Boobook

Ecological Consulting

Report on Phase 1 of detailed ecological assessment of FV03-15-1,2,3 (FV87) proposed lease, camp and associated access track

Compiled by Boobook for Santos

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1. Abbreviations

Table 1: Abbreviations

Abbreviation	Description
DBH	Diameter at Breast Height
DEHP	Department of Environment and Heritage Protection
DSEWPaC	Department of Sustainability, Environment, Water, Population and Communities
GLNG	Gladstone Liquefied Natural Gas
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EH	Essential Habitat
ESA	Environmentally Sensitive Area
EVNT	Endangered, Vulnerable or Near Threatened
HVR	High Value Regrowth
MNES	Matters of National Significance
NC Act	*Nature Conservation Act 1992*
NP	National Park
RE	Regional Ecosystem
REDD	Regional Ecosystem Description Database
SF	State Forest
TAR plant	Type A Restricted Plant
TEC	Threatened Ecological Community
VM Act	Vegetation Management Act 1999
WoNS	Weeds of National Significance

2. Introduction

2.1. Purpose and Scope

Following preparation and submission of preliminary information relating to the proposed FV03-15 (formerly FV87) well lease and access track (Boobook 2013), Boobook was commissioned by Santos in August 2013 to undertake a further and more detailed investigation into the ecological values and potential constraints for the proposed FV03-15-1,2,3 well lease (the Lease) and associated camp site (the Camp) and access track (the Access Track). Collectively the proposed Lease, Camp and Access Track are referred to as the Site. This report presents the findings of Phase 1 of the detailed investigation.

The following tasks were requested of Boobook for Phase 1 of the detailed assessment relating to the Lease and Camp:

- Recording of identity, status, location and description of all endangered, vulnerable or near threatened (EVNT) flora and fauna scheduled under the *Nature Conservation Act 1992* (NC Act) and all fauna scheduled as vulnerable or endangered under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act; DSEWPaC 2013a) which are *Matters of National*

Environmental Significance (MNES) occurring within the Lease and Camp disturbance footprints and 200m buffer.

- Recording of height, diameter at breast height (DBH) and photographs, and comment on whether the plant is likely to survive translocation, for all EVNT and MNES flora occurring within the Lease and Camp disturbance footprints and 200m buffer (surveys to be sufficient for NC Act Clearing Permit).
- Recording locations of microhabitat potentially supporting MNES fauna within the Lease and Camp footprints and 30m buffer and an assessment of likely presence/absence and suitability of habitat within the 200m buffer surrounding the Lease and Camp for MNES fauna.
- An assessment and description of vegetation and regional ecosystems present within the Lease and Camp footprints and 30m buffers and determination of endangered and/or of concern regional ecosystem (RE) and Threatened Ecological Community (TEC) type and status within the 200m buffer surrounding the Lease and Camp.
- *Water Act 2000* (WC Act) definition assessment for watercourses within the 100m buffer surrounding the Lease and Camp.
- Description of any Queensland Wetland Program (DERM 2011) and/or referable wetlands within the Lease and Camp disturbance footprints and 200m buffer surrounding the Lease and Camp.
- Description of any lakes or springs within the Lease and Camp disturbance footprints and 200m buffer surrounding the Lease and Camp.
- Identification of any weeds declared under the *Land Protection (Pest and Stock Route Management) Act 2002* (LP Act) (DAFF 2013) within the Lease and Camp disturbance footprints (note point data for each individual was not required).
- An assessment of any Type A Restricted (TAR) plants, including location, species, height, DBH, photographs and comments on whether the plant is likely to survive translocation, within the Lease and Camp disturbance footprints.

The following tasks were requested of Boobook for Phase 1 of the detailed assessment concerning the Access Track:

- Recording of identity, status, location and description of all endangered, vulnerable or near threatened (EVNT) flora and fauna scheduled under the NC Act and all fauna scheduled as vulnerable or endangered under the EPBC Act which are *Matters of National Environmental Significance* (MNES) occurring within the areas of proposed clearing and 10m buffer from the edge of the existing road.
- Recording of height, diameter at breast height (DBH) and photographs, and comment on whether the plant is likely to survive translocation, for all EVNT and MNES flora occurring within areas of proposed clearing and 10m buffer from the edge of the existing road.
- Recording locations of microhabitat potentially supporting MNES fauna within the areas of proposed clearing and an assessment of likely presence/absence and suitability of habitat within the 10m buffer from the edge of the existing road.
- An assessment of regional ecosystems and Threatened Ecological Community (TEC) type and status present within the areas of proposed clearing.
- Description of any Queensland Wetland Program and/or referable wetlands within the areas of proposed clearing.
- Description of any lakes or springs within the areas of proposed clearing.
- Identification of any weeds declared under the LP Act within the areas of proposed clearing.

- An assessment of any TAR plants, including location, species, height, DBH, photographs and comments on whether the plant is likely to survive translocation, within the areas of proposed clearing.

Boobook was also requested to conduct bed level crossing (i.e. distance between banks, presence of water, capacity of the feature to support fish and photographic records) and WC Act definition assessments at each watercourse within the areas of proposed clearing and 10m buffer from road edge at the Access Road, however, due to time constraints these were not completed by Boobook during Phase 1.

Incidental fauna observations were requested to be recorded for all assessment areas associated with the Lease and Camp disturbance footprints and buffers, as well as the Access Track areas of proposed clearing and 10m buffer from road edge.

2.2. Site Location

The Site is situated within Province 24 (Carnarvon Ranges) of the Brigalow Belt South bioregion (Sattler and Williams 1999) and lies approximately 54km northeast to 68km east-northeast of Injune, south central Queensland. It is entirely within the Dawson River catchment.

Individual Infrastructure locations are summarised as follows:

- proposed FV03-15 lease: 55J 700696E 7171883N (datum GDA94) on Lot 807 on Plan PH1979;
- proposed FV03-15 camp: 55J 700587 7171622 (datum GDA94) on Lot 807 on Plan PH1979;

The Access Track is that described within Boobook (2013) which almost entirely follows an existing track commencing at the Injune - Taroom Road and traversing Belington Hut State Forest (SF) (Lot 46 on Plan FTY1813), Yebna Station (Lot 1 on AB81), Expedition (Limited Depth) National Park (NP) (Lot 27 on Plan NPW826) and Lonesome Holding.

The general location of the proposed infrastructure and access track are shown in Appendix A.

2.3. Survey Team

The project supervisor (Craig Eddie) was approved by the Commonwealth Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) in writing on the 28th of January 2011 for the purpose of undertaking ecological assessment works for the Gladstone Liquefied Natural Gas (GLNG) project. All aspects of the project including field survey and reporting were conducted under the supervision of Craig Eddie (Principal Ecologist and Project Supervisor).

The field survey described by this report was undertaken by Craig Eddie (Principal Ecologist, Boobook), Rosamund Aisthorpe (Botanist, Boobook), Scott Akins-Sellar (Ecologist, Boobook) and Jeroen Lurling (Ecologist, Boobook) between 14 and 16 August 2013 with Santos representatives.

2.4. Limitations of this Report

The Site assessment descriptions presented in this report provide a snapshot of the species recorded during the inspection but do not represent a complete inventory of the native flora, fauna and weeds present. No detailed fauna surveys as per EPBC Act guidelines (DEWHA 2010a, DEWHA 2010b, DEWHA 2010c, DSEWPaC 2011a and DSEWPaC 2011b) have been undertaken either at the Site.

Since the 2011 assessment, a fire had burnt much of the Site within Expedition (Limited Depth) NP, Belington Hut SF and Lonesome Holding. At the time of this survey, much of the ground and shrub layers

were still regenerating. In small areas where the intensity of the fire was particularly severe (e.g. areas of RE 11.10.3, 11.10.4 and 11.10.13a) canopy trees were still regenerating and in some cases were not able to be assigned to species level until fertile material becomes available.

The August 2013 survey followed a particularly dry autumn and winter hence there was a lack of ephemeral herbs. Subsequent visits would be necessary over a range of seasons to compile a more detailed inventory of species present. Despite these limitations, sufficient information was collected to assess the status, condition and composition of vegetation communities within the Site and predict likely flora and fauna values, including the potential presence of threatened species.

3. Methodology

3.1. Desktop & Literature Review

The desktop and literature review described by this report used a variety of electronic and paper-based sources to identify ecological values and potential constraints predicted to occur at the Site. Sources used to obtain information for the desktop and literature review are as follows:

- Remnant RE mapping version 6.1 (DEHP 2013a);
- High value regrowth (HVR) mapping version 2.1 (DEHP 2013b);
- Essential habitat (EH) mapping version 3.1 (DEHP 2013c);
- Wildnet database (Wildlife Online) (DEHP 2013d);
- Referable wetlands mapping (DEHP 2013e);
- Environmentally Sensitive Areas mapping (DEHP 2013f);
- EPBC Act protected matters search tool (DSEWPaC 2013b).

Point-based data searches for the Lease and Camp were conducted using a 5km buffer around the coordinate -25.55689°S, 148.99766°E which corresponds to the approximate centre point of the Lease. All of these infrastructure points are within close proximity to each other and the 5km search around the Lease co-ordinate is considered adequate to detect any potential ecological values and constraints. Point-based data searches for the Access Track were conducted using a 20km buffer around the coordinate -25.59302°S, 149.07543°E which corresponds to the approximate centre point of the track footprint.

Additional searches of the Wildnet database were conducted for Expedition (Limited Depth) NP and Belington Hut SF.

Other relevant information has been drawn from previous assessments relating to various former proposed locations of the FV87 well lease (Boobook 2011, 2012, 2013) and published literature (e.g. Santos 2012, Crossman and Reimer 1986).

3.2. Field Survey

Vegetation structure and species composition was assessed at the Lease and Camp during walking traverses of the proposed disturbance footprint. A description of vegetation was compiled at one representative assessment point within each infrastructure site (Appendix B). This assessment was consistent with the quaternary level of detail as per Neldner *et al.* (2012).

Quaternary assessments are those sites where all location, environmental (landform, substrate) and overall vegetation structure and species composition was recorded. Abundance of all dominant species in each layer was recorded. A list of additional species present at each site was also obtained (i.e. species that

were not dominant were also recorded as being present but their abundance was not rated). Species names for flora follow Bostock and Holland (2010). The location of the survey site was determined using a handheld GPS unit (Garmin GPSmap 78S). The datum for all co-ordinates referred to in this report is GDA94. When referred to within this report survey sites are identified alphanumerically using a prefix Q, e.g. Q1. At the quaternary site the following was recorded:

1. height (median and maximum/minimum) of each stratum of vegetation (i.e. ground, shrub, tree and emergent layers) and foliage projective cover (FPC) and average DBH for all woody strata;
2. dominant flora in each stratum of vegetation;
3. structural formation type codes (Neldner *et al.* 2012: Table 29);
4. RE type mapped;
5. RE type observed;
6. broad geology type;
7. landform type;
8. broad soil type;
9. connectivity/patch characteristics (i.e. whether the isolated or degree of connectivity to surrounding vegetation);
10. presence and abundance of weeds (declared and non-declared species) as well as estimated % coverage of the site;
11. presence of endangered, vulnerable or near threatened flora;
12. presence of suitable habitat for endangered, vulnerable or near threatened flora;
13. a list of all other flora encountered at the Site; and
14. disturbance types (e.g. clearing, grazing, fire history, pest animal diggings): categories as per Neldner *et al.* (2012) with some minor modification to suit local variables.

Active fauna searches were beyond the scope of this survey. However, fauna opportunistically sighted or heard at the quaternary survey site were recorded as either within, outside or flying over the assessment site, and the identification method noted.

The presence of any watercourses, wetlands or drainage features in or within the Lease and Camp footprint and 100m buffer was recorded. Where any of these features were encountered the following was recorded:

- Dominant vegetation description
- Fringing/surrounding vegetation description
- Identify presence/absence of riparian vegetation
- Width of channel/ watercourse bed
- Identify presence/absence of defined bed and banks.

Where individual trees were identified to be cleared along the Access Track these were identified to species level and any potential fauna habitat features they contained were described. Where multiple trees and shrubs were identified to be cleared the dominant trees and shrubs were identified as well as any additional fauna habitat features present within that zone. REs were identified within the clearing zones where possible and more detailed assessments of vegetation (i.e. quaternary level assessments) will be conducted in the proposed Phase 2 field assessment.

