yes	Yes

Threatened flora species were assessed by random meander at each of the standard vegetation community assessment sites.

2.9. NOMENCLATURE

Scientific names for terrestrial flora are consistent with those used in the Census of the Queensland Flora (Bostock, and Holland, 2016) and botanical binomials presently accepted by the Queensland Herbarium, (DSITIA). The description of regional ecosystems follows that of the Regional Ecosystem Description Database (REDD, Version 7.1 (Queensland Herbarium, 2013)). Scientific names for terrestrial fauna are consistent with those used in the Species Profile and Threats Database of the Australian Department of the Environment and Energy.



LEGEND

- IDP136_AoI_Bound
- Hallett
- Bielba

FIGURE 1.1

Study Area Location

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

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3.0 RESULTS AND DISCUSSION

The Beilba SF survey area is dominated by blocky large-grained sandstone escarpments supporting gently undulating mesas with relatively deep sandy to loamy soils on the plateaus and valley bottoms and shallow sandy soils on the slopes. These landscapes support tall eucalypt woodlands dominated by spotted-gum *Corymbia citriodora* (RE 11.10.1) on the shallow soils of the steep slopes and narrow-leaved ironbark *Eucalyptus crebra* (RE 11.10.1c, 11.10.7), *Eucalyptus fibrosa* broad-leaved red ironbark and *Eucalyptus melanophloia* silver-leaved ironbark (RE11.10.7) on the deeper sandy plateaus. Patches of Semi-evergreen vine thicket (SEVT) occur on western facing slopes that have exposed medium to fine grained sandstone derived clays (RE 11.9.4a), whilst deeper soils associated with these finer grained sandstones have developed isolated patches of clay soils that support small patches brigalow *Acacia harpophylla* woodland (RE 11.9.5). Narrow linear areas of SEVT associated with coarse grained sandstones occur just below the lip of very steep escarpment areas where the communities are sheltered from fires (RE 11.10.8).

The Hallett SF survey area is dominated by deep sandy soils derived from coarse grained sandstones. The landscape is comprised of low gently undulating hills dominated by a patchwork of white cypress pine *Callitris glaucophylla* (11.10.9) and poplar box *Eucalyptus populnea* (RE 11.10.11) with occurrences of narrow-leaved ironbark *Eucalyptus crebra* and silver-leaved ironbark *Eucalyptus melanophloia* woodlands (RE 11.10.7). Small patches of spotted gum *Corymbia citriodora* woodland (RE 11.10.1) occurs on the shallow sandy soils of the steeper parts of the southern and northern extremities of the survey area. The north and western edges of the survey area support narrow areas of finer grained sandstones and alluvial soils that have either been cleared or support woodlands of polar box (RE 11.3.2, 11.9.7) and small patches of brigalow *Acacia harpophylla* (RE 11.9.5). There are minor occurrences of very narrow fringing *Eucalyptus camaldulensis* / *E. tereticornis* river red-gum/forest red gum) open-forest associated with the larger watercourses (RE 11.3.25).

The IDP136 survey area is a flat to very gently undulating deep sand plain covered by a woodland of narrow-leaved ironbark *Eucalyptus crebra*, white cypress pine *Callitris glaucophylla*, Baradine red gum *Eucalyptus chloroclada* with suppressed occurrences of rough-barked apple *Angophora floribunda* (RE 11.5.4). There is a patch of poplar box *Eucalyptus populnea* (RE 11.5.3) dominated woodland within the western part of the survey area.

3.1. GEOLOGY

The Department of Natural Resources and Mines (DNRM) geology dataset for the Roma 1:250,000 geology map sheet (Department of Natural Resources and Mines, 2012) and Detailed surface geology – Queensland (2005) spatial database mapping layer (Figure **3.1 – 3.3**) identifies the study area as being dominated by Jurassic sandstones that are predominately medium to coarse grained that give rise to steep scarps and mesas with relictual soils on the steep slopes and deep sandy soils on top of the mesas and on the colluvial lower slopes. Due to the lack of deep weathering on the geological maps, these landscapes are predominantly assigned to land zone 10 (**Tables 3.1 – 3.3**).

It is noted that although the geology of IDP136 is noted as not being deeply weathered the floristic community that dominates this area is better described by regional ecosystems within land zone 5 and has therefore been mapped as such.

Table 3.1: Major geology units mapped from the Beilba Survey area (source: Detailed surface geology – Queensland, 2005)(Figure 3.1)

Map Symbol	Age	Lithology Description	Land Zone
Jew	Jurassic	Fine lithic sandstone, siltstone, mudstone, concretionary ironstone oolitic in part	10
Jev/b	Jurassic	Fine to medium-grained quartzose sandstone; fossil wood	10
Jp	Early Jurassic	White to brown, poorly sorted, thick-bedded, cross-bedded, fine to very coarse-grained, pebbly quartzose sandstone; minor white to yellowish brown, laminated siltstone (in upper part), carbonaceous shale, lithic sublabile sandstone, granule conglomerate	10
Je	Early Jurassic	Labile and sublabile, fine to medium-grained sandstone, carbonaceous mudstone, siltstone and minor coal; local oolitic ironstone	10

Table 3.2: Major geology units mapped from the Hallett Survey area (source: Detailed surface geology – Queensland, 2005) (Figure 3.2)

Map Symbol	Age	Lithology Description	Land Zone
Jev/b	Jurassic	Fine to medium-grained quartzose sandstone; fossil wood	9/10
Jew	Jurassic	Fine lithic sandstone, siltstone, mudstone, concretionary ironstone oolitic in part	9
Je	Early Jurassic	Labile and sublabile, fine to medium-grained sandstone, carbonaceous mudstone, siltstone and minor coal; local oolitic ironstone	9
Jh	Early Jurassic	Pale brown to pale grey, poorly sorted, medium-grained, feldspathic sublabile sandstone (at base) and fine-grained, well-sorted quartzose sandstone (at top); minor dark grey carbonaceous siltstone, mudstone and rare pebble conglomerate	10

Table 3.3: Major geology units mapped from the IDP136 Survey area (source: Detailed surface geology – Queensland, 2005) (Figure 3.3)

Map Symbol	Age	Lithology Description	Land Zone
Juo	Jurassic	Sandstone, siltstone, mudstone, conglomerate, coal	10

3.2. REGIONAL ECOSYSTEMS MAPPING

25 Santos GLNG Standard Vegetation Community Assessment sites and 77 quaternary sites were recorded (**Table 3.4; Appendix A**).

One of the major drivers for the increase in mapped regional ecosystem area is the higher map resolution that allows for the mapping of patches of structurally mature native vegetation communities previously too small to map (< 5.0ha) at the 1:100,000 scale.

In addition to the increase in mapped regional ecosystem area, the use of better aerial imagery coupled with more intense on-ground surveys has also led to better community type attribution and the reduction of heterogeneous polygons, especially polygons containing Endangered and Of Concern regional ecosystems.

3.3. FAUNA SPECIES HABITAT

Habitat for 10 species was observed during the 2015 survey effort. A greater number of EVNT species are modelled to occur within the Fairview gas field (HMAT Sites 2016-S3 to 2016-S25) when compared with the Roma gas field (HMAT Sites 2016-S1 and 2016-S2). Three of the five species mapped are considered to have the same broad habitat requirements. The Collared Delma, Yakka skink and Dunmall's snake all rely on ground level habitat features, in particular woodlands and open forests with abundant woody debris. The habitat mapping for these three species shows that they are expected to occur in the same areas and the habitat for these species had the greatest extent of coverage in all three assessment areas. The results of the HMAT assessment is provided in Table 3.4.

Table 3.4: The HMAT results

HMAT SITE	Regional Ecosystem	Koala	Squatter pigeon	Black-breasted button-quail	Red goshawk	Large-eared pied bat	SE long-eared bat	Northern quoll	Dunmall's snake	Yakka skink	Collared delma
2016-S1	11.5.4/11.5.5	G					G		G	G	G
2016-S2	11.5.3	G					G		G	G	G
2016-S3	non-rem										
2016-S4	11.10.7a					G	G	G	G	G	G
2016-S5	11.9.5		G				G		G	G	G
2016-S6	11.3.25	G	G		G		G		G	G	G
2016-S7	11.9.5		G				G		G	G	G
2016-S8	11.10.1	G	G		G		G	G	G	G	G
2016-S9	11.9.10		G				G		G	G	G
2016-S10	11.9.5		G				G		G	G	G
2016-S11	11.10.9		G				G	G	G	G	G
2016-S12	11.9.5		G						G	G	G
2016-S13	11.10.1	G	G		G		G		G	G	G
2016-S14	11.10.8		G	G	G	C		C			

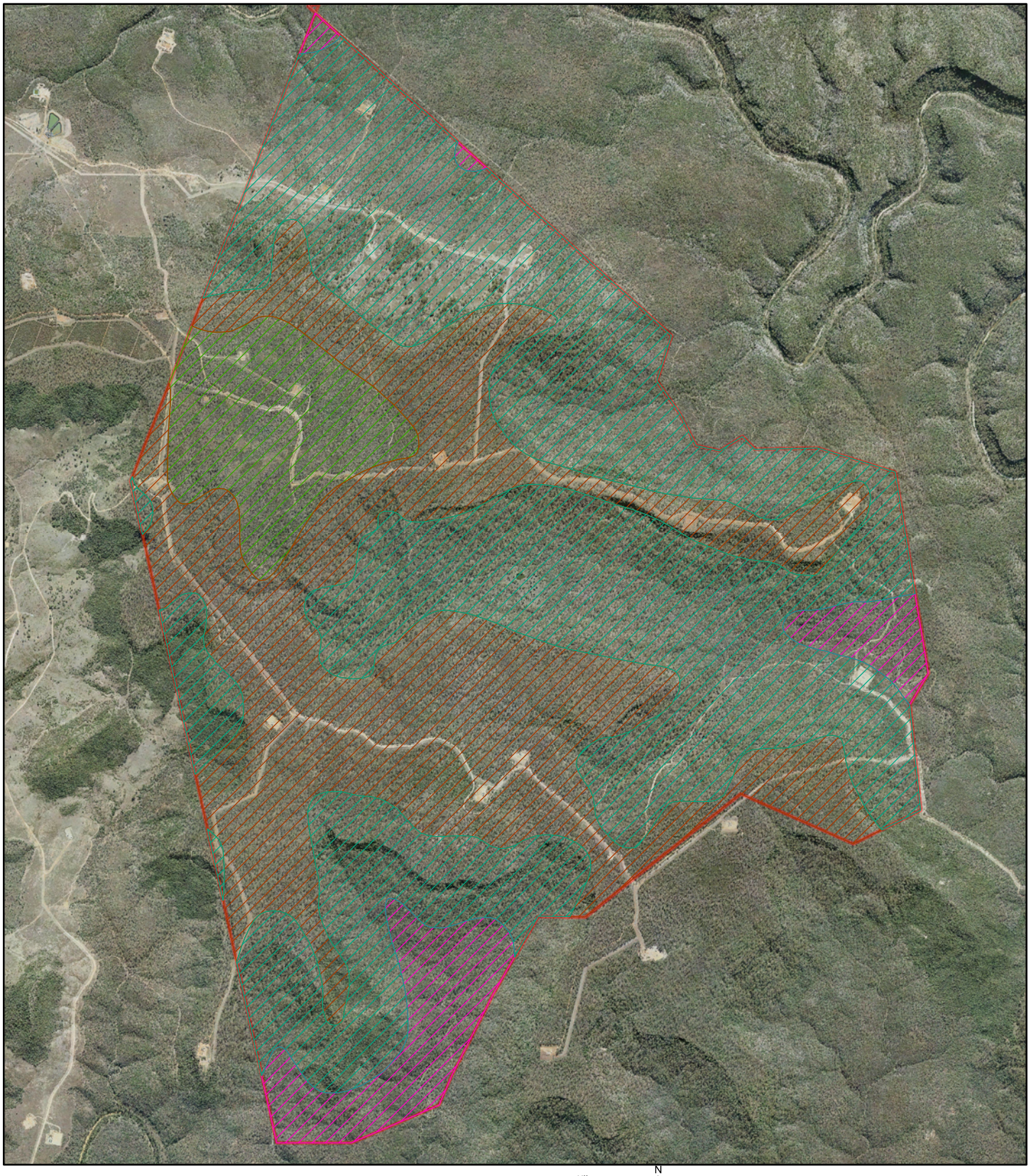
HMAT SITE	Regional Ecosystem	Koala	Squatter pigeon	Black-breasted button-quail	Red goshawk	Large-eared pied bat	SE long-eared bat	Northern quoll	Dunmall's snake	Yakka skink	Collared delma
2016-S15	11.10.1	G			G		G	G	G	G	G
2016-S16	Non-rem										
2016-S17	11.9.5						G		G	G	G
2016-S18	11.10.1	G			G		G		G	G	G
2016-S19	11.10.1	G	G		G		G		G	G	G
2016-S20	11.7.5a				G						
2016-S21	11.10.7	G	G		G	**C**		**C**	G	G	G
2016-S22	11.10.1	G	G		G		G		G	G	G
2016-S23	11.10.1		G				G		G	G	G
2016-S24	11.10.1	G	G		G		G		G	G	G
2016-S25	11.10.1	G			G		G		G	G	G