4. Results & Discussion

4.1. FV03-15-1,2,3 Lease and Camp

4.1.1. Vegetation Communities

4.1.1.1. DEHP Regional Ecosystem & Regrowth Mapping

Current regional ecosystem mapping (DEHP 2013a) indicates that the proposed disturbance footprints occupied by the Lease and Camp are mapped as remnant RE 11.10.1 (Appendix C) which is described within the Regional Ecosystem Description Database (REDD) as 'Spotted Gum *Corymbia citriodora* open forest on coarse-grained sedimentary rocks'. The *Vegetation Management Act 1999* (VM Act) and DEHP biodiversity status of this RE is listed within Table 2.

Table 2. Regional ecosystems (REs) mapped at the Lease and Camp.

Key: VM Act = *Vegetation Management Act 1999*; DEHP = Department of Environment and Heritage Protection.

RE	RE DESCRIPTION[1]	VM Act status	DEHP status
11.10.1	Spotted Gum *Corymbia citriodora* open forest on coarse-grained sedimentary rocks	Least Concern	No Concern at Present

[1] DEHP 2013g

4.1.1.2. Regional Ecosystems Observed

Descriptions of vegetation present at each infrastructure site are described in Table 3 below.

Table 3. Regional ecosystems (REs) observed at the Lease and Camp.

Site	**Location**	**Vegetation Description**			**Observed RE**
Q1 (FV03-15 lease)	55J 700696E 7171883N	*Eucalyptus crebra* woodland; low tree layer dominated by *E. crebra* and *Acacia leiocalyx*; shrub layer dominated by *A. leiocalyx* and *E. crebra* saplings; grassy ground layer dominated by native perennial grasses			11.10.1
Stratum	**Median height (m)**	**% foliage cover**	**Stems/ha**	**DBH (cm)**	
T1	20	15	225	30	
T2	4	12	150	10	
S1	0.8	4	100	5	
Site	**Location**	**Vegetation Description**			
Q2 (camp)	55J 700587E 7171622N	Eucalyptus crebra open woodland; shrubby midlayer dominated by *Acacia leiocalyx*; grassy ground layer dominated by *Eremochloa bimaculata*			11.10.1
Stratum	**Median height (m)**	**% foliage cover**	**Stems/ha**	**DBH (cm)**	
T1	18	10	200	25	

T2	8	2	100	10	
S1	6	M	2000	5	

The Lease and Camp are both vegetated by remnant Narrow-leaved Ironbark *Eucalyptus crebra* woodland to open woodland with a very sparse to moderately dense understory dominated by Early-flowering Black Wattle *Acacia leiocalyx* (Appendix D). The RE observed was consistent with the mapped RE at the two sites, this being RE 11.10.1. Appendix E contains photographs for the quaternary survey sites.

4.1.1.3. Non-remnant Vegetation and/or Regrowth Observed

No non-remnant or regrowth vegetation occurs at the Lease and Camp. No High Value Regrowth (HVR) is mapped for the Lease and Camp (DEHP 2013b).

4.1.1.4. Threatened Ecological Communities

A search of the EPBC Protected Matters database (DSEWPaC 2013b) listed two Threatened Ecological Communities (TECs) that could potentially occur at the Lease and Camp these being:

- Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions;
- Weeping Myall Woodlands.

Neither of these TECs occurs at the Lease and/or Camp nor occurs within the 200m buffer surrounding the Lease and Camp.

Two other TECs known to occur within 5km of the Lease and Camp (Boobook unpublished data) include 'Brigalow (*Acacia harpophylla* dominant and sub-dominant)' and 'Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions', however, these were not listed in the search results of the EPBC Protected Matters database (DSEWPaC 2013b).

4.1.2. Flora

4.1.2.1. Least Concern Flora

Least concern flora detected at the Lease and Camp footprints and 30m buffer is listed within Appendix F. Additional species were identified and additional species are expected to be recorded with further field survey.

4.1.2.2. EVNT Flora

Table 4 lists endangered, vulnerable or near threatened (EVNT) flora which could potentially occur at the Lease and Camp based on the desktop assessment (5km search). No EVNT flora was detected within the Lease and Camp footprints or within the 200m buffer. No Essential Habitat for EVNT flora is present at or near the Lease and Camp (DEHP 2013c).

Table 4. Summary of likelihood of occurrence of EVNT flora at the proposed Lease and Camp site.

KEY: EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999*; NC Act = *Nature Conservation Act 1992*. **Record Source**: 1 = EPBC search; 2 = Wildlife on-line (DEHP database); 3 = Boobook (2012); 4 = species predicted to or known to occur in Fairview Gas Field. **Status**: E = endangered; V = vulnerable; NT = near threatened; LC = least concern.

FAMILY	SPECIES NAME	COMMON NAME	EPBC ACT STATUS	NC ACT STATUS	RECORD SOURCE	LIKELIHOOD OF PRESENCE AT PROPOSED LEASE SITE
Apocynaceae	*Tylophora linearis*	Slender Tylophora	E	E	1	Unlikely: well outside known Queensland location (AVH 2013)
Campanulaceae	*Wahlenbergia islensis*	Cliff Bluebell	-	NT	2, 3	Absent: suitable habitat (eg. Santos 2012) is not present
Celastraceae	*Apatophyllum teretifolium*	Sandstone Prickle-bush	-	NT	4	Absent: suitable habitat (eg. Santos 2012) is not present
Ericaceae	*Leucopogon grandiflorus*	Whorl-leaved Heath	-	NT	4	Absent: suitable habitat (eg. Santos 2012) is not present
Mimosaceae	*Acacia calantha*	Cracow Wattle	-	NT	4	Absent: suitable habitat (eg. Santos 2012) is not present
Mimosaceae	*Acacia spania*	Western Rosewood	-	NT	4	Absent: suitable habitat (eg. Santos 2012) is not present
Myrtaceae	*Eucalyptus virens*	Shiny-leaved Ironbark	V	V	4	Absent: suitable habitat (eg. Santos 2012) is not present
Myrtaceae	*Melaleuca irbyana*	Swamp Paperbark	-	E	4	Absent: suitable habitat (eg. Santos 2012) is not present
Surianaceae	*Cadellia pentastylis*	Ooline	V	V	1	Absent: suitable habitat (eg. Santos 2012) is not present

4.1.2.3. Other Significant Flora

No regionally or locally significant or TAR flora occurs within the Lease and Camp disturbance footprints or 30m buffer.

4.1.2.4. Pest Flora

Four species of non-native flora were recorded within the Lease and Camp disturbance footprints and 30m buffer (Appendix D, F). Two species of declared Class 2 weed scheduled under the LP Act and Weeds of National Significance (WoNS) were recorded, these being Common Pest Pear (*Opuntia stricta*) and Velvety Tree Pear (*O. tomentosa*). Velvety Tree Pear was recorded at both sites, while Common Pest Pear was recorded only at the Camp. Both species were in very low abundance.

4.1.3. Fauna

4.1.3.1. Fauna Observations

Native vertebrate fauna were recorded incidentally during the quaternary assessment at the Lease and Camp and the 200m buffer around the Lease and Camp. These are listed with their NC Act and EPBC Act status in Appendix G. Intensive fauna searches were not part of the scope of works and many additional species are expected to occur within and surrounding the disturbance footprints.

4.1.3.2. MNES and EVNT fauna

The combined results of database searches and analysis of species distributions indicates that at least 29 species of MNES fauna may potentially occur at the Lease and Camp footprint. The likelihood of occurrence and potential habitat utilisation by these species is described further within Table 5.

Table 5. Likelihood of occurrence and potential habitat utilisation by MNES and EVNT fauna at the Lease and Camp.

Key: NCA = *Nature Conservation Act 1992* (Qld); EPBC = *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth). **Record Source**: 1 = EPBC search; 2 = Wildlife on-line (DEHP database); 3 = Boobook unpublished fauna data for Fairview gas field; 4 = Crossman & Reimer (1986); 5 = species predicted or known to occur in broader study area; 6 = this survey. **Status**: E = endangered; LC = least concern; NT = near threatened; PE = presumed extinct; SLC = special least concern; V = vulnerable.

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
Amphibians	*Cyclorana verrucosa*	Rough Collared-frog	not listed	NT	5	Unlikely to be present - within species known range (Robinson 1993) but potentially suitable foraging and breeding habitat (Tyler and Knight 2009) is absent from the Lease and Camp footprints and associated buffers.
Birds	*Accipiter novaehollandiae*	Grey Goshawk	not listed	NT	5	Potentially present – within species known range (Birdlife Australia 2013) and potential foraging habitat is present within all parts of the Lease and Camp footprints and associated buffers. This species could potentially roost or nest within suitable trees on any part of the Lease and Camp.
	Calyptorhynchus lathami	Glossy Black-Cockatoo	not listed	V	2, 3	Potentially present – within species known range (Birdlife Australia 2013) and known to occur at Lonesome Holding (Boobook unpubl. data) and may overfly the Site but the Lease and Camp footprints and associated buffers do not support food plants or suitable nesting hollows (Higgins 1999) for this species.
	Ephippiorhynchus asiaticus	Black-necked Stork	not listed	NT	5	Unlikely to be present – within species known range (Birdlife Australia 2013) but no suitable wetland habitat is present within any part of the Lease and Camp footprints and associated buffers. May overfly the Site.
	Erythrotriorchis radiata	Red Goshawk	V	E	1	Potentially present – within species known range (Birdlife Australia 2013) and potential foraging habitat is present within all parts of the Lease and Camp footprints and associated buffers. This species could potentially roost or nest witihin suitable trees on any part of the Lease and Camp.
	Geophaps scripta scripta	Squatter Pigeon (southern)	V	V	1, 2, 3, 4, 6	Confirmed – observed at the Camp and likely to forage throughout the Lease and Camp footprints. Potential breeding habitat is present throughout the Lease and Camp footprints and associated buffers.
	Grantiella picta	Painted Honeyeater	not listed	V	5	Unlikely to be present – within species known range (Birdlife Australia 2013) but potentially suitable food plants (mistletoes,

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
						family Loranthaceae) (Higgins et. al. 2001) are absent within the Lease and Camp footprints and associated buffers. May overfly the Site.
	Lophoictinia isura	Square-tailed Kite	not listed	NT	5	Potentially present – within species known range (Birdlife Australia 2013) and potential foraging habitat is present is present within all parts of the Lease and Camp and associated buffers.
	Melithreptus gularis	Black-chinned Honeyeater	not listed	NT	5	Potentially present – within species known range (Birdlife Australia 2013) and potential foraging habitat is present within all parts of the Lease and Camp footprints and associated buffers. This species could potentially roost or nest witihin suitable trees on any part of the Lease and Camp.
	Neochmia ruficauda ruficauda	Star Finch (eastern, southern)	E	E	1	Unlikely to be present – within species known historical range (Birdlife Australia 2013) but the subspecies is possibly extinct (Garnett *et al.* 2011).
	Nettapus coromandelianus	Cotton Pygmy-goose	not listed	NT	5	Unlikely to be present – within species known range (Birdlife Australia 2013) but no suitable wetland habitat is present within any part of the Lease and Camp footprints and associated buffers. May overfly the Site.
	Ninox strenua	Powerful Owl	not listed	V	5	Potentially present – within species known range (Birdlife Australia 2013) and potential foraging habitat is present within all parts of the Lease and Camp footprints and associated buffers. Unlikely to roost within the Lease and Camp footprints.
	Poephila cincta cincta	Black-throated Finch	V	V	2	Unlikely to be present – within species known historical range (Birdlife Australia 2013) but the Lease and Camp are outside the extant range of the subspecies (Garnett *et al.* 2011).
	Rostratula australis	Australian Painted Snipe	E	V	1, 5	Unlikely to be present – within species known range (Birdlife Australia 2013) but no suitable wetland habitat is present within any part of the Lease and Camp footprints and associated buffers. May overfly the Site.
	Turnix melanogaster	Black-breasted Button-quail	V	V	5	Unlikely to be present – on edge of species known range (Birdlife Australia 2013) but no semi-evergreen vine thicket or other potentially suitable foraging or nesting habitat is present within any part of the Lease and Camp footprints and associated buffers.
Insects	*Jalmenus eubulus*	Pale Imperial Hairstreak	not listed	V	5	Potentially present – within species known range (Braby 2000) and potentially suitable food plants (e.g. *Acacia* spp.) (Common and Waterhouse 1981, Valentine and Johnson 2012) are present within the Lease and Camp footprints and associated buffers.
Mammals	*Dasyurus hallucatus*	Northern Quoll	E	LC	1	Potentially present – within species known range (Oakwood 2008) and potential foraging habitat is present within any part of the Lease and Camp footprints and associated buffers. Potential shelter sites (e.g. logs with hollows) are in very low