G = General Habitat, E = Essential Habitat and C = Core Habitat

Habitat for any EVNT fauna species is an environmental constraint on field development for the GLNG Project. Santos GLNG approvals requires that development avoid areas of habitat wherever possible. The location and extent of these fauna habitat areas is shown in Figures 3.10 to 3.12.

3.4. THREATENED FLORA

To allow accurate identification of plants, a number of flora species samples were collected to during the random meander searches. No threatened flora species were observed in any of the three assessment areas. These results are supported by previous assessments in the vicinity of the three assessment areas all of which failed to identify any EPBC Act listed flora species.



LEGEND

Beilba surface geology

- Boxvale Sandstone Member (Jev/b)
- Evergreen Formation (Je)
- Precipice Sandstone (Jp)
- Westgrove Ironstone Member (Jew)

FIGURE 3.1

Beilba Survey Area Surface Geology

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

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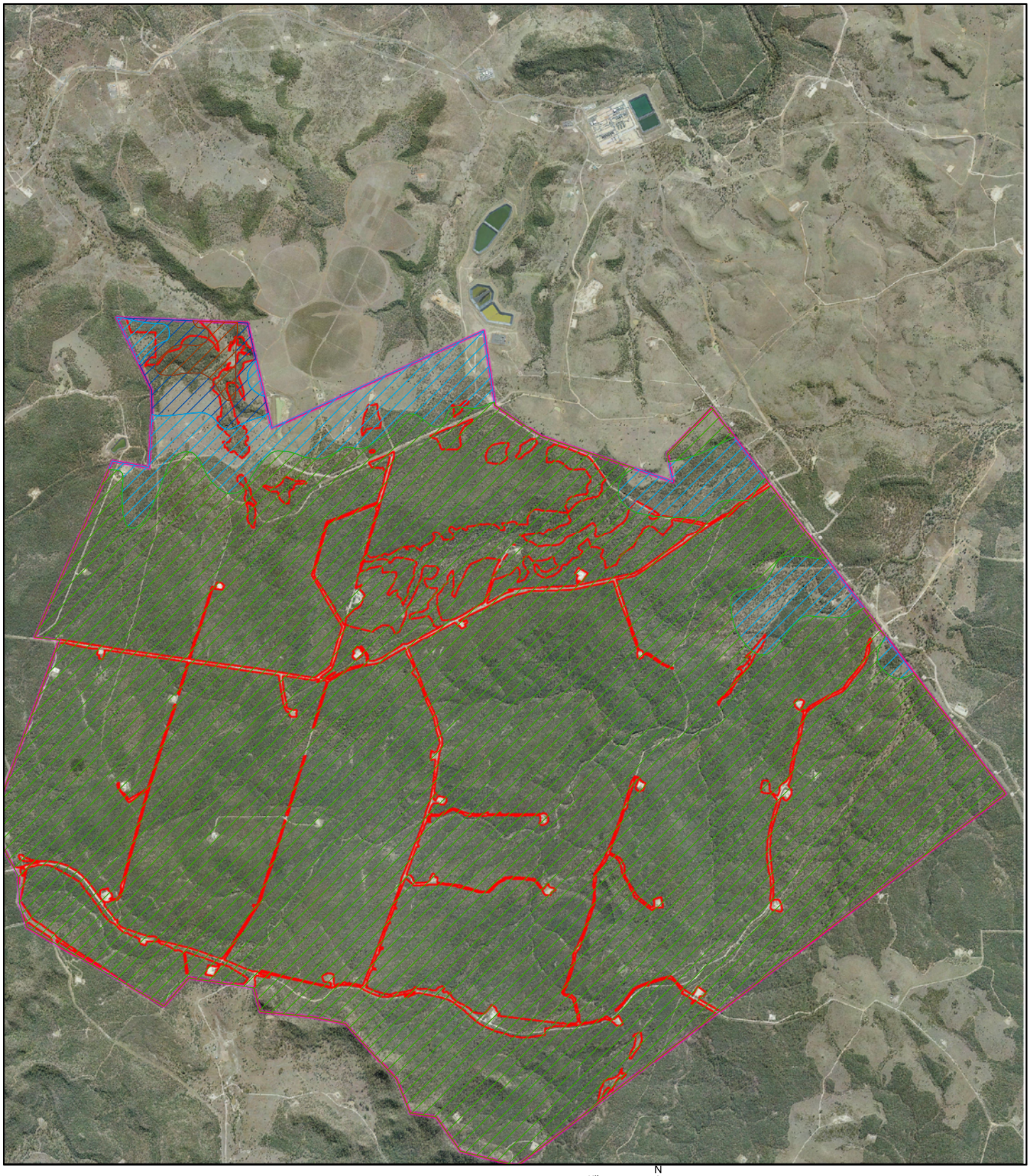

LEGEND

Hallett surface geology

- Boxvale Sandstone Member (Jev/b)
- Evergreen Formation (Je)
- Hutton Sandstone (Jh)
- Westgrove Ironstone Member (Jew)

FIGURE 3.2

Hallett Survey Area Surface Geology

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

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0 0.05 0.1 0.2 0.3 0.4 Kilometers

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LEGEND

IDP136 surface geology

Orallo Formation (Jo)

FIGURE 3.3

IDP136 Survey Area Surface Geology

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

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Table 3.4: Flora Survey sites for the Study Area

Survey area	Waypoint	Easting	Northing	site type	Comment
idp136	587	710655.3	7085000		
idp136	588	710432.4	7085480	code site 1	
idp136	589	710363.8	7085765	code site 2	non-rem scattered 5-8m VS E. Chloroclada, Angophora floribunda
idp136	590	710631.3	7085891	Q	Callitris 14m MD E. melanophloia emergent
idp136	591	710893.5	7086028	Q	Acacia decora, A. deanii 1-4m MD
Hallett	592	708120	7148835	Q	T1 E. populnea 6m Callitris glaucophylla LZ10 non-rem
Hallett	593	708222.9	7148655	Q	E. melanophloia LZ10 8-10m rem?
Hallett	594	708171.7	7148494	Q	end rem heading south
Hallett	595	707923.6	7147683	Q	
Hallett	596	707900.9	7147562	Q	Creek line no crk veg no alluvial
Hallett	597	708167.3	7148467	code site 4	Exuded sap hirsute opposite leaves
Hallett	598	708684.8	7148595	Q	T1 E. populnea 11-14m woodland cleared under boundary LZ10/9
Hallett	599	708945.3	7148457	Q	T1 E. melanophloia 12m sparse Callitris glaucophylla 6m MD LZ10 rem 11.10.9
Hallett	600	709070.2	7148288	Q	
Hallett	601	709148.1	7148154	Q	changes rem E. Melanophloia LZ10
Hallett	602	709263	7148079	code site 5	
Hallett	603	709327.9	7148009	Q	
Hallett	604	709417.9	7147979	Q	T1 E. populnea 12m rem LZ3 flats rem W and E
Hallett	605	709879.2	7147762	code site 6	T1 E. populnea rem LZ10
Hallett	606	710060.5	7146379	Q	Creek line no crk veg or alluvium 11.10.9
Hallett	607	710038.8	7145207	Q	Creek line no crk veg or alluvium 11.10.9
Hallett	608	709132.4	7143737	Q	
Hallett	609	708971.2	7143434	Q	LZ10 end brigalow poplar over pine rem 11.10.9
Hallett	610	708736.9	7141904	code site 7	
Hallett	611	708733.2	7141917	Q	
Hallett	612	706553.7	7143151	Q	E. populnea (no E. citriodora)

Survey area	Waypoint	Easting	Northing	site type	Comment
Hallett	613	708251.5	7143416	code site 8	E. populnea C glaucophylla dense
Hallett	614	706411.8	7146034	Q	
Hallett	615	706262.8	7146000	Q	end 11.9.10
Hallett	616	706414	7148471	code site 9	RE 11.9.5 7-9m rem? Native grass under
Hallett	617	706240	7148390	Q	E. populnea 8-10m Geijera parviflora 5-7m S carissa ovata buffel 11.9.7
Hallett	618	705919.6	7148252	Q	LZ10 11.10.9 remnant
Hallett	619	705111.4	7147753	Q	RE 11.9.5 T1 A. harpophylla 13-16m patch size?
Hallett	620	704881.2	7147869	Q	
Hallett	621	704845.5	7147920	Q	
Hallett	622	701823.5	7148761	Q	RE 11.9.5 14m good condition
Hallett	623	703127.9	7148167	code site 10	RE 11.9.5 / 11.9.10
Hallett	624	703125.8	7148167	Q	
Hallett	625	702819.8	7144831	Q	
Hallett	626	706827	7142060	code site 11	E. melanophloia callitris LZ10
Hallett	627	709041.1	7141696	code site 12	E. citriodora 11.10.1 rem
Hallett	628	711117	7147209	Q	Well pad Callitris glaucophylla to west 10m tall dense
Hallett	629	711742.7	7147165	Q	A. harpophylla too small to map
Hallett	630	710179.7	7147700	Q	A harpophylla patch >1ha
Beilba	631	700825.1	7163606	Q	
Beilba	632	701139.8	7163556	Q	T1 E. crebra 9-11m sparse LZ10
Beilba	633	702053.5	7162969	Q	A.harpophylla 30m east on lZ10(9) C. citriodora on north facing slope surrounding
Beilba	634	700749.8	7162977	code site 13	E. citriodora 12m N facing slope gives way to crebra higher on slope
Beilba	635	700918.9	7162591	Q	E. citriodora Lysicarpus angustifolius top of jump up LZ10
Beilba	636	700520	7162662	Q	E. tenuipes non-rem to south citriodora supreseed
Beilba	637	699664.4	7162438	Q	non-rem north
Beilba	638	699722.8	7162174	Q	T1 E nubila 12-14m Gahnia grassy under LZ10

Survey area	Waypoint	Easting	Northing	site type	Comment
Beilba	639	699475.3	7161989	Q	T1 E crebra soil deep red/brown loamy M nodsa and Lysicarpus
Beilba	640	699612.1	7156981	Q	SEVT on LZ10 Brachychiton acerifolius, flindersia, Pouteria cotinofolia, trema, A. excelsa, carissa ovata Alectron diversifolius
Beilba	641	699893.6	7158271	Q	RE 11.10.1 rem no SEVT on scarp
Beilba	642	699649.4	7158532	Q	s
Beilba	643	700146.6	7159337	Q	Rem E. nubila C. ctriodora LZ10
Beilba	644	701350.6	7159437	Q	
Beilba	645	701725.5	7159288	code site 14	C intermedia A liocarpa Corymbia sp. LZ10 Callitris glauco, acacia sp. Pandorina, A leuhmanii, A excelsa, P. pubescens, Santalum lanceolatum deep pale yellow sand
Beilba	646	702049.2	7159157	Q	E. fibrosa , C. citriodora rem
Beilba	647	702513.7	7158944	code site 15	E. fibrosa , C. citriodora rem
Beilba	648	703369.3	7159384	Q	T1 C. citriodora rem trees, cleared sitroically regwroth c tesselris, 10 thick grassy under LZ10
Beilba	649	703687.2	7159757	Q	E melanophloia C citriodora regrwth 12m LZ10 in valley btoom
Beilba	650	703809.5	7159903	Q	non-rem regrowth Euc and acacia
Beilba	651	702834.5	7160726	Q	E. melanophloia d, C citirodora a LZ10
Beilba	652	702259.6	7160731	Q	A harpophylla 6m VS scattered clunps E mithcellii 2-3m VS non-rem non-functional
Beilba	653	701925.9	7160737	Q	A harpohylla 14-18m sparse remnant
Beilba	654	701464.4	7160707	Q	
Beilba	655	700103.8	7160993	Q	non-rem west- rem east LZ10
Beilba	656	701169.1	7161551	Q	
Beilba	657	701853.3	7161628	code site 17	
Beilba	658	702640.8	7161465	Q	SEVT band running east-west north of track

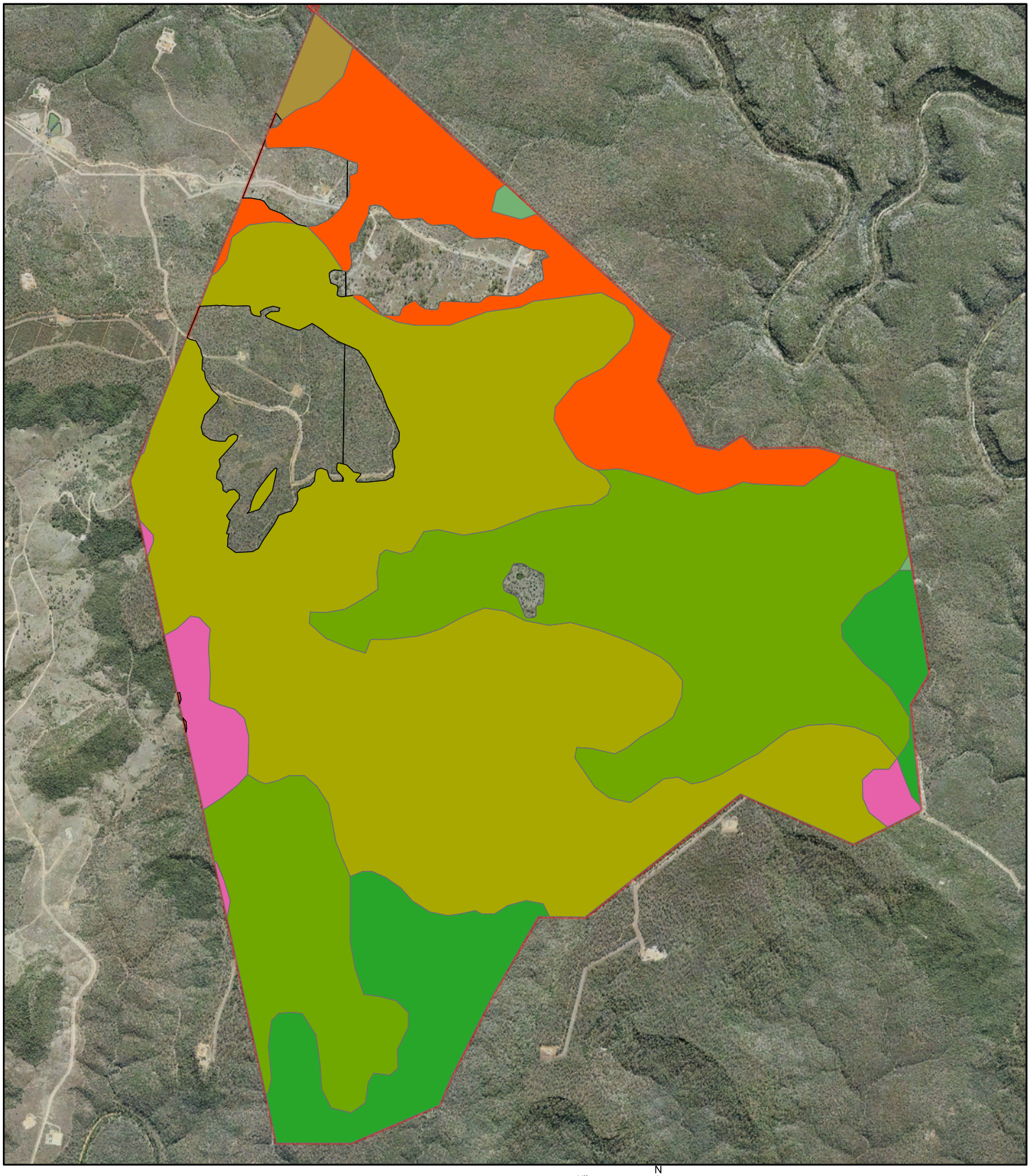
Survey area	Waypoint	Easting	Northing	site type	Comment
Beilba	659	703487	7161205	code site 18	SEVT band running east-west north of track
Beilba	660	700352.9	7161579	code site 19	non-rem
Beilba	661	700328.3	7161639	Q	
Beilba	662	699996.8	7162059	Q	Still Mallee form eucalypts
Beilba	663	699878.4	7162084	Q	M thymifolia 0.5m MD, E panda emergent
Beilba	664	698857.3	7161216	code site 20	SEVT on south scarp
Beilba	665	700024.9	7156425	Q	E. melanophloia patch tordened standing dead
Beilba	666	700125.8	7156458	Q	E. melanophloia rem LZ10 good condition
Beilba	667	700232.2	7156450	Q	creek line no alluvium
Beilba	668	700286.5	7156439	Q	
Beilba	669	699367.5	7161840	Q	E. fibrosa 8-11m LZ10 rem good condition
Beilba	670	700022.4	7162796	Q	E. tenuipes 11.10.13 12m rem
Beilba	671	700429.6	7162674	Q	Start E. citriodora patch 16m tall smll patch
Beilba	672	700870.6	7163093	code site 21	A. harpophylla 8m MD 7-10m remnant functional patch size? 20m west
Beilba	673	701136.9	7164616	Q	
Beilba	674	701350.2	7164440	Q	LZ10 undulating not LZ3 E. tenuipes rem 11.10.13
Beilba	675	701551.5	7164269	Q	
Beilba	676	701622.5	7164208	Q	E. citriodora remnant LZ10
Beilba	677	702037.7	7163859	code site 22	E. tenuipes remnant LZ10
Beilba	678	702251.5	7163678	Q	E. fibrosa remnant LZ10
Beilba	679	702380.3	7163585	code site 23	
Beilba	680	702649.2	7163345	Q	Creek line no alluvium LZ10
Beilba	681	702263.7	7163162	Q	E. melanophloia LZ10 remnant in gully
Beilba	682	699388.5	7161127	Q	E. crebra /nubila north of track / E. citriodora and ubila south
Beilba	683	699624.9	7160682	code site 24	

Survey area	Waypoint	Easting	Northing	site type	Comment
Beilba	684	708863.9	7151238	Q	A. harpophylla regrowth tallest canopy 5m median 3m cover 20% groundlayer MD almost entirely buffel, very small amount FWM non-functional
Beilba	685	708884.8	7150973	Q	RE 11.9.4a Croton insulrais Eremophila michelii, A harpophylla, acalypha eremorum, Alectryon diversifolius Acacia amidenii patch on ridge
Beilba	686	707298.4	7150656	Q	SEVT 11.9.4a 200m west on east facing slope good conidtion
Beilba	687	707662.3	7150820	code site 25	RE 11.9.4a 50m east in gully good conidtion
Beilba	688	707924.6	7151070	Q	RE 11.9.4a 50m east in gully good conidtion

Q =Quaternary Site
Code site = Santos Standard Vegetation Community Assessment Proforma

4.0 CONCLUSION

The use of recent high quality high resolution aerial imagery combined with field verification has led to the production of a large scale regional ecosystem and threatened fauna habitat mapping with a high level of certainty of polygon attribution.



LEGEND

RE

- 11.10.1/11.10.1
- 11.10.1/11.10.13a
- 11.10.13a/11.10.1/11.3.25
- 11.10.3/11.3.25
- 11.10.7
- 11.3.39/11.3.2
- 11.9.4a
- non-rem