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
						abundance within the Lease and Camp footprints.
	Chalinolobus dwyeri	Large-eared Pied Bat	V	V	1, 2, 4	Likely to be present – within species known range (Churchill 2008) and potentially suitable foraging habitat is present within all parts of the Lease and Camp footprints and associated buffers. Suitable roosting habitat i.e. caves, rock crevices and Fairy Martin nests (Hoye and Schultz 2008) were not recorded within the Lease and Camp footprints and associated buffers.
	Chalinolobus picatus	Little Pied Bat	not listed	NT	5	Likely to be present – within species known range (Churchill 2008) and potentially suitable foraging and roosting sites (e.g. hollow trees) are present within the Lease and Camp footprints and associated buffers.
	Nyctophilus corbeni	Eastern Long-eared Bat	V	V	1	Potentially present – within species known range (Churchill 2008) and potentially suitable foraging and roosting sites (e.g. hollow trees) are present within the Lease and Camp footprints and associated buffers.
	Phascolarctos cinereus	Koala	V	SLC	1	Potentially present – within species known range (Martin *et al.* 2008) and potentially suitable foraging habitat containing known food trees (e.g. *Eucalyptus crebra*) is present within the Lease and Camp footprints and associated buffers.
Reptiles	*Acanthophis antarcticus*	Common Death Adder	not listed	NT	5	Potentially present – within species known range (Wilson 2005) and potentially suitable habitat (e.g. low shrubs, logs, dense leaflitter) (QMDC 2008) is present within the Lease and Camp footprints and associated buffers.
	Delma torquata	Collared Delma	V	V	1	Potentially present – within species known/predicted range (DSEWPaC 2013c) and potentially suitable habitat (e.g. logs, dense leaflitter) (QMDC 2008) is present within the Lease and Camp footprints and associated buffers.
	Denisonia maculata	Ornamental Snake	V	V	1	Unlikely to be present – within species known range (Wilson 2005) and but habitat within the Lease and Camp footprints and associated buffers does not represent a known foraging habitat for this species.
	Egernia rugosa	Yakka Skink	V	V	1, 2	Potentially present – within species known range (Wilson 2005) and potentially suitable habitat with logs and burrowing substrate (QMDC 2008) is present within the Lease and Camp footprints and associated buffers.
	Furina dunmalli	Dunmall's snake	V	V	1, 4	Potentially present – within species known/predicted range (DSEWPaC 2013c) and potentially suitable habitat (e.g. logs, fallen bark sheets, dense leaflitter) (QMDC 2008) is present within the Lease and Camp footprints and associated buffers.
	Paradelma orientalis	Brigalow Scaly-foot	not listed	V	5	Potentially present – within species known/predicted range (DSEWPaC 2013c) and potentially suitable habitat

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
						(e.g. logs, fallen bark sheets, dense leaflitter) (QMDC 2008) is present within the Lease and Camp footprints and associated buffers.
	Rheodytes leukops	Fitzroy Turtle	V	V	1, 2	Unlikely to be present – within species known range (Birdlife Australia 2013) but no suitable wetland habitat is present.
	Strophurus taenicauda	Golden-tailed Gecko	not listed	NT	2	Potentially present – within species known range (Wilson 2005). Suitable sheltering and foraging habitat (hollow trees, loose bark on trees and larger shrubs) (QMDC 2008) is present within the Lease and Camp footprints and associated buffers.

One species of MNES and EVNT fauna was recorded during the on-ground survey within the Lease and Camp assessment. A pair of Squatter Pigeons *Geophaps scripta scripta* was observed foraging within the Camp footprint on 15 August 2013. This species is scheduled as vulnerable under the EPBC and NC Act.

The proposed activities within the Lease and Camp footprints are likely to have minimal impact on EPBC listed threatened fauna. Any potential impacts are likely to be short term and recoverable. The main impacts are likely to be disturbance to potential foraging and nesting habitat for Squatter Pigeon, loss of potential roost sites (i.e. hollow-bearing trees) for Eastern Long-eared Bat, loss of potential food trees for Koala (i.e. *Eucalyptus crebra*) and loss of potential shelter sites (i.e. logs, fallen bark and leaflitter) for Dunmall's Snake, Yakka Skink and Collared Delma. All of these shelter and foraging resources are abundant in the remnant vegetation surrounding the Lease and Camp. Refer to section 4.1.3.5 for further detail relating to potential fauna habitat of EVNT fauna at the Lease and Camp.

4.1.3.3. Migratory Fauna

Several species scheduled as migratory fauna under the EPBC Act are likely to overfly the Lease and Camp, these being White-throated Needletail, Fork-tailed Swift and Rainbow Bee-eater. No suitable habitat exists for migratory water birds. The proposed activities within the Lease and Camp footprints are likely to have minimal impact on EPBC listed migratory fauna. Any potential impacts are likely to be short term and recoverable.

4.1.3.4. Other Significant Fauna

No regionally or locally significant fauna were detected within the Lease and Camp footprint and 200m buffer, however, no intensive fauna surveys have been undertaken.

4.1.3.5. Fauna Habitat Features

Fauna habitat features present at the Lease and Camp include logs, hollow-bearing trees, dead trees containing loose bark, fallen bark, aerial and terrestrial termite mounds and widely scattered small rocks. Potential suitability of habitat features for MNES and EVNT fauna is provided in Table 5.

Forty-four hollow-bearing or other trees containing potential fauna breeding or shelter places (e.g. dead trees with loose bark) recorded within the Lease footprint and 30m buffer are described in Table 6 and their locations are shown in Appendix H. Note that only two of the 44 hollow-bearing trees identified are living trees. Not all of these habitat trees are expected to be directly impacted by the proposed activities as a number occur within the buffer surrounding the Lease and Camp.

Table 6. Habitat trees recorded within the Lease disturbance footprint and 30m buffer.

Waypoint Code	Location	Species	Alive / Dead	DBH (cm)	Height (m)	Habitat features
HT1	55J 700780 7171912	Ironbark (*Eucalyptus* sp.)	Dead	50	12	4 small hollows, 90% loose bark
HT2	55J 700761 7171913	Ironbark (*Eucalyptus* sp.)	Dead	45	10	5 small hollows, 90% loose bark
HT3	55J 700744 7171896	Ironbark (*Eucalyptus* sp.)	Dead	40	7	1 medium hollow, 95% loose bark, contains aerial termite mound (no excavations) c.6m off ground
HT4	55J 700733 7171896	Ironbark (*Eucalyptus* sp.)	Dead	40	12	80% loose bark
HT5	55J 700712 7171892	Ironbark (*Eucalyptus* sp.)	Dead	25	10	3 small hollows, 90% loose bark
HT6	55J 700707 7171890	Ironbark (*Eucalyptus* sp.)	Dead	45	20	5 small hollows, 80% loose bark
HT7	55J 700703 7171884	Ironbark (*Eucalyptus* sp.)	Dead	40	19	6 small hollows, 80% loose bark
HT8	55J 700700 7171880	Ironbark (*Eucalyptus* sp.)	Dead	30	18	2 small hollows, 90% loose bark
HT9	55J 700697 7171869	Ironbark (*Eucalyptus* sp.)	Dead	50	18	1 medium hollow, 2 small hollows, 70% loose bark
HT10	55J 700734 7171859	Ironbark (*Eucalyptus* sp.)	Dead	40	6	1 medium hollow, 50% loose bark, fallen bark at base of tree
HT11	55J 700733 7171858	Ironbark (*Eucalyptus* sp.)	Dead	35	14	6 small hollows, 80% loose bark
HT12	55J 700728 7171855	Ironbark (*Eucalyptus* sp.)	Dead	50	16	6 medium hollows, 2 small hollows, 80% loose bark
HT13	55J 700731 7171850	Ironbark (*Eucalyptus* sp.)	Dead	20	14	3 small hollows, 90% loose bark
HT14	55J 700746 7171848	Ironbark (*Eucalyptus* sp.)	Dead	40	16	4 medium hollows, 3 small hollows, 95% loose bark
HT15	55J 700761 7171862	Ironbark (*Eucalyptus* sp.)	Dead	50	14	1 medium hollow, 6 small hollows, 90% loose bark
HT16	55J 700766 7171879	Ironbark (*Eucalyptus* sp.)	Dead	40	14	4 small hollows, 30% loose bark
HT17	55J 700767 7171881	Ironbark (*Eucalyptus* sp.)	Dead	30	16	1 medium hollow, 4 small hollows, 90% loose bark
HT18	55J 700774 7171887	Ironbark (*Eucalyptus* sp.)	Dead	20	14	5 small hollows, 90% loose bark
HT19	55J 700781 7171888	Ironbark (*Eucalyptus* sp.)	Dead	40	12	3 medium hollows, 2 small hollows, 90% loose bark
HT20	55J 700714 7171822	Ironbark (*Eucalyptus* sp.)	Dead	40	14	3 medium hollows, 2 small hollows, 90% loose bark
HT21	55J 700711 7171823	Ironbark (*Eucalyptus* sp.)	Dead	60	25	1 medium hollow, 4 small hollows, 25% loose bark
HT22	55J 700690 7171789	Ironbark (*Eucalyptus* sp.)	Alive	60	8	1 medium hollow, 5% loose bark
HT23	55J 700696 7171782	Ironbark (*Eucalyptus* sp.)	Dead	50	20	2 small hollows, 50% loose bark
HT24	55J 700693 7171777	Ironbark (*Eucalyptus* sp.)	Dead	60	20	2 small hollows, 70% loose bark
HT25	55J 700687 7171782	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	60	20	3 small hollows, <5% loose bark, aerial termite mound 7m off ground. No visible excavations
HT26	55J 700674 7171796	Ironbark (*Eucalyptus* sp.)	Dead	60	6	2 medium, hollows, 95% loose bark
HT27	55J 700651 7171806	Ironbark (*Eucalyptus* sp.)	Dead	20	8	50% loose bark
HT28	55J 700649 7171817	Ironbark (*Eucalyptus* sp.)	Dead	50	10	30% loose bark, twin trunks
HT29	55J 700653	Ironbark	Dead	60	12	2 medium hollows, 2 small hollows,

Waypoint Code	Location	Species	Alive / Dead	DBH (cm)	Height (m)	Habitat features
	7171839	(*Eucalyptus* sp.)				95% loose bark
HT30	55J 700660 7171844	Ironbark (*Eucalyptus* sp.)	Dead	70	18	1 small hollow, 60% loose bark
HT31	55J 700675 7171845	Ironbark (*Eucalyptus* sp.)	Dead	40	10	3 small hollows, 40% loose bark
HT32	55J 700673 7171838	Ironbark (*Eucalyptus* sp.)	Dead	45	6	1 medium hollow, 80% loose bark
HT33	55J 700675 7171857	Ironbark (*Eucalyptus* sp.)	Dead	50	16	80% loose bark
HT34	55J 700661 7171871	Ironbark (*Eucalyptus* sp.)	Dead	20	10	5% loose bark
HT35	55J 700657 7171892	Ironbark (*Eucalyptus* sp.)	Dead	15, 15	11, 7	Two dead trees side by side, both 85% loose bark
HT36	55J 700677 7171886	Ironbark (*Eucalyptus* sp.)	Dead	15	10	90% loose bark
HT37	55J 700695 7171913	Ironbark (*Eucalyptus* sp.)	Dead	60	16	80% loose bark
HT38	55J 700691 7171902	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	50	20	1 small hollow, 5% loose bark
HT39	55J 700686 7171937	Ironbark (*Eucalyptus* sp.)	Dead	65	14	1 small hollow, 80% loose bark
HT40	55J 700645 7171912	Ironbark (*Eucalyptus* sp.)	Dead	50	8	1 small hollow, 60% loose bark
HT41	55J 700633 7171917	Ironbark (*Eucalyptus* sp.)	Dead	20	12	40% loose bark
HT42	55J 700649 7171927	Ironbark (*Eucalyptus* sp.)	Dead	40	14	2 small hollows, 50% loose bark
HT43	55J 700646 7171933	Ironbark (*Eucalyptus* sp.)	Dead	30	14	90% loose bark
HT44	55J 700665 7171938	Ironbark (*Eucalyptus* sp.)	Dead	20	14	90% loose bark. 3 other dead trees with loose bark and nil hollows within 5m radius

Other fauna habitat features recorded within the Lease footprint and 30m buffer are described in Table 7 and their locations are shown in Appendix H. Note that the quaternary site assessment sheet (Appendix D) shows that additional logs are present throughout the Lease footprint, however, only the largest logs containing hollows are described within Table 7. Not all these habitat logs are expected to be directly impacted as a number occur within the buffer area surrounding the Lease footprint.

Table 7. Description of other fauna habitat features recorded within the Lease disturbance footprint and 30m buffer.