FIGURE 3.4

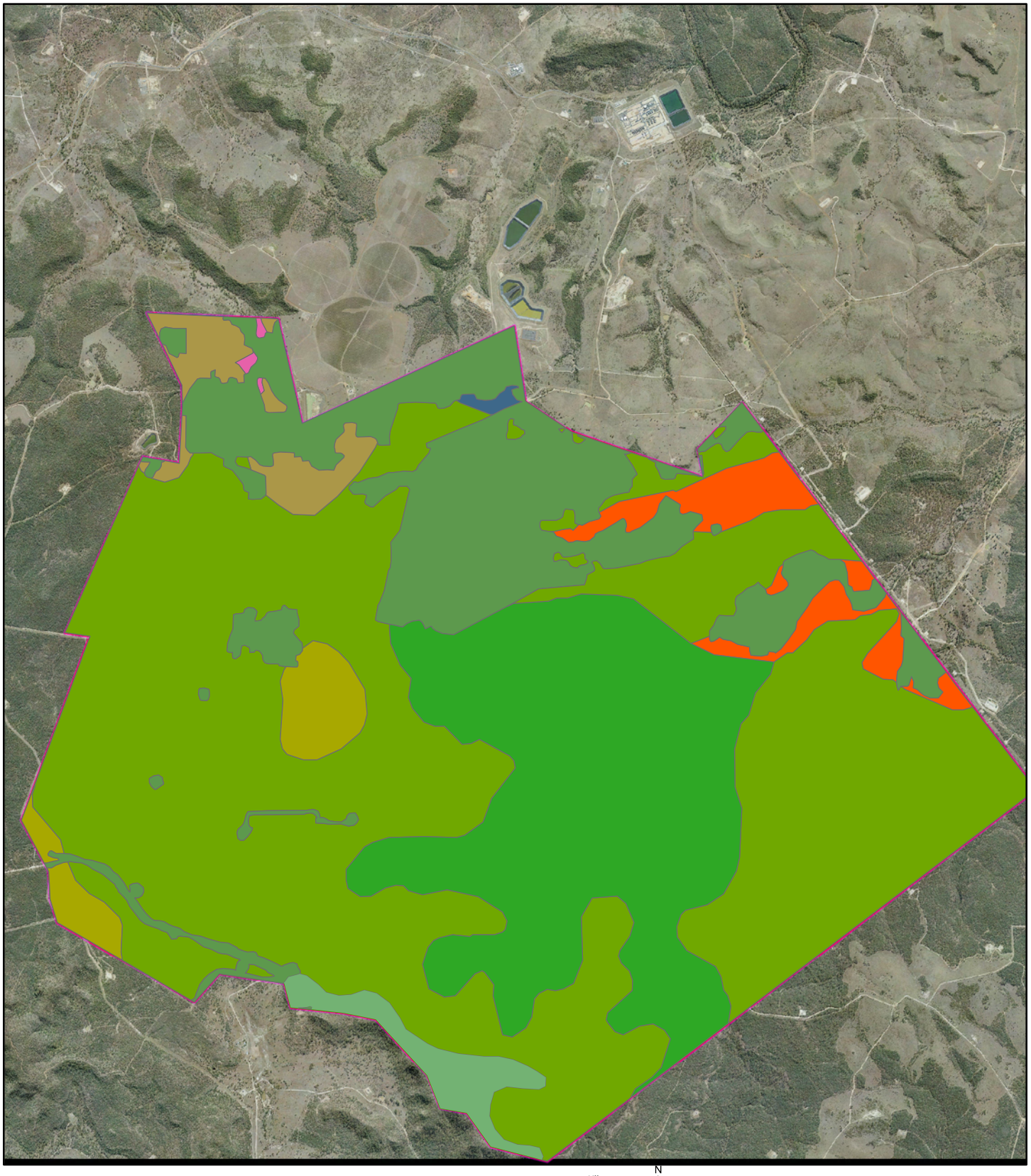
Beilba Survey Area Herbarium 1:100,000 Regional Ecosystem Map (Version 8.0)

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

terrestria
ECOLOGICAL MANAGEMENT



LEGEND

RE

- 11.10.1
- 11.10.1/11.10.1/11.10.8
- 11.10.11
- 11.10.11/11.10.7a
- 11.10.7a
- 11.10.9
- 11.3.2
- 11.9.7a/11.9.5a
- non-rem

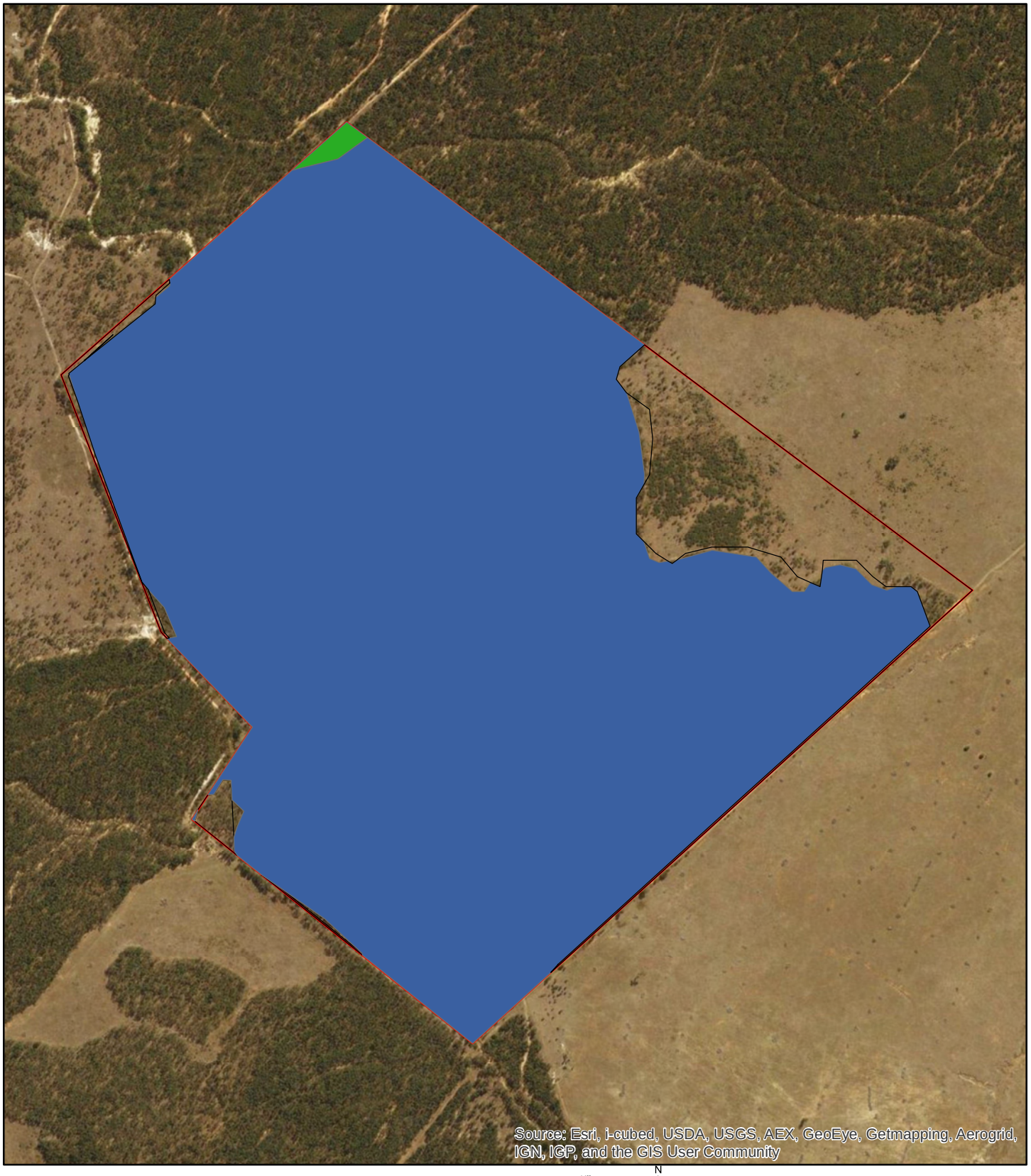
FIGURE 3.5
Hallett Survey Area Herbarium 1:100,000 Regional Ecosystem Map (Version 8.0)

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

terrestria
ECOLOGICAL MANAGEMENT



0 0.05 0.1 0.2 0.3 0.4 Kilometers

N

LEGEND

RE

- 11.10.11
- 11.3.39/11.10.11
- non-rem

FIGURE 3.6

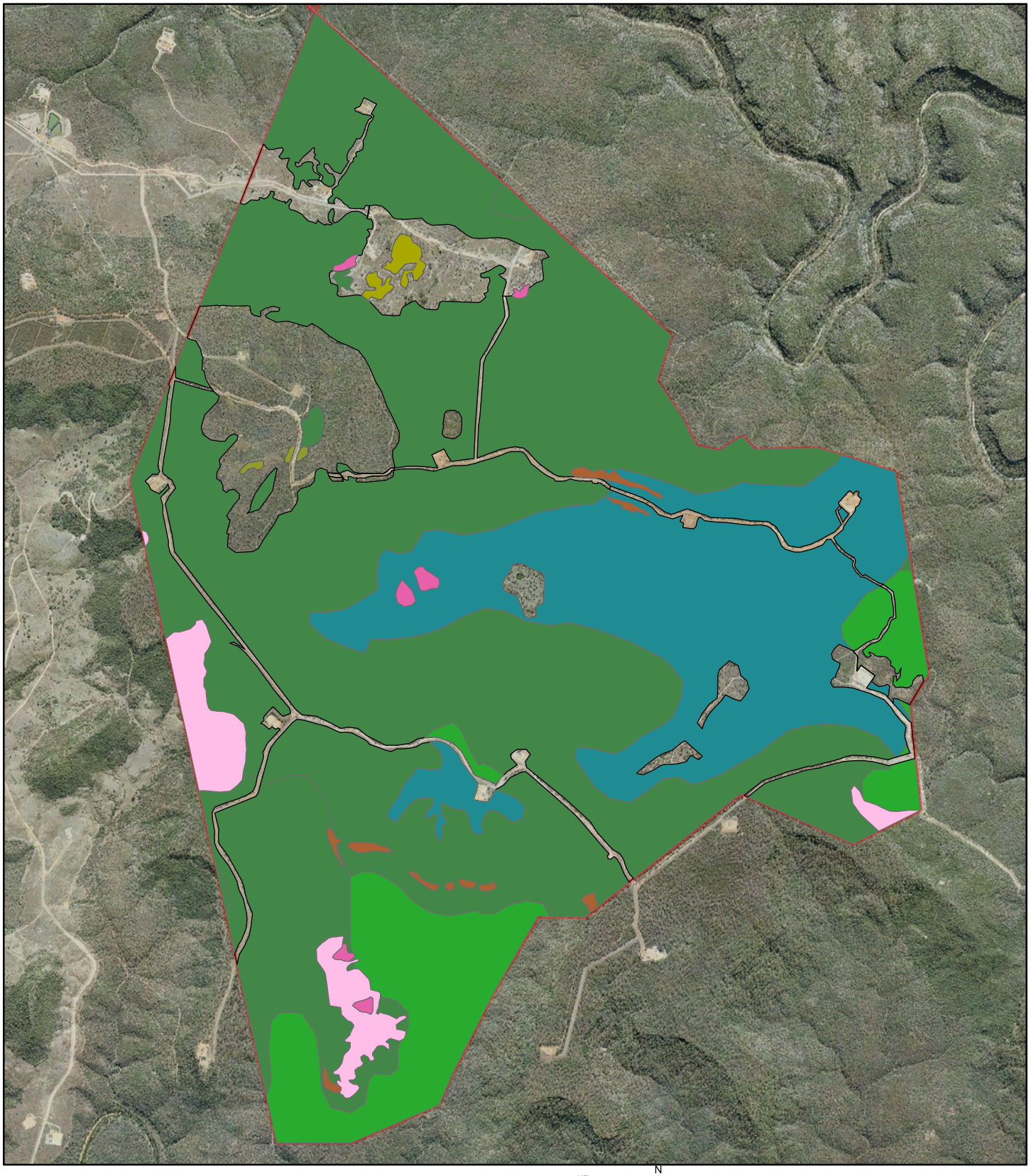
IDP136 Survey Area Herbarium 1:100,000 Regional Ecosystem Map (Version 8.0)

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

terrestria
ECOLOGICAL MANAGEMENT



LEGEND

Field_RE

- 11.10.1
- 11.10.1/11.10.1c
- 11.10.1/11.10.7
- 11.10.7
- 11.10.8
- 11.7.5a
- 11.9.4a
- 11.9.5
- non-rem

FIGURE 3.7

Beilba Survey Area Field Validated Regional Ecosystem Map

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

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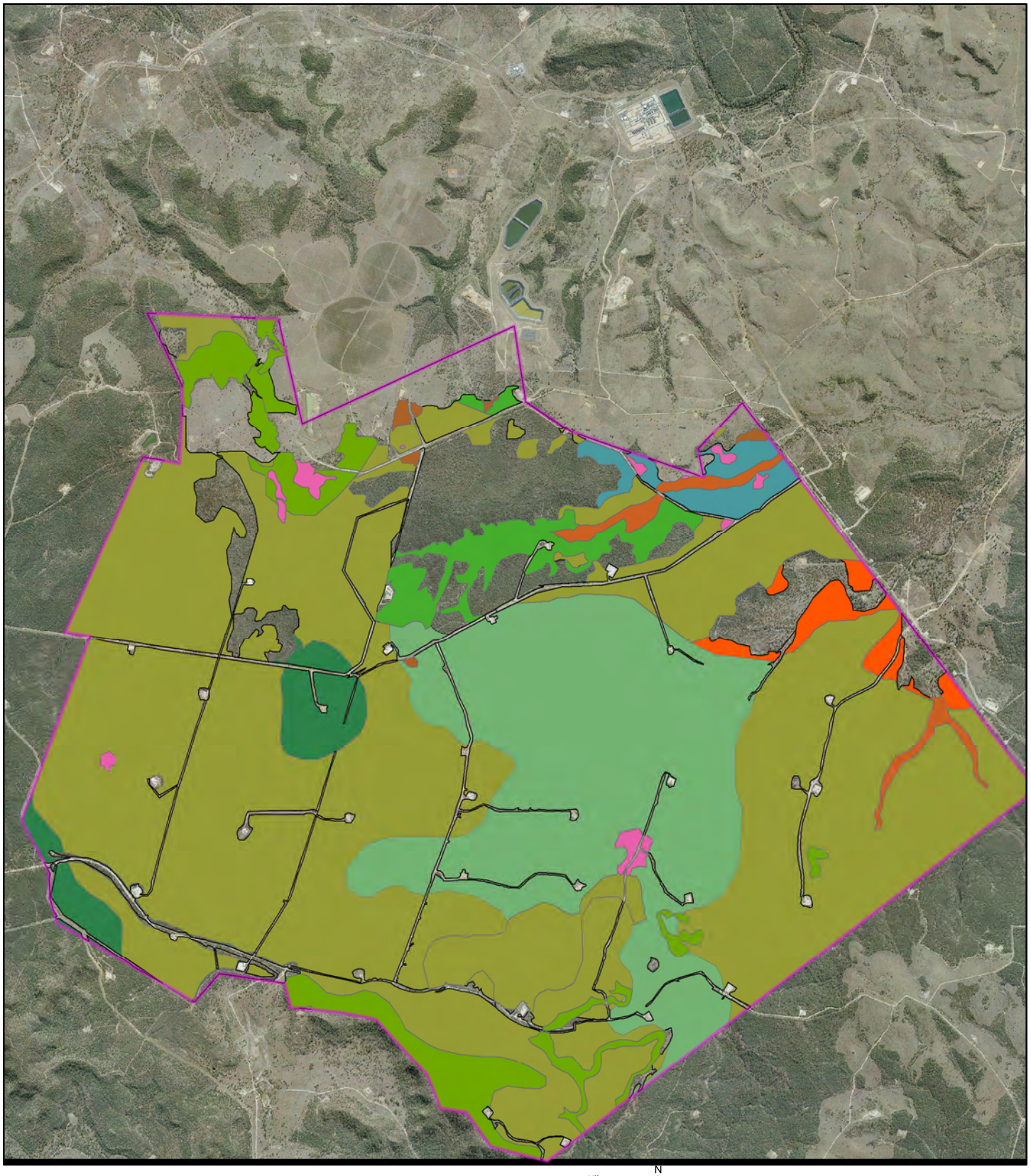
ECOLOGICAL MANAGEMENT



LEGEND

Hallet Field RE

- 11.10.1
- 11.10.11
- 11.10.11/11.10.7a
- 11.10.7a
- 11.10.9
- 11.3.2
- 11.3.2/11.3.25
- 11.9.10
- 11.9.5
- 11.9.7
- non-rem

FIGURE 3.8
Hallett Survey Area Field Validated Regional Ecosystem Map

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

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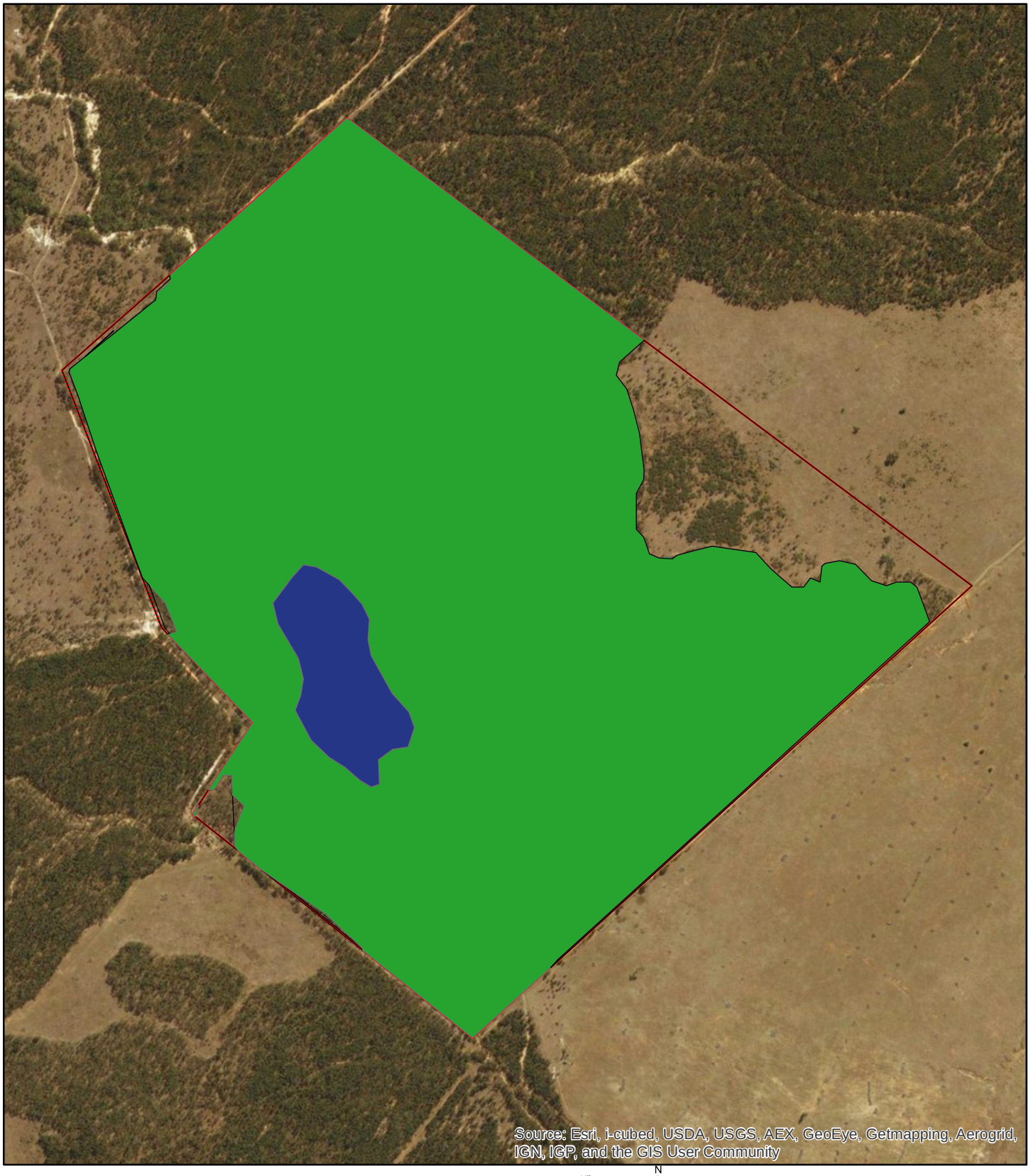
ECOLOGICAL MANAGEMENT



0 0.05 0.1 0.2 0.3 0.4 Kilometers

N

LEGEND

IDP136 Field RE

- 11.5.3
- 11.5.4
- non-rem

FIGURE 3.9

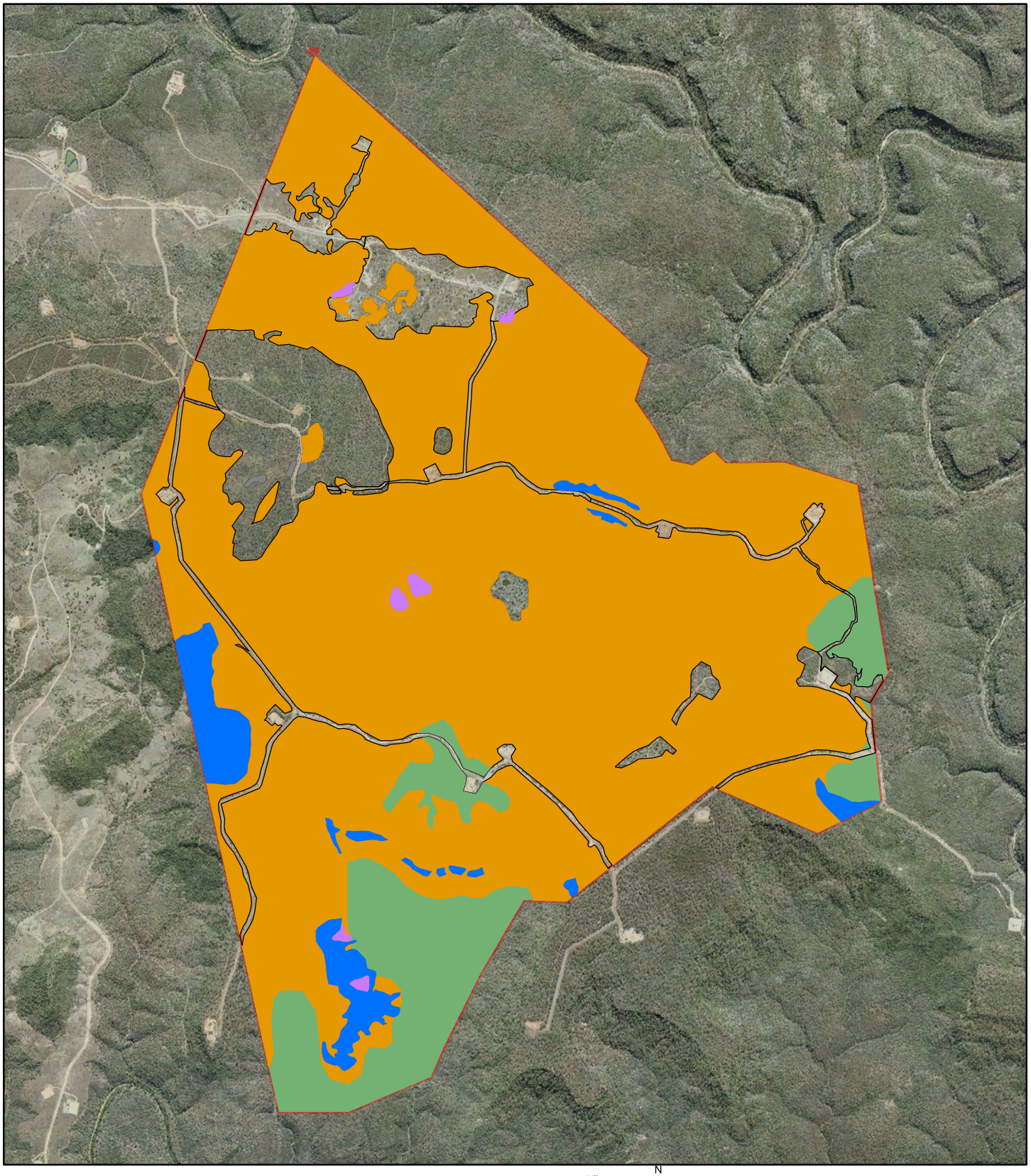
IDP136 Survey Area Field Validated Regional Ecosystem Map