Waypoint Code	Location	Description	Comments
HF1	55J 700717 7171898	Nest	Grey-crowned Babbler (*Pomatostomus temporalis*) nest 4.5m above ground in *Acacia leiocalyx* tree. No activity observed.
HF2	55J 700659 7171812	Burrow	Unidentified burrow, 5cm diameter, in terrestrial termite mound at end of small log. No recent signs of activity observed
HL1	55J 700696 7171793	Log	Log 20m long x 60cm DBH. 1 large hollow. 75% loose bark
HL2	55J 700682 7171776	Log	Log 10m long x 60cm DBH. 1 large hollow, 2 medium hollows, 2 small hollows. Fallen bark around base
TM1	55J 700694 7171866	Termite mound	Terrestrial termite mound c.0.5m high x 1m diameter, no excavations
TM2	55J 700690 7171794	Termite mound	Terrestrial termite mound c.0.5m high x 1m diameter, no excavations
TM3	55J 700744 7171896	Termite mound	Aerial termite mound (no excavations) c.6m off ground in ironbark (*Eucalyptus* sp.)
TM4	55J 700687 7171782	Termite mound	Aerial termite mound 7m off ground in Narrow-leaved Ironbark (*Eucalyptus crebra*). No visible excavations.

Thirty-three hollow-bearing or other trees containing potential fauna breeding or shelter places (e.g. dead trees with loose bark) recorded within the Camp footprint and 30m buffer are described in Table 8 and their locations are shown in Appendix I. Not all these habitat trees are expected to be directly impacted as a number occur within the buffer area surrounding the Camp footprint.

Table 8. Habitat trees recorded within the Camp disturbance footprint and 30m buffer.

Waypoint Code	Location (Easting / Northing)	Species	Alive/ dead	DBH (cm)	Height (m)	Habitat features
HT1	55J 700628 7171635	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	25	15	1 small hollow
HT2	55J 700621 7171630	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	25	12	Dead tree with 1 small hollow, 95% of trunk has loose bark
HT3	55J 700619 7171646	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	20	3.5	1 medium hollow, 100% of trunk has loose bark
HT4	55J 700612 7171647	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	20, 30	14	Multi-stemmed tree with 2 small hollows and 8% loose bark
HT5	55J 700601 7171664	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	25	16	1 small hollow
HT6	55J 700630 7171622	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	20, 20	13	Multi-stemmed tree with 4 small hollows and 40% loose bark
HT7	55J 700625 7171619	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	17	3 small hollows and 80% loose bark
HT8	55J 700632 7171617	Narrow-leaved Ironbark (*Eucalyptus* sp.)	Dead	25	15	1 small hollow and 10% loose bark
HT9	55J 700610 7171612	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	35	19	1 medium hollow
HT10	55J 700604 7171607	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	30	19	1 medium hollow, 1 small hollow and 5% loose bark
HT11	55J 700605 7171582	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	40	4.5	1 medium hollow and 80% loose bark
HT12	55J 700592 7171576	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	15	2 medium hollows and 10% loose bark
HT13	55J 700581 7171588	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	15	65% loose bark
HT14	55J 700591 7171595	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	15	10	1 small hollow

Waypoint Code	Location (Easting / Northing)	Species	Alive/ dead	DBH (cm)	Height (m)	Habitat features
HT15	55J 700591 7171592	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	20	13	2 small hollows, 2 medium hollows and 85% loose bark
HT16	55J 700582 7171611	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	3.5	1 small hollow and 95% loose bark
HT17	55J 700587 7171624	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	25	11	Dead tree with 60% loose bark
HT18	55J 700594 7171630	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	14	Dead tree with 30% loose bark
HT19	55J 700594 7171622	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	13	Dead tree with 1 small hollow and 20% loose bark
HT20	55J 700597 7171628	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	15	Dead tree with 3 small hollows and 40% loose bark
HT21	55J 700606 7171624	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	30	15	1 small hollow
HT22	55J 700573 7171659	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	35	13	4 small hollows and 10% loose bark
HT23	55J 700573 7171648	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	40	13	3 small hollows
HT24	55J 700565 7171649	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	25	12	1 small hollow and 40% loose bark
HT25	55J 700560 7171649	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	15	8	Dead tree with 1 medium hollow
HT26	55J 700559 7171635	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	25	13	Dead tree with 2 small hollows and 60% loose bark, Black-tailed Monitor (*Varanus tristis*) seen basking on trunk
HT27	55J 700563 7171639	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	35	18	2 small hollows
HT28	55J 700560 7171624	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	13	3 small hollows and 50% loose bark
HT29	55J 700573 7171617	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Alive	25	14	1 small hollow
HT30	55J 700550 7171609	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	18	4.5	1 medium hollow
HT31	55J 700547	Narrow-leaved	Alive	35	14	1 small hollow

Waypoint Code	Location (Easting / Northing)	Species	Alive/ dead	DBH (cm)	Height (m)	Habitat features
	7171614	Ironbark (*Eucalyptus crebra*)				
HT32	55J 700546 7171602	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	14	2 small hollows
HT33	55J 700559 7171594	Narrow-leaved Ironbark (*Eucalyptus crebra*)	Dead	30	12	2 small hollows and 5% loose bark

Other fauna habitat features recorded within the Camp footprint and 30m buffer are described in Table 9 and their locations are shown in Appendix I. Note that the quaternary site assessment sheet (Appendix D) shows that additional logs are present throughout the Camp footprint, however, only the largest logs containing hollows are described within Table 9. Not all these habitat features are expected to be directly impacted upon as a number occur within the buffer area surrounding the Lease. Note that one active animal breeding place was recorded within the buffer zone, this being the nest of a Grey-crowned Babbler (*Pomatostomus temporalis*).

Table 9. Description of other fauna habitat features recorded within the Lease disturbance footprint and 30m buffer.

Waypoint Code	Location	Description	Comments
NEST1	55J 700618 7171633	Nest	Active Grey-crowned Babbler (*Pomatostomus temporalis*) nest 4m above ground in fork of Narrow-leaved Ironbark (*Eucalyptus crebra*) tree. Domed stick nest, 30 x 20 x 20cm.
TM1	55J 700606 7171624	Termite mound	Aerial termite mound 8m above ground in Narrow-leaved Ironbark (*Eucalyptus crebra*) tree HTA01, dimensions 30 x 30 x 25 cm.
HL1	55J 700617 7171638	Log	Narrow-leaved Ironbark (*Eucalyptus crebra*) hollow log, 12m long, DBH 25cm, medium sized hollow, 5% loose bark.

4.1.3.6. Pest Fauna

Evidence (scats) of one species of pest fauna was recorded within the Lease and Camp footprint and 200m buffer, this being European Rabbit (*Oryctolagus capensis*) which is scheduled as a Class 2 pest under the LP Act. Other pest fauna expected to occur within this area include Cane Toad (*Rhinella marina*), House Mouse (*Mus musculus*), Dingo (*Canis lupus dingo*), Red Fox (*Vulpes vulpes*), Brown Hare (*Lepus capensis*), Pig (*Sus scrofa*) and Cat (*Felis catus*).

4.1.4. Wetlands

4.1.4.1. Referable Wetlands

No referable wetlands are mapped within the Lease and Camp footprint and 200m buffer (DEHP 2013e; Appendix J).

4.1.4.2. Watercourses and Drainage Features

Five drainage features were detected within the 100m Lease and Camp buffer. Despite the presence of definable banks and beds, they are considered to be drainage features due to a lack of riparian vegetation (Water Act 2000). Additionally, they meet the definition of a drainage feature according to the Act because they are likely to be only capable of flowing during and immediately after rainfall, for a short period and do

not have enough continual flow to maintain a riparian ecosystem. These are listed in Table 11 and the locations of the assessment sites are shown in Appendix K. Representative photographs of each drainage feature are shown in Appendix L. No other drainage features or watercourses as defined by the Act were detected in or within the Lease and Camp footprint and 100m buffer.

Table 11. Description of drainage features occurring within 100m Lease and Camp buffer.

Waypoint	Location	Description
W1	55J 700801E 7171957N	Drainage feature dominated by *Arundinella nepalensis* in channel. Fringed by *Eucalyptus melanophloia* and *E. crebra* woodland; midlayer composed of canopy recruits, *Acacia leiocalyx*, *A. excelsa* and *Atalaya hemiglauca*; grassy ground layer dominated by *Dichanthium sericeum* and *Aristida* sp. No apparent vegetation change associated with watercourse. Channel 8m wide; water absent; defined bed and banks present.
W2	55J 700509E 7171873N	Drainage feature dominated by *Arundinella nepalensis* in channel. Fringed by *Acacia shirleyi* and *Eucalyptus crebra* woodland; midlayer composed of canopy recruits (regenerating after fire); grassy ground layer dominated by *A. nepalensis*. No apparent vegetation change associated with watercourse. Channel 1.5m wide; water absent; defined bed and banks present.
W3	55J 700416E 7171618N	Drainage feature dominated by *Arundinella nepalensis* and *Eulalia aurea*. Fringed by *Eucalyptus crebra* woodland; midlayer dominated by *Acacia leiocalyx*; grassy ground layer dominated by *A. nepalensis*. No apparent vegetation change associated with watercourse. Channel 1m wide; water absent; bed and banks poorly defined.
W4	55J 700687E 7171515N	Drainage feature dominated by *Eulalia aurea*. Fringed by *Eucalyptus crebra*; midlayer dominated by *Acacia leiocalyx*; grassy ground layer dominated by *E. aurea*, *Aristida* spp. and *Eragrostis* sp. No apparent vegetation change associated with watercourse. Channel 0.5-4m wide (channel widens due to erosion); water absent; bed and banks poorly defined until erosion begins downstream.
W5	55J 700804E 7171766N	Drainage feature dominated by *Arundinella nepalensis* and *Eulalia aurea*. Fringed by *Eucalyptus crebra*; midlayer dominated by canopy recruits and *Acacia leiocalyx*; grassy ground layer dominated by *A. nepalensis* and *E. aurea*. No apparent vegetation change associated with watercourse. Channel 1m wide; water absent; bed and banks slightly defined.

4.1.4.3. Other Wetlands

No wetlands of international, national or regional significance occur within the Lease and Camp footprint and 200m buffer. Likewise, no wetlands as defined by the Queensland Wetland Program (DERM 2011) were detected in or within the Lease and Camp footprint and 100m buffer.

4.2. FV03-15-1,2,3 Access Track

4.2.1. Vegetation Communities

4.2.1.1. DEHP Regional Ecosystems Mapped and Observed

Table 12 summarises the DEHP mapped and observed REs within each area of proposed clearing. Note that no quaternary vegetation assessments have been undertaken within representative REs along the Access Track.

Table 12. Summary of locations of areas of proposed clearing along the access track with mapped and observed REs.

Note: Areas within the Expedition (Limited Depth) National Park are shaded in green.

Santos Waypoint Code	Easting / Northing (Zone 55J; Datum GDA94)	Lot / Plan	DEHP Mapped RE	Observed RE	Proposed Santos Disturbance	Comments
#14	720120 7157283	46FTY1813	11.3.2/ 11.3.25 (60/40)	Non-remnant	Install 2 loads of ballast and cap 80mm with gravel	No clearing required
#15	719968 7158053	46FTY1813	Non-remnant	Non-remnant	Install 2 pipes and cover 300mm with gravel to allow suitable approach	No clearing required
#16	719755 7158590	46FTY1813	Non-remnant	Non-remnant	Install 2 loads of ballast in floodway	No clearing required
#17	719733 7159262	46FTY1813	Non-remnant	Non-remnant	Install 1 load of ballast in floodway	No clearing required
#18	719234 7159135	1AB81	11.3.2/ 11.3.25 (60/40)	11.3.25	Widen approach on south side LHS to allow long loads between trees.	No clearing required
#19	717813 7159116	1AB81	Non-remnant	Non-remnant	1 Load of Ballast	No clearing required
#20	717309 7159327	1AB81	11.3.2/ 11.3.25 (60/40)	Not assessed	1 Load of ballast and cut North side of approach to allow low loads	No clearing required
#21	716800 7159667	1AB81	11.3.2/ 11.3.25 (60/40)	Not assessed	1 Load of ballast	No clearing required
#22	716342 7159526	1AB81	11.10.11	Not assessed	Import materials to gravel 300mm cover over existing pipes	No clearing required
#23	716296 7159550	1AB81	11.10.11	Not assessed	Realign Crossing and install 1 Load of ballast Bottle Tree E:716319 N:7159535	No clearing required
#24	716126 7159582	1AB81	11.10.11	Not assessed	2 Loads of Ballast	No clearing required
#25	715883 7159564	1AB81	11.10.11	11.10.1	Remove 3 dead trees	
#26	715719 7159547	1AB81	11.10.11	11.10.1	Remove 1 Dead Tree (RHS)	
#27	714738 7158994	1AB81	11.10.11	Non-remnant	Remove 1 Large tree from centre of gateway to clear turning path for heavy vehicle access and cut top of tree/gate post to remove obstruction from overhanging branches	
#28	713069 7160837	27NPW826	11.10.11	11.10.1	Remove 1 large I/B tree and small suckers to allow unobstructed oversize vehicle access and straighten road alignment. Add 1 load of ballast to repair road surface and mitigate erosion	