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

terrestria
ECOLOGICAL MANAGEMENT



Legend

- Koala, Squatter Pigeon, Red Goshawk, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Koala, Squatter Pigeon, Red Goshawk, Large-eared Pied Bat, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Squatter Pigeon, BB Button-quail, Large-eared Pied Bat (Core), Northern Quoll (Core)
- Squatter Pigeon, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Koala, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Squatter Pigeon, SE Long-eared bat, Northern Quoll, Dunmalls Snake, Yakka Skink, Collared Delma
- Red Goshawk

FIGURE 3.10

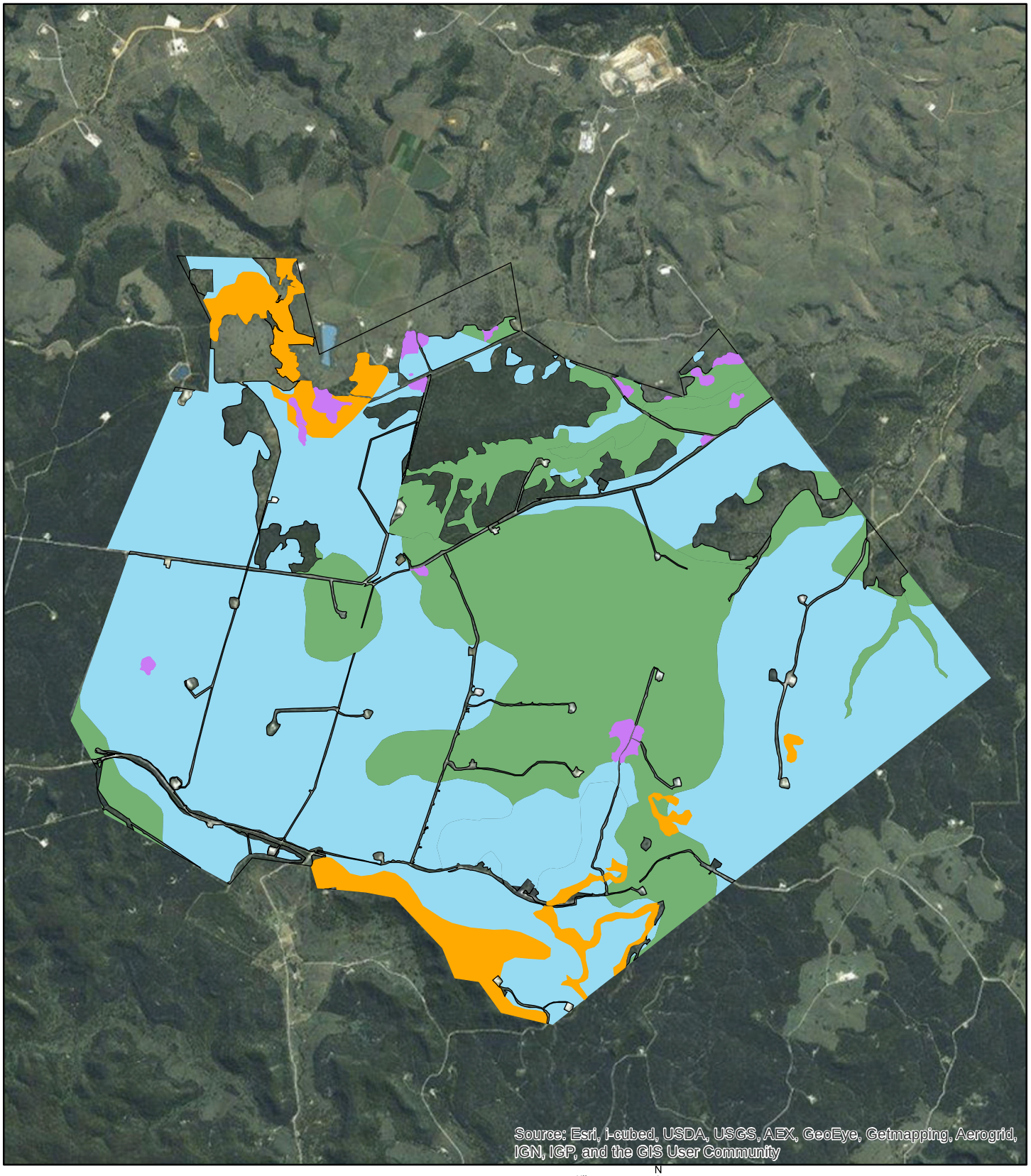
Beilba Survey Area Fauna Habitat Map

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

terrestria ECOLOGICAL MANAGEMENT



0 0.375 0.75 1.5 2.25 3 Kilometers

N

Legend

- Koala, Squatter Pigeon, Red Goshawk, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Koala, Squatter Pigeon, Red Goshawk, Large-eared Pied Bat, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Squatter Pigeon, BB Button-quail, Large-eared Pied Bat (Core), Northern Quoll (Core)
- Squatter Pigeon, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Koala, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Squatter Pigeon, SE Long-eared bat, Northern Quoll, Dunmalls Snake, Yakka Skink, Collared Delma
- Red Goshawk

FIGURE 3.11

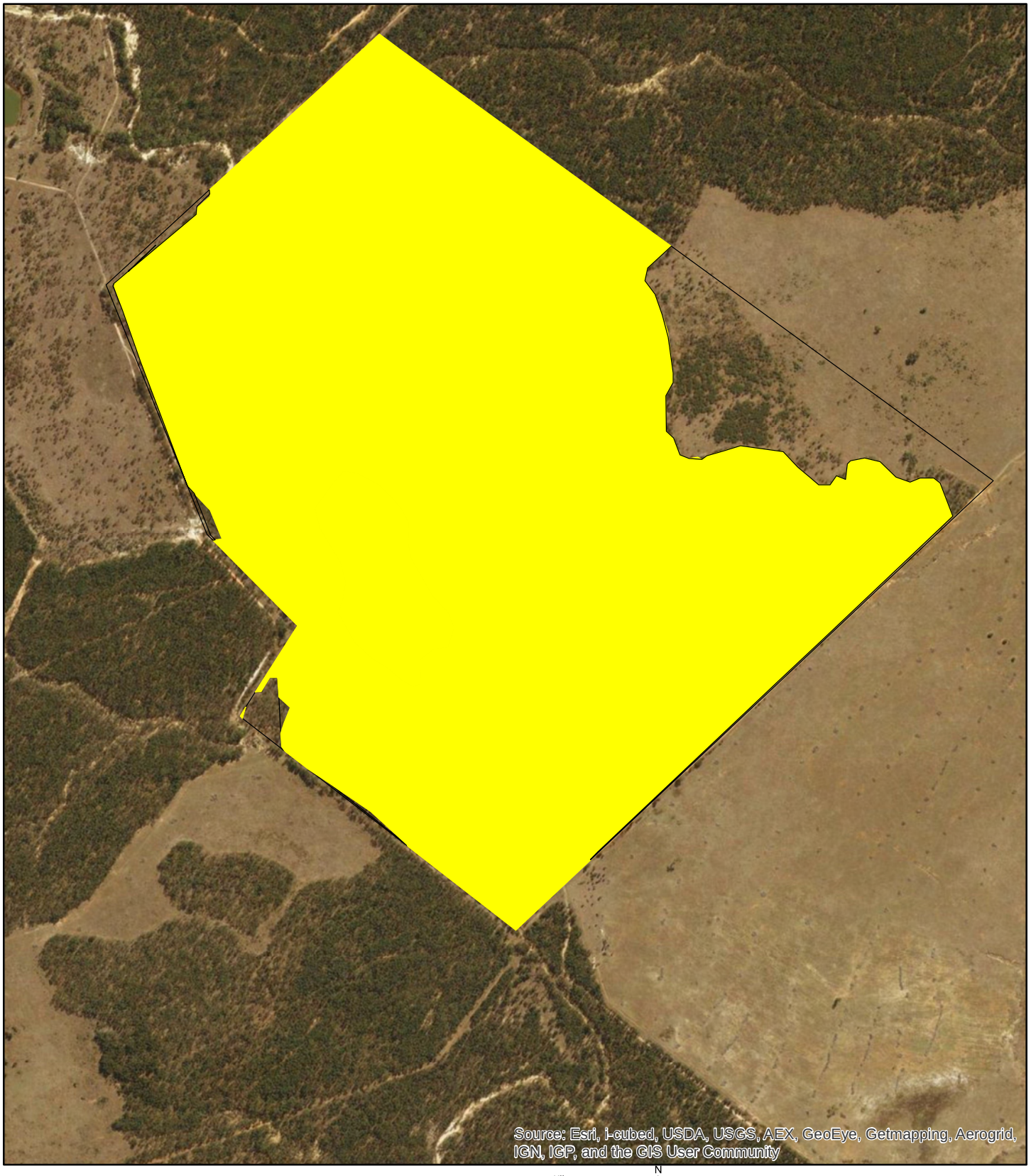
Beilba Survey Area
Fuana Habitat Map

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

terrestria
ECOLOGICAL MANAGEMENT



Legend

- Koala, Squatter Pigeon, Red Goshawk, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Koala, Squatter Pigeon, Red Goshawk, Large-eared Pied Bat, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Squatter Pigeon, BB Button-quail, Large-eared Pied Bat (Core), Northern Quoll (Core)
- Squatter Pigeon, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Koala, SE Long-eared bat, Dunmalls Snake, Yakka Skink, Collared Delma
- Squatter Pigeon, SE Long-eared bat, Northern Quoll, Dunmalls Snake, Yakka Skink, Collared Delma
- Red Goshawk

FIGURE 3.12

Beilba Survey Area Fauna Habitat Map

Field Validated Regional Ecosystem Mapping of IDP136, Bielba and Hallett State forests

Created by AD 19/01/2017

Job No. 0111

terrestria ECOLOGICAL MANAGEMENT

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Appendix A
Field Site Proformas

Standard Vegetation Community Assessment Proforma

Site No. 1 **Recorder:** A. Daniel **Day/Date:** Mon 28/11/16

Locality: (inc. distance/direction to nearest town) IDP136

GPS coordinates: Zone 53 E 0710657 N 7081497 D 94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured 587 291

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	11 - 15	S
T2	8	6 - 11	S
T3		-	
S1		-	
S2		-	
G		-	

Structural formation: (including height)

Ecologically dominant layer: T1 T2

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 chlorantha
T1	a	Angophora floribunda
T1	a	Callitris glaucophylla
T1	a	Eucalyptus populnea
T1	a	Eucalyptus melanophloia
G	a	Themeda triandra
G	a	Aristida ramosa - mediae
G	d	Aristida sp

Land Zone and RE

Mapped Land Zone: ?

Field Assessed Land Zone: ~~6~~ 5

Soils: clay sand deep pale brown

Mapped RE

Assessed RE: 11.10.4

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
XXXXXXXXXXXXXXX

Standard Vegetation Community Assessment Proforma

Site No. 2 **Recorder:** A. Daniel **Day/Date:** Mar 28/11/11

Locality: (inc. distance/direction to nearest town) IDP 136

GPS coordinates: Zone 55 E 0710433 N 7085484 D 94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

588

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	7	5 - 9	S
T3		-	
S1		-	
S2		-	
G		-	

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	S, d	Eremophila mitchellii

Land Zone and RE

Mapped Land Zone:

Field Assessed Land Zone: 5

Soils: Flat sand deep

Mapped RE

Assessed RE: 11.10.3

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

note. Callitris / Melaleuca east.

Standard Vegetation Community Assessment Proforma

Site No. 4 **Recorder:** A. Daniel **Day/Date:** Tues 29/11/16

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

GPS coordinates: Zone 55 E 0707923 N 7174654 D94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured 595 297

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	12	11 - 14	S
T2	9	8 - 11	S
T3		-	
S1	6	4 - 7	S
S2	1.5	1 - 2	VS
G		-	

Structural formation: (including height) Tall 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
T_1	d	Angophora leiocarpa
T_2	d	Callitris glaucophylla
S_1	d	Allocasuarina leuhmannii
	a	Callitris glaucophylla
S_2	d	Acacia longispicata
G	a	Eriachne sp
G	d	Aristida sp.

Land Zone and RE

Mapped Land Zone: 10	**Mapped RE** Non-Rem
Field Assessed Land Zone: 10	**Assessed RE:** 11.10.6
Soils: Deep pale White sand	

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
XXXXXXXXXXXXXXXX

Standard Vegetation Community Assessment Proforma

Site No. 5 **Recorder:** A. Daniel **Day/Date:** Tues 29 [illegible]

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

GPS coordinates: Zone 55 E 0709069 N 7148288 D 94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

W 600 P 302

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9	8 - 11	MD
T2		-	
T3		-	
S1	3	2 - 4	S
S2	0.75	0.5 - 1	S
G		-	

Structural formation: (including height) Tall 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
S1	d	Geijera parviflora
S1	a	Hakea longipes
S2	d	Carissa ovata

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	11.10.9
Field Assessed Land Zone:	9	**Assessed RE:**	11. 9.5
Soils:	pale yellow sandy clay		

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
XXXXXXXXXXXXXXXX

Standard Vegetation Community Assessment Proforma

Site No. 6 **Recorder:** A Daniel **Day/Date:** Tues 29/11/16

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

GPS coordinates: Zone 5 E 0 7 6 9 3 2 8 N 7 1 4 8 0 1 0 D94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

603 P304

Median height of the EDL is to be measured

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1		8 - 12	S
T2	4	2 - 6	S
T3		-	
S1		-	
S2		-	
G	0.9	0 - 1.3	MD

Structural formation: (including height)

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
T_1	d	Eucalyptus camaldulensis
T_2	d	Eucalyptus camaldulensis
G		Juncus continuus
G		Imperata cylindrica

grass photo 305

Land Zone and RE

Mapped Land Zone: 10	**Mapped RE** 11.10.9
Field Assessed Land Zone: LZ3	**Assessed RE:** 11.3.25
Soils: Sand	

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
XXXXXXXXXXXXXXX

Standard Vegetation Community Assessment Proforma

Site No. 7 **Recorder:** A Daniel **Day/Date:** Tues 29/11/16

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

GPS coordinates: Zone 5 E 0701713 N 7143737 D 94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

608

Median height of the EDL is to be measured 9310

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	9½	8 - 13	MD
T2	6	5 - 8	S
T3		-	
S1	4	2 - 65	S
S2	0.6	0.3 - 0.8	S
G		-	

Structural formation: (including height) Tall woodland

Ecologically dominant layer: T_1

Plant species

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

Str.	Rel. dom.	Scientific Name
T_1	d	Acacia harpophylla
T_2	d	Acacia harpophylla
T_2	d	Eremophila mitchellii
S_1	c	Eremophila mitchellii
S_1	c	Geijera parviflora
S_1	a	Alectryon diversifolius
S_2	d	Carissa ovata

Land Zone and RE

Mapped Land Zone: 10

Field Assessed Land Zone: 9

Soils: light brown sandy clay

Mapped RE 11.10.11/11.10.7

Assessed RE: 11.9.5

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Standard Vegetation Community Assessment Proforma

Site No. 8 **Recorder:** A Daniels **Day/Date:** Tues 29/11/16

Locality: (inc. distance/direction to nearest town) Hallett 5 F

GPS coordinates: Zone 5 E 0708734 N 7141917 D

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured 611 311

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	14	12 - 16	VS
T2	8	6 - 10	S MD
T3		-	
S1	4	3 - 6	VS
S2		-	
G	0.8	0 - 1	MD

Structural formation: (including height) Tall 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	Corymbia citriodora
T2	d	Callitris glaucophylla
S1	d	Alphitonia excelsa
S1	a	Acacia longispicata
G	d	Eragrostis sp

Land Zone and RE

Mapped Land Zone: 10 **Mapped RE** 11.10.9

Field Assessed Land Zone: 10 **Assessed RE:** 11.10.1

Soils: White sand

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 9 **Recorder:** A Daniel **Day/Date:** Tue 29/10/13

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

GPS coordinates: Zone 55 E 0796410 N 7746634 D94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured. 614 313 314 315

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	12 - 14	S
T2	8	7 - 10	S
T3		-	
S1	6	4 - 7	S
S2	0.5	0.3 - 1	MD
G		-	

Structural formation: (including height)

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
T_1	d	Eucalyptus populnea
T_2	d	Brachychiton rupestris
T_2	d	Brachychiton papuanus
S_1	c	Alectryon oleifolius
S_1	c	Eremophila mitchellii
S_1	c	Alectryon diversifolius
S_2	d	Psydrax buxifolium
S_2	d	Carissa ovata

Land Zone and RE

Mapped Land Zone: 10

Field Assessed Land Zone: 9

Soils: Brown sandy clay

Mapped RE 11.10.11 / 11.10.7

Assessed RE: 11.9.10

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Alphitonia
Maireana villosa
Eremophila bignoniiflora
Acacia ?
Capparis canescens

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 10 **Recorder:** A Daniel **Day/Date:** Tues 29/11/16

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

GPS coordinates: Zone 55 E 0704842 N 7147920 D94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

621

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	MD
T2	7	5 - 8	S
T3		-	
S1	4	3 - 5	S
S2	0.5	0.3 - 1	VS
G		-	

Structural formation: (including height) Tall Woodland

Ecologically dominant layer: T_1

Plant species

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

Str.	Rel. dom.	Scientific Name
T_1	d	Acacia harpophylla
T_2	d	Geijera parviflora
S_1	c	Geijera parviflora
S_1	c	Eremophila mitchellii
S_2	d	Carissa ovata
S_2	a	Alectryon diversifolius

Land Zone and RE

Mapped Land Zone: 10

Field Assessed Land Zone: 9

Soils: light brown sandy clay

Mapped RE 11.10.1/11.10.8

Assessed RE: 11.9-5

ESA Rehabilitation Data Requirements

Summary: 2 50 x 10

Conclusions/notes:

Total Coarse Woody Debris	15.5 m
% Species Richness of Declared Plants	1 %

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover	80	40	70	20	30	
Total % Organic Litter	10	60	30	40	40	
Native Groundcover sp richness	2	3	1	2	2	

8.5
3
1

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 11 **Recorder:** A Daniel **Day/Date:** Tues 29/11/96

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

GPS coordinates: Zone 55 E 0703128 N 7148167 D94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured 624 823 824

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	15	13 - 16	S
T2	5	3 - 6	VS
T3		-	
S1	2	1 - 4	MD
S2	0.4	0.2 - 1	S
G		-	

Structural formation: (including height) Tall 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	Eremophila mitchellii
S1	c	Acacia harpophylla
S1	c	Eremophila mitchellii
S2	d	Carissa ovata.
G	d	Enteropogon ascuberis

Disturbed

Land Zone and RE

Mapped Land Zone: 10 **Mapped RE** 11.10.9

Field Assessed Land Zone: 9 **Assessed RE:** 11 9.5

Soils: light grey brown Sandy clay

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	18 m	
% Species Richness of Declared Plants	1 %	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover	80	20	30	20	80	
Total % Organic Litter	10	80	20	10	10	
Native Groundcover sp richness	1	3	2	1	1	

1.5
2.5

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 12 **Recorder:** A. Daniel **Day/Date:** Tues 29/11/16

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

GPS coordinates: Zone 55 E 0702821 N 7148430 D

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured 625 327

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1		10 - 12	VS
T2	8	6 - 10	MD
T3		-	
S1		-	
S2		-	
G	0.5	0 - 0.1	litter

Structural formation: (including height) Tall Open woodland

Ecologically dominant layer: T_1

Plant species

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

Str.	Rel. dom.	Scientific Name
T_1	d	Eucalyptus populnea
T_1	a	Casuarina cristata
T_2	d	Casuarina cristata
G	d	litter

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	11.10.9
Field Assessed Land Zone:	LZ 9	**Assessed RE:**	11.9.5, E
Soils:	light pink brown Sandy clay		

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	16 m	
% Species Richness of Declared Plants	0 %	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter	80	100	100	80	150	
Native Groundcover sp richness	0					

15

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 13 **Recorder:** A. Danwel **Day/Date:** Wed 30/11/16

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

GPS coordinates: Zone 55 E 0700826 N 7163607 D94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure 630/631

Median height of the EDL is to be measured 329/330

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	11	10 - 13	S
T2	7	5 - 8	VS
T3		-	
S1	0.5	0.2 - 1	VS
S2		-	
G	0.3	0 - 0.5	S

Structural formation: (including height) Tall 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 citriodora
T1	a	Eucalyptus melanophloia
T2	d	Corymbia citriodora
T2	a	Eucalyptus melanophloia
S1	c	Maytenus sp.
S1	c	Dodonaea viscosa
S1	c	Corymbia citriodora
G	d	Lomandra cylindrical
G	d	Aristida caput-medusae

MY

331 maytenus collected

Land Zone and RE

Mapped Land Zone:	3	**Mapped RE**	11.3.39/11.3.2
Field Assessed Land Zone:	10	**Assessed RE:**	11.10.1
Soils: Pale grey/yellow sandy clay			

ESA Rehabilitation Data Requirements

note: Some heterogenous understorey

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Standard Vegetation Community Assessment Proforma

Site No. 14 **Recorder:** A Daniel **Day/Date:** Wed 30/4/14

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

GPS coordinates: Zone 55 E 0699650 N 7158533 D

Patch Size		**Evidence of canopy tree recruitment**	**Y**	**N**

Vegetation structure 642

Median height of the EDL is to be measured 347 341

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	6	5 - 8	S
T2	3	2 - 5	MD
T3		-	
S1		-	
S2		-	
G	0.9	0 - 1.5	MD