Santos Waypoint Code	Easting / Northing (Zone 55J; Datum GDA94)	Lot / Plan	DEHP Mapped RE	Observed RE	Proposed Santos Disturbance	Comments
#29	712860 7161238	27NPW826	11.10.11	11.10.1	Remove 1 large dead tree from inside of bend, approx.. 8 suckers and straighten road alignment	
#30	712032 7161725	46FTY1813	11.10.11	11.10.1	Trim encroaching and overhanging branches to allow oversize vehicle access	
#31	710584 7162456	46FTY1813	11.10.11	11.10.1c	Remove 1 Large tree and realign road	
#32	710368 7162845	46FTY1813	11.10.11	11.10.1c	Install 3 Pipes and cover 300mm with gravel to allow suitable approach	
#33	710338 7162939	46FTY1813	11.10.11	11.10.1c	Remove 1 large I/B tree (LHS)	
#34	710076 7163339	Boundary of 27NPW826 and 46FTY1813	11.10.11	11.10.1	Remove 3 small trees (LHS)	
#35	709496 7164971	Road corridor	11.10.11	11.10.1c	Remove 1 young pine tree and a tree	
#36	709831 7165378	46FTY1813	11.10.11	11.10.1c	Remove approx. 10 suckers to allow straight access through gates	
#37	709846 7165937	46FTY1813	11.10.11	11.10.1	Upgrade crossing widen North RHS avoid large tree	
#38	708364 7168897	27NPW826	11.10.13a/ 11.10.1/ 11.3.25 (60/35/5)	Not assessed	Upgrade crossing install 1 load of ballast	No clearing required
CRK-A	708095 7172487	27NPW826	11.10.1	11.10.1	Upgrade creek crossing as per drawing No: CRK-A	
#39	706989 7178856	27NPW826	11.10.1	11/10.1/ 11.10.13?	Remove1 I/B tree (RHS)	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#40	706785 7178774	27NPW826	11.10.1	11/10.1/ 11.10.13?	Remove 4 I/B tree, regrowth and realign (RHS)	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#41	706689 7178773	27NPW826	11.10.1	11/10.1/ 11.10.13?	Remove I/B Trees (RHS)	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#42	706534 7178781	27NPW826	11.10.1	11.10.1	Remove 5 I/B trees and realign (RHS)	

Santos Waypoint Code	Easting / Northing (Zone 55J; Datum GDA94)	Lot / Plan	DEHP Mapped RE	Observed RE	Proposed Santos Disturbance	Comments
#43	706431 7178808	27NPW826	11.10.1	11.10.1	Remove 2 I/B trees, 1 young regrowth and realign	
#44	706367 7178826	27NPW826	11.10.1	11.10.1	Remove 5 I/B trees and realign	
#45	706225 7178801	27NPW826	11.10.1	11.10.1	Remove 1 I/B Tree and realign	
#46	706158 7178772	27NPW826	11.10.1	11.10.1	Remove 4 I/B trees and realign	
#47	705964 7178694	27NPW826	11.10.1	11.10.1	Remove 1 dead tree (LHS)	
#48	705872 7178668	27NPW826	11.10.1	11.10.1	Remove 2 young gum trees, 3 regrowth suckers and realign	
#49	705652 7178656	27NPW826	11.10.1	11.10.1	Remove small patch of regrowth to avoid leaning gum tree	
#50	705334 7178752	27NPW826	11.10.1	11.10.1	Remove 2 I/B trees due to branches overhanging (LHS)	
#51	705123 7178920	27NPW826	11.10.1	11.10.1	Remove regrowth and realign	
#52	704919 7179032	27NPW826	11.10.1	11.10.1	Remove 2 large gum trees and realign	
#53	704826 7179071	27NPW826	11.10.1	11.10.1	Remove 4 gum trees approx 10 suckers and 1 dead tree	
#54	704665 7179111	27NPW826	11.10.1	11.10.1	Remove 1 I/B tree due to over branches (RHS)	
#55	704339 7179578	27NPW826	11.10.1	11.10.1	Remove 1 I/B tree (LHS)	
#56	704054 7180228	27NPW826	11.10.1	11.10.1	Remove 1 Large I/B tree (LHS)	
#57	703864 7180550	27NPW826	11.10.1	11.10.1	Remove 1 large gum tree and I/B Tree and realign	
#58	703822 7180576	27NPW826	11.10.1	11.10.1	Remove 1 Tree (RHS)	
#59	703230 7180698	27NPW826	11.10.1	11.10.1	Remove 1 Large gum tree and realign	
#60	703151 7180657	27NPW826	11.10.1	11.10.1	Remove 1 large gum tree from middle of road	
#61	703107 7180654	27NPW826	11.10.1	11.10.1	Remove 1 large leaning gum tree (RHS)	
#62	702617 7180270	27NPW826	11.10.1	11.10.1	Upgrade & clear new approach onto crk. Install pipes	
#63	702524 7180282	27NPW826	11.10.1	11.10.1	Remove 5 I/B trees (RHS) widen 4m on bend	
#64	702571 7180031	27NPW826	11.10.1	11.10.1	Remove 2 large I/B trees (LHS)	
#65	702645 7179932	27NPW826	11.10.1	11.10.1	Remove 3 I/B Trees (LHS)	
#66	702709 7179661	27NPW826	11.10.13a/ 11.10.4 (60/40)	11.10.1/11.10. 4?/11.10.13?	Remove 3 I/B Trees (RHS)	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE

Santos Waypoint Code	Easting / Northing (Zone 55J; Datum GDA94)	Lot / Plan	DEHP Mapped RE	Observed RE	Proposed Santos Disturbance	Comments
#67	702843 7179206	27NPW826	11.10.13a/ 11.10.4 (60/40)	11.10.1/11.10. 4?/11.10.13?	remove 2 I/B trees (RHS)	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#68	702637 7178625	27NPW826	11.10.1	11.10.4?/11.10 .13?	START: Mulch regrowth on side road and trim branches	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#69	702620 7178434	27NPW826	11.10.1	11.10.4?/11.10 .13?	FINISH: Mulch regrowth on side road and trim branches. Remove 1 large gum tree (LHS)	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#70	702624 7178309	27NPW826	11.10.1	11.10.4?/11.10 .13?	remove 1 large tree (LHS)	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#71	702702 7177484	27NPW826	11.10.13a/ 11.10.4 (60/40)	11.10.1?/11.10 .4?/11.10.13?	Remove 6 I/B Trees and 1 large stump, START: mulch regrowth on side road trim limbs avoid large trees	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#72	702701 7176163	27NPW826	11.10.13a/ 11.10.4 (60/40)	11.10.1?/11.10 .4?/11.10.13?	FINISH: mulch regrowth on side road trim limbs avoid large trees	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#73	702583 7175842	27NPW826	11.10.13a/ 11.10.4 (60/40)	11.10.1?/11.10 .3?/11.10.4?/1 1.10.13?	START: mulch regrowth on side road trim limbs avoid large trees	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#74	702371 7175089	27NPW826	11.10.13a/ 11.10.4 (60/40)	11.10.1?/11.10 .3?/11.10.4?/1 1.10.13?	FINISH: mulch regrowth on side road trim limbs avoid large trees	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE

Santos Waypoint Code	Easting / Northing (Zone 55J; Datum GDA94)	Lot / Plan	DEHP Mapped RE	Observed RE	Proposed Santos Disturbance	Comments
#75	702129 7174844	27NPW826	11.10.13a/ 11.10.4 (60/40)	11.10.1?/11.10 .3?/11.10.4?/1 1.10.13?	START: mulch regrowth on side road trim limbs avoid large trees	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#76	701912 7174608	27NPW826	11.10.13a/ 11.10.4 (60/40)	11.10.1?/11.10 .3?/11.10.4?/1 1.10.13?	FINISH: mulch regrowth on side road trim limbs avoid large trees	Unable to positively identify canopy trees due to fire damage: correct RE to be determined once positive identification of dominant trees can be made. RE not an OC or ERE
#77	701605 7173198	807PH1979	11.10.1	11.10.1	Remove 2 Large I/B trees (LHS)	

Table 12 indicates that the Access Track traverses at least five mapped and two additional observed REs. The VM Act and DEHP biodiversity status of each observed and mapped RE is listed within Table 13.

Table 13. Status of regional ecosystems (REs) mapped and observed for the Access Track.

Key: E = endangered; LC = least concern; OC = of concern; NCAP = no concern at present; VM Act 1999 = *Vegetation Management Act 1999*; DEHP = Department of Environment and Heritage Protection.

RE	RE DESCRIPTION	VM Act status	DEHP status
11.3.2	*Eucalyptus populnea* woodland on alluvial plains	OC	OC
11.3.25	Queensland Blue Gum *Eucalyptus tereticornis* or River Red Gum *E. camaldulensis* woodland fringing drainage lines	LC	OC
11.10.1	Spotted Gum *Corymbia citriodora* open forest on coarse-grained sedimentary rocks	LC	NCAP
11.10.1c	11.10.1c: *Eucalyptus fibrosa*, *Eucalyptus* spp. woodland.	LC	NCAP
11.10.3	*Acacia catenulata* or *A. shirleyi* open forest on coarse-grained sedimentary rocks. Crests and scarps	LC	NCAP
11.10.4	Gum-topped Ironbark *Eucalyptus decorticans*, *Lysicarpus angustifolius* +/- *Eucalyptus* spp., *Corymbia* spp., *Acacia* spp. woodland on coarse-grained sedimentary rocks	LC	NCAP
11.10.11	*Eucalyptus populnea*, *E. melanophloia* +/- *Callitris glaucophylla* woodland on coarse-grained sedimentary rocks	LC	NCAP
11.10.13a	*Eucalyptus cloeziana* +/- *E. melanoleuca* +/- *Corymbia bunites* +/- *E. sphaerocarpa* woodland to open-forest	LC	NCAP

The Access Track mainly traverses least concern REs and some non-remnant vegetation within parts of Lot 46 on Plan FTY1813 and Lot 1 on Plan AB81. No clearing will occur within the mapped extent of any of concern (OC) REs. Although the boundaries of OC REs are yet to be clarified in the field, this survey confirmed that no clearing will occur within any unmapped occurrences of OC RE. No endangered REs occur within the areas of proposed clearing or within the 10m buffer from edge of road.

Due to severe scorch of canopy trees and almost total loss of shrub strata in some parts of the Access Track, the RE is not able to be accurately determined for those parts of the Access Track. Such locations are identified within Table 11. These areas are most likely to represent RE 11.10.1, 11.10.3, 110.10.13a or a variation of 11.10.4 which are all least concern REs.

4.2.1.2. Threatened Ecological Communities

No TECs occur within the areas of proposed clearing or within the 10m buffer from edge of road. Boobook (2013) describes the occurrence of two potential TECs that occur within 50m of the road edge, these being 'Brigalow (*Acacia harpophylla* dominant and sub-dominant)' and 'Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions' TEC criteria. Further assessment of these potential TECs was not conducted during this survey. Any potential impacts on these TECs by the proposed activity are likely to have minimal and short term impacts. These impacts, such as dust, can be mitigated and will be recoverable.

4.2.2. Flora

4.2.2.1. Least Concern Flora

Least concern flora was only recorded along the Access Track within areas of proposed clearing. A list of species recorded within these areas is presented within Appendix F.

4.2.2.2. EVNT and MNES Flora

No flora scheduled as endangered, vulnerable or near threatened under state or federal legislation was recorded within areas of proposed clearing or the 10m buffer along the Access Track. A list of endangered, vulnerable or near threatened flora which could potentially occur within the Access Track footprint was provided within Boobook (2013). Table 14 provides an updated list of EVNT flora recorded within the 20km search buffer with the addition of desktop search records of EVNT and MNES flora for Expedition (Limited Depth) NP and Belington Hut SF.

Table 14. Summary of likelihood of occurrence of MNES and EVNT flora within the Access Track.

KEY: APC = area of proposed clearing (Santos supplied reference point); KP = kilometer point; EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999*; NC Act = *Nature Conservation Act 1992*. **Record Source**: 1 = EPBC search; 2 = Wildlife on-line (DEHP 2013d); 3 = Boobook unpublished flora data for Fairview gas field; 4 = species predicted or known to occur in broader study area. **Status**: E = endangered; V = vulnerable; NT = near threatened; LC = least concern.