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	Croton insularis
T1	c	Cupaniopsis anacardioides
T2	c	Acacia concurrens
T2	c	Notelaea decifolius
T2	c	Geijera parvi (dead)
S2	c	Acalypha eremorum
S2	c	Carissa ovata
G	d	Aristida calycina

SEVT 10 — top of Scarp only

Land Zone and RE

Mapped Land Zone:	9	**Mapped RE**	11.9.4
Field Assessed Land Zone:	10	**Assessed RE:**	11.10.8
Soils:	Rock		

ESA Rehabilitation Data Requirements

Summary:		**Conclusions/notes:**
Total Coarse Woody Debris	15 m	
% Species Richness of Declared Plants	1 %	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover	80			70	40	
Total % Organic Litter	20	30	60	10	40	
Native Groundcover sp richness	1	0	0	1	2	

Putranjavaceae
Staghorn
pandorea
notelaea longifolia

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 15 **Recorder:** A. Daniel **Day/Date:** Wed 30/9/16

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

GPS coordinates: Zone 55 E 0701350 N 7159437 D 94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured 644 355 356

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	15	13 - 16	S
T2		-	
T3		-	
S1	5	3 - 6	S
S2	0.6	0.3 - 1	VS
G	0.3	0 - 0.5	S

Structural formation: (including height) Tall 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 citriodora
S1	c	Acacia longispicata
S1	c	Acacia leiocalyx
S1	a	Callitris glaucophylla
S2	d	dodonaea sp.
S2	a	Oz-Hammus diosm
G	d	Themeda triandra
G	a	Brunella sp

357 Carex fasty

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	11.10.1 / 11.10.13
Field Assessed Land Zone:	~~8~~ 10 ✓	**Assessed RE:**	11.7.7 ? 11.10.1
Soils: grey/brown sandy loam			

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Stone fragments sandstone.
Petalostigma pubescens

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 17 **Recorder:** A. Daniel **Day/Date:** Wed 30/11/16

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

GPS coordinates: Zone 55 E 0701464 N 7166708 D94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured 364 367 368

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	16	14 - 18	S
T2		-	
T3		-	
S1	6	4 - 8	S
S2		-	
G	0.3	0 - 0.6	MD

Structural formation: (including height) Tall 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
S1	c	Croton insularis
S1	c	Geijera parviflora.
S1	a	Brachychiton rupestris
S1	a	Eremophila mitchellii
S1	a	Atalaya hemiglauca
G	d	Aristrachne uncinatum

369

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	11.10.1
Field Assessed Land Zone:	9	**Assessed RE:**	11.9.5
Soils:			

ESA Rehabilitation Data Requirements

Summary:		**Conclusions/notes:**
Total Coarse Woody Debris	18 m	
% Species Richness of Declared Plants	0 %	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover	90	80	90	85	80	
Total % Organic Litter	10	5	1	5	5	
Native Groundcover sp richness	1	1	1	1	1	

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 18 **Recorder:** A Daniel **Day/Date:** Wed 30/11/16

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

GPS coordinates: Zone 55 E 0701168 N 7164352 D

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

656 380

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 - 9	S
T3		-	
S1	1.5	1 - 2	VS
S2		-	
G		-	

Structural formation: (including height)

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
T_1	d	Eucalyptus tenuipes
T_1	a	Grey box
T_2	dc	Lysicarpus angustifolius
T_2	dc	Grey box
S_1	a	Petrostigma gubescens
S_1	d	Alphitonia excelsa
S_1	a	Jacksonia scoparia
S_1	a	Acacia longispicata
G.	MD	Aristida sp

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	11.10.1 / 11.10.13
Field Assessed Land Zone:	10	**Assessed RE:**	11.10.1
Soils:			

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 9 **Recorder:** A. Gaunt **Day/Date:** 30/4/14

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

GPS coordinates: Zone 55 E 0701853 N 7161628 D 94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

657

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	6 - 10	S
T3		-	
S1	1.5	1 - 2	VS
S2		-	
G	004	0 - 065	MP

Structural formation: (including height)

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
T_1	d	Eucalyptus tenuipes
T_1	a	Corymbia citriodora
T_2	d	Lysicarpus angustifolius
S_1		Acacia longispicata
g	a	Xanthorrhoea sp
g	a	Hakea sp
g	d	Thamnochortus sp

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	11.10.1 / 11.10.13
Field Assessed Land Zone:	10	**Assessed RE:**	11.10.1
Soils:			

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 20 **Recorder:** A. Deenik **Day/Date:** 16/3/16

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

GPS coordinates: Zone 55 E 0709329 N 7161637 D '94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured

~~392~~ 393

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	4	2 - 6	VS
T2		-	
T3		-	
S1	1.8	1.5 - 2.2	MD
S2		-	
G		-	

Structural formation: (including height)

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
T_1	~~dc~~	Corymbia (paperbark Euc)
T_1	c	Ironbark
S_1	d	Melaleuca ~~nervosa~~ nodosa
S_1	a	Hakea actites
S_2		Melaleuca thymifolia
G	a	Tremada stachyoa
G		

402
~~399~~

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	non-rem
Field Assessed Land Zone:	10	**Assessed RE:**	11.7.5a
Soils:	Yellow clay		

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

E. Panda
C. Trudy

Santos
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Standard Vegetation Community Assessment Proforma

Site No: 24 **Recorder:** A Daniel **Day/Date:** Wed 30/11/16

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

GPS coordinates: Zone 55 E 0 0 0 2 8 5 N 7 1 5 6 4 3 2 D'GY

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

668 415 (5)

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 - 8	VS
T3		-	
S1	3	2 - 5	VS
S2	0.7	0.5 - 1	VS
G	0.04	0 - 0.06	MD

Structural formation: (including height)

Tall Woodland

Ecologically dominant layer: T_1

Plant species

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

Str.	Rel. dom.	Scientific Name
T_1	d	Eucalyptus melanophloia
T_1	a	Eucalyptus crebra
T_2	d	Acacia decalvx
T_2	a	Eremophila mitchellii
S_1	a	Eremophila mitchellii
S_1	d	Callitris glaucophylla
S_2	d	Eremophila mitchellii
G	d	Thoracia triandra

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	11.10.7
Field Assessed Land Zone:	10	**Assessed RE:**	11.10.7
Soils:	Pale grey brown sandy clay		

ESA Rehabilitation Data Requirements

Summary:		**Conclusions/notes:**
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 22 **Recorder:** A Daniel **Day/Date:** Wed 30/11/16

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

GPS coordinates: Zone 55 E 0701139 N 7164615 D

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure 673 422 423

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		-	
T3		-	
S1	6	5 - 7	MD
S2	1.5	0.5 - 2	VS
G		-	

Structural formation: (including height) Tall 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 fibrosa
S1	d	Acacia longispicata
S2	d	Acacia longispicata
S2	a	Alphitonia excelsa
G	a	Dodonaea triangularis
G	d	Thaveda triandra

Land Zone and RE 424 Coarse grained sandstone evident in tree roots & graded track.

Mapped Land Zone:	3	**Mapped RE**	11.3.39 / 11.3.2
Field Assessed Land Zone:	10	**Assessed RE:**	11.10.1
Soils:			

ESA Rehabilitation Data Requirements

Summary:		**Conclusions/notes:**
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
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Standard Vegetation Community Assessment Proforma

Site No. 23 **Recorder:** **Day/Date:** Wed 30/11/16

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

GPS coordinates: Zone 55 E 0701550 N 7164288 D94

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

675 428 427

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 - 11	MD
T2	6	5 - 8	VS
T3		-	
S1	3	2 - 5	VS
S2		-	
G	0.2	0 - 0.3	MD

Structural formation: (including height) Tall Woodland

Ecologically dominant layer: T_1

Plant species

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

Str.	Rel. dom.	Scientific Name
T_1	d	Acacia shirleyi
T_2	d	Acacia shirleyi
S_1	d	Acacia shirleyi
	a	Acacia montivaga?
G	d	Aristida caput-medusae

Land Zone and RE

Mapped Land Zone: 3	**Mapped RE** 11.3.99 / 11.3.2
Field Assessed Land Zone: 10	**Assessed RE:** 11.10.3
Soils:	

ESA Rehabilitation Data Requirements

Summary:		**Conclusions/notes:**
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Maytenus cunninghamii
Grevillea robusta

Santos
XXXXXXXXXXXXXXX

Standard Vegetation Community Assessment Proforma

Site No. 24 **Recorder:** A. Daniel **Day/Date:** Wed 30/11/16

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

GPS coordinates: Zone 55 E 0702381 N 7163585 D 95

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

679 433 432

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 - 13	S
T2	7	6 - 9	VS
T3		-	
S1	3	2 - 5	VS
S2		-	
G		-	

Structural formation: (including height) Tall woodland

Ecologically dominant layer: T_1

Plant species

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

Str.	Rel. dom.	Scientific Name
T_1	d	Ironbark
T_2	d	ironbark
S_1	d	Melaleuca exceelsa
S_1	a	Petalostigma pubescens
S_1	a	Acacia cowleyi
S_2	c	Acacia cowleyi
S_2	c	Cenchrus breviflorus
G	a	Heteropogon contortus
G	a	white Spinifex

Land Zone and RE

Mapped Land Zone: 3

Field Assessed Land Zone: 10

Soils: pale sandy clay

Mapped RE 11.3.39/11.3.2

Assessed RE: 11.10.1

ESA Rehabilitation Data Requirements

Summary:		Conclusions/notes:
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Ironbark 429 430 431

Santos
XXXXXXXXXXXXXXX

Standard Vegetation Community Assessment Proforma

Site No. 25 **Recorder:** A. Daniel **Day/Date:** ~~Wed~~ 30/11/16 Thurs 1/12/16

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

GPS coordinates: Zone 55 E 0699626 N 7160684 D

Patch Size		Evidence of canopy tree recruitment	Y	N

Vegetation structure

Median height of the EDL is to be measured

435 W680684 (S) 683

Stratum	Median height	Height interval	Est. cover density (D,M,S,V)
E		-	
T1	13	11 - 15	S
T2	8	6 - 10	MD
T3		-	
S1		-	
S2		-	
G	0.3	0 - 0.4	

Structural formation: (including height) Tall 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 nubila
T2	d	Acacia
G	d	Themeda triandra

Land Zone and RE

Mapped Land Zone:	10	**Mapped RE**	11.10.1
Field Assessed Land Zone:	10	**Assessed RE:**	10
Soils:	brown sandy loam		

ESA Rehabilitation Data Requirements

Summary:		**Conclusions/notes:**
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						

Santos
XXXXXXXXXXXXXXX

Standard Vegetation Community Assessment Proforma

Site No. ..... **Recorder:** ..... **Day/Date:** .....

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

GPS coordinates: Zone 5 E 0 N D

Patch Size		Evidence of canopy tree recruitment	Y	N

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		-	
T2		-	
T3		-	
S1		-	
S2		-	
G		-	

Structural formation: (including height)

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

Land Zone and RE

Mapped Land Zone:	**Mapped RE** .....
Field Assessed Land Zone:	**Assessed RE:** .....
Soils:	

ESA Rehabilitation Data Requirements

Summary:		**Conclusions/notes:**
Total Coarse Woody Debris	m	
% Species Richness of Declared Plants	%	

	Q1	Q2	Q3	Q4	Q5	Mean
Total % Groundcover						
Total % Organic Litter						
Native Groundcover sp richness						