FAMILY	SPECIES NAME	COMMON NAME	EPBC ACT STATUS	NC ACT STATUS	RECORD SOURCE	LIKELIHOOD OF PRESENCE AT PROPOSED LEASE SITE
Acanthaceae	*Xerothamnella herbacea*	-	E	E	2	Unlikely to be present - within species known range (AVH 2013) but potentially suitable habitat (e.g. *Acacia harpophylla* woodland along watercourses) is not present.
Apocynaceae	*Tylophora linearis*	Slender Tylophora	E	E	1	Unlikely to be present – although the habitat is broadly suitable the Access Track is well outside the known Queensland range of the species (AVH 2013).
Arecaceae	*Livistona nitida*	Carnarvon Fan-palm	-	NT	2	Absent – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and potentially suitable habitat is present in RE 11.10.1 and 11.3.25. This species is

FAMILY	SPECIES NAME	COMMON NAME	EPBC ACT STATUS	NC ACT STATUS	RECORD SOURCE	LIKELIHOOD OF PRESENCE AT PROPOSED LEASE SITE
						obvious and readily identifiable and is not present within any APC or 10m road buffer.
Byttneriaceae	*Commersonia argentea*	A shrub	V	C	4	Potentially present – within species known range (AVH 2013) and potentially suitable habitat is present in RE 11.10.1, 11.10.1c and 11.3.25. Not present within any APC or 10m road buffer.
Caesalpiniaceae	*Senna acclinis*	Rainforest Cassia	-	NT	2	Potentially present – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and potentially suitable habitat is present in RE 11.9.4 west of the Access Track between APC #27 and #28. Not present within any APC or 10m road buffer.
Campanulaceae	*Wahlenbergia islensis*	Cliff Bluebell	-	NT	2	Potentially present – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and potentially suitable habitat is present in RE 11.10.1 and 11.3.25 (with boulders) adjoining the Access Track (e.g. Hungry Creek crossing). Not present within any APC or 10m road buffer.
Celastraceae	*Apatophyllum teretifolium*	Sandstone Prickle-bush	-	NT	2	Potentially present – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Ericaceae	*Leucopogon grandiflorus*	Whorl-leaved Heath	-	NT	2	Potentially present – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and Belington Hut SF, and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Mimosaceae	*Acacia calantha*	Cracow Wattle	-	NT	2	Potentially present – within species known range (AVH 2013) and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Mimosaceae	*Acacia islana*	Isla Gorge Wattle	-	V	2	Potentially present – within species known range (AVH 2013) and potentially suitable

FAMILY	SPECIES NAME	COMMON NAME	EPBC ACT STATUS	NC ACT STATUS	RECORD SOURCE	LIKELIHOOD OF PRESENCE AT PROPOSED LEASE SITE
						habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Mimosaceae	*Acacia spania*	Western Rosewood	-	NT	2	Potentially present – within species known range (AVH 2013) and potentially suitable habitat is present in RE 11.10.1. Not present within any APC or 10m road buffer.
Myrtaceae	*Calytrix islensis*	Isla Gorge Fringe-myrtle	-	V	2	Potentially present – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and potentially suitable habitat is present in RE 11.10.1 and 11.10.13. Not present within any APC or 10m road buffer.
Myrtaceae	*Eucalyptus beaniana*	An ironbark	V	V	2	Potentially present – within species known range (AVH 2013), recorded from Belington Hut SF and potentially suitable habitat is present in RE 11.10.1, 11.10.1c and 11.10.13. Not present within any APC or 10m road buffer.
Myrtaceae	*Eucalyptus curtisii*	Plunkett Mallee	-	NT	2	Potentially present – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and Belington Hut SF, and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Myrtaceae	*Eucalyptus virens*	Shiny-leaved Ironbark	V	V	3, 4	Potentially present – within species known range (AVH 2013) and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Myrtaceae	*Homoranthus decasetus*	A Mouse-bush	-	NT	2	Potentially present – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Myrtaceae	*Melaleuca irbyana*	Swamp Paperbark	-	E	2	Potentially present – within species known range (AVH 2013) and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Picrodendraceae	*Pseudanthus*	No common	-	NT	2	Potentially present – within

FAMILY	SPECIES NAME	COMMON NAME	EPBC ACT STATUS	NC ACT STATUS	RECORD SOURCE	LIKELIHOOD OF PRESENCE AT PROPOSED LEASE SITE
	pauciflorus subsp*. arenicola*	name				species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and Belington Hut SF, and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.
Surianaceae	*Cadellia pentastylis*	Ooline	V	V	1	Absent – within species known range (AVH 2013) but potentially suitable habitat is not present on the track. Not present within any APC or 10m road buffer.
Zamiaceae	*Macrozamia platyrhachis*	No common name	E	E	2	Potentially present – within species known range (AVH 2013), recorded from Expedition (Limited Depth) NP and potentially suitable habitat is present in RE 11.10.1 and 11.10.1c. Not present within any APC or 10m road buffer.

The Access Track does not traverse any mapped essential habitat for flora.

4.2.2.3. Other Significant Flora

Boobook (2013) noted the presence of a *Melaleuca* sp. (possibly undescribed) occurring at the Hungry Creek crossing at 707055E 7178861N. Although fruiting samples of this species have been submitted to the Queensland Herbarium no flowering plants were observed during this survey, hence, the identity of this species remains unconfirmed.

No TAR flora occurs within the areas of proposed clearing. As per the scope of works provided to Boobook, TAR flora was not recorded within the 10m buffer from the road edge. TAR flora known to occur within close proximity to the Access Track includes Kurrajong *Brachychiton populneus,* Narrow-leaved Bottle Tree *B. rupestris* and Black Orchid *Cymbidium canaliculatum* (Boobook 2013).

4.2.2.4. Pest Flora

Two declared pest plants were observed along the Access Track these being Velvety Tree Pear *Opuntia tomentosa* and Common Pest Pear *O. stricta*. Both are Weeds of National Significance (WoNS) and scheduled as class 2 pests under the LP Act.

4.2.3. Fauna

4.2.3.1. Fauna Observations

Incidental observations of least concern fauna are summarised within Appendix G.

4.2.3.2. MNES and EVNT Fauna

The combined results of database searches, analysis of species distributions and habitat preferences, and previous studies undertaken in the area indicate that at least 29 species of EVNT fauna may potentially occur within the Access Track footprint (Table 15). The Access Track does not traverse any mapped essential habitat for fauna (DEHP 2013c).

Table 15. MNES and EVNT fauna occurring or potentially occurring at the Access Track and the likelihood of occurrence.

Key: APC = area of proposed clearing (Santos supplied reference point); KP = kilometer point; NCA = *Nature Conservation Act 1992*; EPBC = *Environment Protection and Biodiversity Conservation Act 1999*. **Record Source**: 1 = EPBC search; 2 = Wildlife on-line (DEHP 2013d); 3 = Boobook unpublished fauna data for Fairview gas field; 4 = Crossman and Reimer (1986); 5 = species predicted or known to occur in broader study area; 6 = this survey. **Status**: E = endangered; LC = least concern; NT = near threatened; PE = presumed extinct; SLC = special least concern; V = vulnerable.

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
Amphibians	*Cyclorana verrucosa*	Rough Collared-frog	not listed	NT	5	Potentially present - within species known range (Robinson 1993) and potentially suitable foraging habitat (Tyler and Knight 2009) is present between KP 0 and APC #21. Potential breeding places (e.g. shallow depressions and ephemeral swamps) are present within the landscape adjoining the Access Track between KP 0 and APC #20.
Birds	*Accipiter novaehollandiae*	Grey Goshawk	not listed	NT	3	Potentially present – within species known range (Birdlife Australia 2013) and may overfly any part of the Access Track. Potential foraging habitat is present within all areas of proposed clearing and within the entire 10m buffer from edge of road.
	Calyptorhynchus lathami	Glossy Black-Cockatoo	not listed	V	2, 3	Potentially present – within species known range (Birdlife Australia 2013) and may overfly any part of the Access Track. Recorded from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). Hollow-bearing trees with potentially suitable nest sites (Higgins 1999) are present mainly between APC#22 and #71. Potentially suitable food plants are scarce within the Access Track 10m buffer but include Thready-bark She-oak *Allocasuarina inophloia* between APC and APC#39 and 41 and #73A and #75.
	Ephippiorhynchus asiaticus	Black-necked Stork	not listed	NT	5	Unlikely to be present – within species known range (Birdlife Australia 2013) but no suitable wetland habitat is present within any areas of proposed clearing or within the entire 10m buffer from edge of road. May overfly any part of the Access Track.
	Erythrotriorchis radiata	Red Goshawk	V	E	1	Potentially present – within species known range (Birdlife Australia 2013) and may overfly any part of the Access Track. Potential foraging habitat is present within all areas of proposed clearing and within the entire 10m buffer from edge of road.
	Geophaps scripta scripta	Squatter Pigeon (southern)	V	V	1, 2, 3, 4, 6	Confirmed – observed at six locations along the Access Track (Appendix M). Potential foraging and breeding habitat is

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
						present throughout the entire Access Track footprint.
	Grantiella picta	Painted Honeyeater	not listed	V	5	Unlikely to be present – within species known range (Birdlife Australia 2013) but potentially suitable food plants (mistletoes, family Loranthaceae) (Higgins et. al. 2001) are in very low abundance within the Access Track footprint. May overfly any part of the Access Track.
	Lophoictinia isura	Square-tailed Kite	not listed	NT	2	Potentially present – within species known range (Birdlife Australia 2013) and may overfly any part of the Access Track. Recorded from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). Potential foraging habitat is present within all areas of proposed clearing and within the entire 10m buffer from edge of road.
	Melithreptus gularis	Black-chinned Honeyeater	not listed	NT	2	Potentially present – within species known range (Birdlife Australia 2013) and may overfly any part of the Access Track. Recorded from Expedition (Limited Depth) NP (DEHP 2013d). Potentially suitable foraging habitat is present mainly between APC#22 and #71.
	Neochmia ruficauda ruficauda	Star Finch (eastern, southern)	E	E	1	Unlikely to be present – within species known historical range (Birdlife Australia 2013) but the subspecies is possibly extinct (Garnett *et al.* 2011).
	Nettapus coromandelianus	Cotton Pygmy-goose	not listed	NT	5	Unlikely to be present – within species known range (Birdlife Australia 2013) but no suitable wetland habitat is present within any areas of proposed clearing or within the entire 10m buffer from edge of road. May overfly any part of the Access Track.
	Ninox strenua	Powerful Owl	not listed	V	2	Potentially present – within species known range (Birdlife Australia 2013) and may overfly any part of the Access Track. Recorded from Expedition (Limited Depth) NP (DEHP 2013d). Potentially suitable nesting habitat is present mainly between APC#22 and #71. Potentially suitable foraging habitat is present mainly between APC#21 and the Camp.
	Poephila cincta cincta	Black-throated Finch	V	V	2	Unlikely to be present – within species known historical range (Birdlife Australia 2013) e.g. recorded historically from Belington Hut SF (DEHP 2013d). The Access Track is outside the known extant range of the subspecies (Garnett *et al.* 2011).
	Rostratula australis	Australian Painted Snipe	E	V	1, 5	Unlikely to be present – within species known range (Birdlife Australia 2013) but no suitable wetland habitat is present within any areas of proposed clearing or within the entire 10m buffer from edge of road. May overfly any part of the Access Track.
	Turnix melanogaster	Black-breasted Button-quail	V	V	5	Potentially present – within species known range (AVH 2013) and potentially suitable foraging and nesting habitat is present in RE 11.9.4 west of the Access Track between APC #27 and #28. Unlikely to be

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
						resident within any APC or the 10m road buffer.
Insects	*Jalmenus eubulus*	Pale Imperial Hairstreak	not listed	V	5	Potentially present – within species known range (Braby 2000) and potentially suitable food plants (e.g. *Acacia* spp.) (Common and Waterhouse 1981, Valentine and Johnson 2012) are present within RE 11.10.1 and the Brigalow (*Acacia harpophylla*) woodland-open forest on the southern side of the Access Track between APC#20 and #21.
Mammals	*Dasyurus hallucatus*	Northern Quoll	E	LC	1, 2	Potentially present – within species known range (Oakwood 2008) and recorded historically from Expedition (Limited Depth) NP (DEHP 2013d). Potential foraging habitat is present within any part of the Access Track footprint. Potential shelter sites (e.g. logs with hollows) are in very low abundance within areas of proposed clearing e.g. Appendix N.
	Chalinolobus dwyeri	Large-eared Pied Bat	V	V	1, 2, 4	Likely to be present – within species known range (Churchill 2008) and recorded from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). Potentially suitable foraging habitat is present within the Access Track primarily between APC#21 and The Camp. Suitable roosting habitat i.e. caves, rock crevices and Fairy Martin nests (Hoye and Schultz 2008) were not recorded within the areas of proposed clearing or 10m buffer from road edge.
	Chalinolobus picatus	Little Pied Bat	not listed	NT	2	Likely to be present – within species known range (Churchill 2008) and recorded from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). Potentially suitable foraging habitat is present throughout the entire Access Track footprint. Potential roosting sites (e.g. hollow-bearing trees) are present within areas of proposed clearing and the 10m buffer from road edge as identified within Appendix N.
	Nyctophilus corbeni	Eastern Long-eared Bat	V	V	1, 2	Likely to be present – within species known range (Churchill 2008) and recorded from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). Potentially suitable foraging habitat is present within the Access Track primarily between APC#21 and The Camp. Potential roosting sites (e.g. hollow-bearing trees) are present within areas of proposed clearing and the 10m buffer from road edge as identified within Appendix N.
	Phascolarctos cinereus	Koala	V	SLC	1, 5	Likely to be present – within species known range (Martin *et al.* 2008) and potentially suitable foraging habitat containing known food trees (e.g. *Corymbia citriodora*, *Eucalyptus crebra*) is present within the Access Track footprint between APC#22 and The Camp. Also potentially present at APC#18 where *E. tereticornis* occurs.
Reptiles	*Acanthophis*	Common Death	not	NT	5	Potentially present – within species known

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
	antarcticus	Adder	listed			range (Wilson 2005) and potentially suitable foraging habitat and shelter sites (e.g. low shrubs, logs, rocks, dense leaflitter) (QMDC 2008) is present within the areas of proposed clearing and 10m buffer from road edge between APC#22 and The Camp.
	Delma torquata	Collared Delma	V	V	1, 2	Potentially present – within species known range (DSEWPaC 2013c) and recorded from Expedition (Limited Depth) NP (DEHP 2013d). Potentially suitable habitat containing logs, small rocks and dense leaflitter) (QMDC 2008) is present within areas of proposed clearing and 10m buffer from road edge between APC#22 and The Camp. Small rocks are particularly abundant between APC#36 and #37.
	Denisonia maculata	Ornamental Snake	V	V	1	Potentially present – within species known range (Wilson 2005) and potentially suitable foraging habitat occurs within the 10m buffer between KP 0 and APC#20.
	Egernia rugosa	Yakka Skink	V	V	1, 2	Likely to be present – within species known range (Wilson 2005) and recorded from Expedition (Limited Depth) NP (DEHP 2013d). Potentially suitable foraging habitat is present within areas of proposed clearing and 10m buffer from road edge between APC#20 and The Camp. Potential shelter sites (e.g. large hollow logs) are identified within Appendix N.
	Furina dunmalli	Dunmall's snake	V	V	1, 2, 4	Likely to be present – within species known range (DSEWPaC 2013c) and recorded from Expedition (Limited Depth) NP (DEHP 2013d). Potentially suitable habitat containing logs, small rocks and dense leaflitter (QMDC 2008) is present within areas of proposed clearing and 10m buffer from road edge between APC#20 and The Camp. Large hollow logs providing potential shelter sites are identified within Appendix N.
	Paradelma orientalis	Brigalow Scaly-foot	not listed	V	1, 2	Likely to be present – within species known range (DSEWPaC 2013c) and recorded from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). Potentially suitable habitat containing logs, small rocks and dense leaflitter (QMDC 2008) is present within areas of proposed clearing and 10m buffer from road edge between APC#20 and The Camp. Large hollow logs providing potential shelter sites are identified within Appendix N.
	Rheodytes leukops	Fitzroy Turtle	V	V	1, 2	Unlikely to be present – within species known range (Birdlife Australia 2013) and recorded from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). No suitable wetland habitat is present within the Access Track footprint.
	Strophurus taenicauda	Golden-tailed Gecko	not listed	NT	2	Potentially present – within species known range (Wilson 2005) and recorded from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). Suitable

Class	Scientific Name	Common Name	Status EPBC	Status NCA	Record Source	Likelihood of Occurrence
						foraging habitat is present throughout the Access Track footprint between APC #20 and The Camp. Potentially suitable sheltering sites (hollow trees, loose bark on trees and larger shrubs) within each APC are identified within Appendix N.

No surveys were undertaken for significant fauna, however, one species listed as vulnerable under both the NC Act and EPBC Act was recorded along the Access Track, this being Squatter Pigeon. This species was recorded from five sites during this survey (Table 16). Previous records from the Access Track are summarised in Boobook (2013). This species is also reported from Expedition (Limited Depth) NP and Belington Hut SF (DEHP 2013d). The sightings from this survey and Boobook (2013) are mapped in Appendix M.

Table 16. Locations of Squatter Pigeons observed along the Access Track.

WAYPOINT CODE	EASTING / NORTHING	LOT/PLAN	NO. INDIVIDUALS	NOTES
SQPI1	55J 720245 7157128	46FTY1813	2	Clearing with scattered *Eucalyptus melanophloia*, *E. populnea*, *Acacia decora* and *Callitris glaucophylla* regrowth saplings. Ground layer dominated by *Cenchrus ciliaris* and *Heteropogon contortus*. Hill slope. Brown clay loam substrate. Site adjoins *Eucalyptus tereticornis*, *Angophora floribunda* fringing woodland along watercourse with ground layer dominated by *Themeda triandra* and other native grasses.
SQPI2	55J 720134 7157886	46FTY1813	5	Clearing with scattered regrowth *E. populnea* and *E. melanophloia* saplings and dead trees. Ground layer dominated by *Cenchrus ciliaris* and *Aristida* sp. Hill slope. Brown clay loam substrate.
SQPI3	55J 708753 7170173	27NPW826	2	*Eucalyptus melanophloia* woodland with ground layer dominated by native perennial grasses (regenerating from fire). Hill slope. Brown loam substrate.
SQPI4	55J 721937 7158570	46FTY1813	1	Clearing with scattered regrowth *E. populnea* saplings (average c. 8m high). Ground layer dominated by *Cenchrus ciliaris*, *Aristida* sp. and *Heteropogon contortus*. Hill slope. Brown clay loam substrate.
SQPI5*	55J 708449 7169413	27NPW826	4	*Eucalyptus melanophloia* woodland with ground layer dominated by *Bothriochloa* sp. Adjoins watercourse (Midnight Creek) fringed by *E. tereticornis* open woodland. Hill slope. Brown clay loam substrate.

4.2.3.3. Other Significant Fauna

As identified within Boobook (2013) habitat (particularly the Spotted Gum/Narrow-leaved Ironbark woodland RE 11.10.1) is suitable for a range of regionally significant fauna including priority (non-EVNT) species

(EPA 2008) such as Speckled Warbler *Chthonicola sagittata*, Barking Owl *Ninox connivens*, Bush Stone-curlew *Burhinus grallarius*, Frilled Lizard *Chlamydosaurus kingii*, Long-nosed Bandicoot *Perameles nasuta,* Eastern Pebble-mound Mouse *Pseudomys patrius,* Common Brushtail Possum *Trichosurus vulpecula* and Yellow-bellied Glider (southern subspecies) *Petaurus australis australis*.

4.2.3.4. Fauna Habitat Features

Fauna habitat features identified within the areas of proposed clearing along the Access Track include hollow-bearing trees, trees with loose bark, dense leaf litter, fallen bark and logs. Rock outcrops and boulders are generally scarce. Hollow bearing trees and descriptions of other fauna habitat features are described within Appendix N.

4.2.3.5. Pest Fauna

Pest fauna observed along the Access Track included Cane Toad (carcase only), Pig and Dingo. Other pest fauna expected to occur at the Access Track are identical to those for the Lease (refer to section 4.1.3.6).

4.2.4. Wetlands

4.2.4.1. Referable Wetlands

The Access Track does not traverse any referable wetlands (DEHP 2013e; Appendix O).

4.2.4.2. Other Wetlands

Bed level crossing, WC Act definition and Queensland Wetland Program assessments were unable to be completed for the Access Track during Phase 1. Preliminary information relating to watercourse crossings along the Access Track is presented within Boobook (2013).

5. Conclusions & Recommendations

5.1. Conclusions

The following conclusions can be drawn from the results of the field and desktop survey:

Lease and Camp Site

- The Lease and Camp are located on a property which has high ecological values, including connectivity with Expedition (Limited Depth) National Park and Expedition Resource Reserve.
- The Lease and Camp are vegetated by a No Concern at Present regional ecosystem type (RE 11.10.1).
- No TECs or other significant vegetation occurs within the Lease and Camp footprints and associated buffers.
- No referable wetlands occur within the Lease and Camp footprints and associated buffers.
- Five drainage features were identified in the 100m buffer surrounding the Lease and Camp footprints.
- Potentially suitable habitat is present within the Lease and Camp for several species of EVNT and/or MNES fauna including Collared Delma (*Delma torquata*), Brigalow Scaly-foot (*Paradelma orientalis*), Dunmall's Snake (*Furina dunmalli*), Golden-tailed Gecko (*Strophurus taenicauda*), Little Pied Bat (*Chalinolobus picatus*), Large-eared Pied Bat (*C. dwyeri*), Eastern Long-eared Bat (*Nyctophilus corbeni*), Koala (*Phascolarctos cinereus*) and Squatter Pigeon (*Geophaps scripta scripta*).

- No EVNT or other significant flora occurs within the Lease and Camp footprints and associated buffers.
- Two species of WoNS and class 2 pest flora occur within the Lease and Camp footprint these being Velvety Tree Pear (*Opuntia tomentosa*) and Common Pest Pear (*O. stricta*).

Access Track

- Parts of the Access Track are located within a Category A Environmentally Sensitive Area (i.e. national park) and Category C Environmentally Sensitive Area (i.e. state forest).
- Although the Access Track traverses an area of high biological value the proposed route follows an existing access track and the area has been subject to other disturbances such as fire and grazing by cattle and horses.
- Areas of proposed clearing along the Access Track are confined to individual dead and live trees or small nodes of clearing. All of the proposed clearing is within No Concern at Present Res or non-remnant vegetation.
- No clearing will occur within the mapped extent of any of concern (OC) REs and no clearing will occur within any unmapped occurrences of OC RE.
- No endangered REs occur within the areas of proposed clearing or within the 10m buffer from the edge of road.
- No TECs are present within areas of proposed clearing or the 10m buffer from road edge along the Access Track.
- No EVNT flora was detected within areas of proposed clearing or the 10m buffer from road edge along the Access Track.
- No Type A Restricted (TAR) plants were observed within areas of proposed clearing or the 10m buffer from road edge along the Access Track.
- A potentially undescribed species of *Melaleuca* occurs at the Hungry Creek crossing.
- One species of EVNT and MNES fauna was detected during driving traverses of the Access Track, this being Squatter Pigeon *Geophaps scripta scripta* which was recorded at 5 locations (within remnant and non-remnant vegetation) along the Access Track.
- Potential animal breeding places occurring within areas of proposed clearing along the Access Track are primarily hollow-bearing trees (mostly small hollows <10cm diameter) with occasional logs, rocks and termite mounds. These may support MNES fauna such as Eastern Long-eared Bat (tree hollows), Yakka Skink (large logs), Collared Delma (small rocks, dense leaflitter, leaflitter, logs), Dunmall's Snake (logs, rocks, termite mounds).
- Potential food plants (Spotted Gum *Corymbia citriodora* subsp. *variegata*) are present for one species of MNES fauna, this being Koala.
- With appropriate mitigation measures such as pre-clearance surveys (searches for/of breeding and shelter places), presence of a fauna spotter during clearing, slow vehicle speeds and strict adherence to clearing limits, impacts on EPBC fauna that are known or likely to occur along the Access Track are likely to be minimal, short term and recoverable impacts.
- No referable wetlands occur along the Access Track; additional wetland features and watercourses remain to be assessed in detail.
- Two species of WoNS and class 2 pest flora occurs within the Access Track 10m buffer from road edge these being Velvety Tree Pear (*Opuntia tomentosa*) and Common Pest Pear (*O. stricta*).

5.2. Recommendations

Lease and Camp Sites

1. A thorough pre-clearing assessment for potential animal breeding places (e.g. nests) should be undertaken at the Lease and Camp prior to clearing.

2. Clearing of remnant vegetation at the proposed Lease and Camp should be minimised. Avoid removal of trees with hollows or other fauna habitat features (e.g. loose bark, aerial termite mounds) where ever possible.

3. Due to the potential presence of significant fauna among logs, loose bark and hollow trees at the proposed Lease and Camp sites a fauna spotter should be engaged to flag significant microhabitat features, search for fauna prior to clearing and relocate any fauna retrieved during clearing operations. This should especially include searches on the ground for nests of Squatter Pigeon.

4. Strict weed hygiene measures should be enforced to ensure no new weeds are transported to the Site.

Access Track

1. Strict adherence to proposed clearing boundaries should be observed.
2. Due to fire impacts which were still evident during this survey a pre-clearing survey for EVNT and MNES flora should be conducted prior to clearing commencing to check for additional species that may germinate subsequent to this assessment.
3. Further vegetation assessments are required to assess and delineate areas of potential TEC (i.e. 'Brigalow (*Acacia harpophylla* dominant and sub-dominant)' and 'Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions') that occur within close proximity (i.e. within 50m) of the Access Track. All potential impacts to adjacent TECs can be mitigated (e.g. management of dust). Further vegetation assessments are required to determine the regional ecosystem types along parts of the Access Track that have been disturbed by fire.
4. Follow-up visits to the Hungry Creek crossing should be made to attempt to obtain flowering samples of the *Melaleuca* sp. Surveys should be undertaken in late spring (e.g. November), summer (e.g. February) and autumn (e.g. April).
5. Due to the potential presence of significant fauna among logs, loose bark and hollow trees at the proposed Access Track a fauna spotter should be engaged to flag significant microhabitat features, search for fauna prior to clearing and relocate any fauna retrieved during clearing operations. This should especially include searches on the ground for nests of Squatter Pigeon and a thorough pre-clearing search for Collared Delma at rocky sites such as between areas of proposed clearing #36 and #37.

6. References

AVH (2013). *Australia's Virtual Herbarium*. http://chah.gov.au/avh/

Birdlife Australia (2013) *Birdata*. Birdlife Australia, Melbourne. http://www.birdata.com.au/homecontent.do

Boobook (2011). *Preliminary field notes and recommendations for FV87*. Unpublished summary report submitted to Santos on 26 August 2011.

Boobook (2012). *Report on preliminary inspection of proposed access track to FV87 lease, Fairview Gas Field*. Unpublished draft report submitted to Santos on 28 March 2012.

Boobook (2013) *Preliminary ecological assessment of FV03-15-1,2,3 (FV87) proposed lease and associated access track*. Unpublished report submitted to Santos on 13 August 2013.

Bostock, P.D. and Holland, A.E. (eds.) (2010). *Census of the Queensland Flora 2010*. Queensland Herbarium, Brisbane.

Braby, M. (2000) *Butterflies of Australia. Their Identification, Biology and Distribution. Volume Two*. CSIRO Publishing, Melbourne.

Churchill, S. (2008) *Australian Bats*. Second Edition. Allen and Unwin, Sydney.

Common, I.F.B. and Waterhouse, D.F. (1981) *Butterflies of Australia*. Angus and Robertson, Sydney.

Crossman, D.G. and Reimer, D. (1986). Fauna survey of Taroom Shire, Central Queensland. *Queensland Journal of Animal and Agricultural Sciences* **43**.

DAFF (2013). *Land Protection (Pest and Stock Route Management) Act 2002* Department of Agriculture, Fisheries and Forestry, Queensland Government, Brisbane. http://www.legislation.qld.gov.au/LEGISLTN/CURRENT/L/LandPrPSRMA02.pdf

DEHP (2013a). *Vegetation Management Act Regional Ecosystem and Remnant Map – Version 6.1.* Regional Ecosystem Maps/ Regrowth Vegetation Maps and PMAVs. Department of Environment and Heritage Protection, Queensland Government, Brisbane.
http://www.ehp.qld.gov.au/ecosystems/biodiversity/regional-ecosystems/maps/index.php

DEHP (2013b). *Regrowth Vegetation Map—Version 2.1*. Regional Ecosystem Maps/ Regrowth Vegetation Maps and PMAVs. Department of Environment and Heritage Protection, Queensland Government, Brisbane. http://www.ehp.qld.gov.au/ecosystems/biodiversity/regional-ecosystems/maps/index.php

DEHP (2013c). *Vegetation Management Act Essential Habitat Map Version 3.1.* Regional Ecosystem Maps/ Regrowth Vegetation Maps and PMAVs. Department of Environment and Heritage Protection, Queensland Government, Brisbane. http://www.ehp.qld.gov.au/ecosystems/biodiversity/regional-ecosystems/maps/index.php

DEHP (2013d). *Wildlife Online*. Department of Environment and Heritage Protection, Queensland Government, Brisbane. http://www.ehp.qld.gov.au/wildlife/wildlife-online/index.html

DEHP (2013e). *Map of Referable Wetlands, Wetland Protection Areas/Wetland Management Areas*. Map Request Form - Referable Wetlands. Department of Environment and Heritage Protection, Queensland Government, Brisbane. http://www.ehp.qld.gov.au/ecosystems/wetlands/referable-wetlands-form.php

DEHP (2013f). *Environmentally Sensitive Areas- chapter 5A activities (EP Act)*. Department of Environment and Heritage Protection, Queensland Government, Brisbane. http://www.ehp.qld.gov.au/licences-permits/maps_of_environmentally_sensitive_areas.php

DEHP (2012g). *Regional Ecosystem Description Database* (REDD). Department of Environment and Heritage Protection, Queensland Government, Brisbane.
http://www.ehp.qld.gov.au/ecosystems/biodiversity/regional-ecosystems/index.php

DERM (2011). *Queensland Wetland Definition and Delineation Guideline.* Queensland Government, Brisbane.

DEWHA (2010a). *Survey Guidelines for Australia's Threatened Bats.* Department of Environment, Water, Heritage and the Arts, Canberra.

DEWHA (2010b) *Survey Guidelines for Australia's Threatened Birds.* Department of Environment, Water, Heritage and the Arts, Canberra.

DEWHA (2010c) *Survey Guidelines for Australia's Threatened Frogs.* Department of Environment, Water, Heritage and the Arts, Canberra.

DSEWPaC. (2011a). *Survey Guidelines for Australia's Threatened Mammals.* Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra.

DSEWPaC (2011b). *Survey Guidelines for Australia's Threatened Reptiles*. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra. http://www.environment.gov.au/epbc/publications/threatened-reptiles.html

DSEWPaC (2013a). *Environment Protection and Biodiversity Conservation Act 1999*. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra. http://www.comlaw.gov.au/Series/C2004A00485

DSEWPaC (2013b). *EPBC Protected Matters Search Tool*. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra. http://www.environment.gov.au/epbc/pmst/index.html

DSEWPaC (2013c). *Species Profile and Threats Database (SPRAT)*. Department of Sustainability, Environment, Water, Population and Communities, Australian Government, Canberra. http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

EPA (2008). *Brigalow Belt South Fauna Expert Panel Report*. Environmental Protection Agency, Brisbane. August 2002. Revised and updated June 2008.

Garnett, S.J., Szabo, J.K. and Dutson, G. (2011) *The Action Plan for Australian Birds 2010*. CSIRO Publishing, Melbourne.

Higgins PJ (Ed.) (1999) *Handbook of Australian, New Zealand and Antarctic birds, Volume 4*. *Parrots to Dollarbird*. Oxford University Press: Melbourne.

Higgins, P.J., Peter, J.M. and Steele, W.K. (eds) (2001) *Handbook of Australian, New Zealand and Antarctic Birds. Volume 5: Tyrant-flycatchers to Chats*. Oxford University Press, Melbourne.

Hoye, G.A. and Schulz, M. (2008) Large-eared pied Bat. In: Van Dyck, S. and Strahan, R. (eds) *The Mammals of Australia*. Third Edition. Reed New Holland, Sydney. Pp. 531-532.

Martin, R.W., Handasyde, K.A. and Krockenberger, A. (2008) Koala. In: Van Dyck, S. and Strahan, R. (eds) *The Mammals of Australia*. Third Edition. Reed New Holland, Sydney. Pp. 198-201.

Neldner, V.J., Wilson, B. A., Thompson, E.J. and Dillewaard, H.A. (2012) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland. Version 3.2.* Department of Science, Information Technology, Innovation and the Arts, Brisbane.

Oakwood, M. (2008) Northern Quoll. In: Van Dyck, S. and Strahan, R. (eds) *The Mammals of Australia*. Third Edition. Reed New Holland, Sydney. Pp. 57-59.

QMDC (2008) *Reptiles of the Brigalow Belt: an information kit*. WWF-Australia and Queensland Murray Darling Committee.

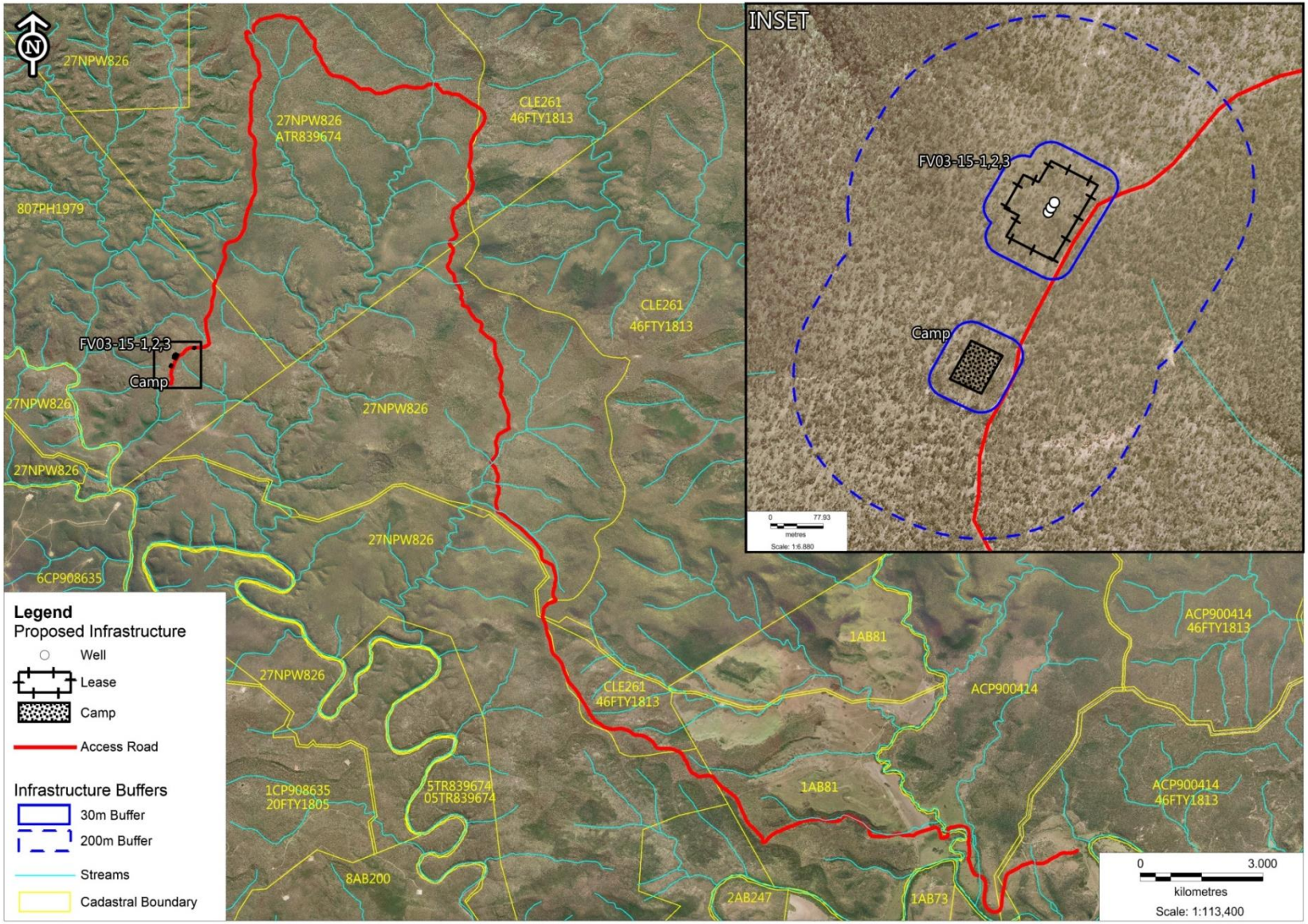
Santos (2012) *Field Guide to Trees and Shrubs of Eastern Queensland Oil and Gas Fields*. Second Edition. Santos, Adelaide.

Sattler, P. and Williams, R. (eds.) (1999) *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

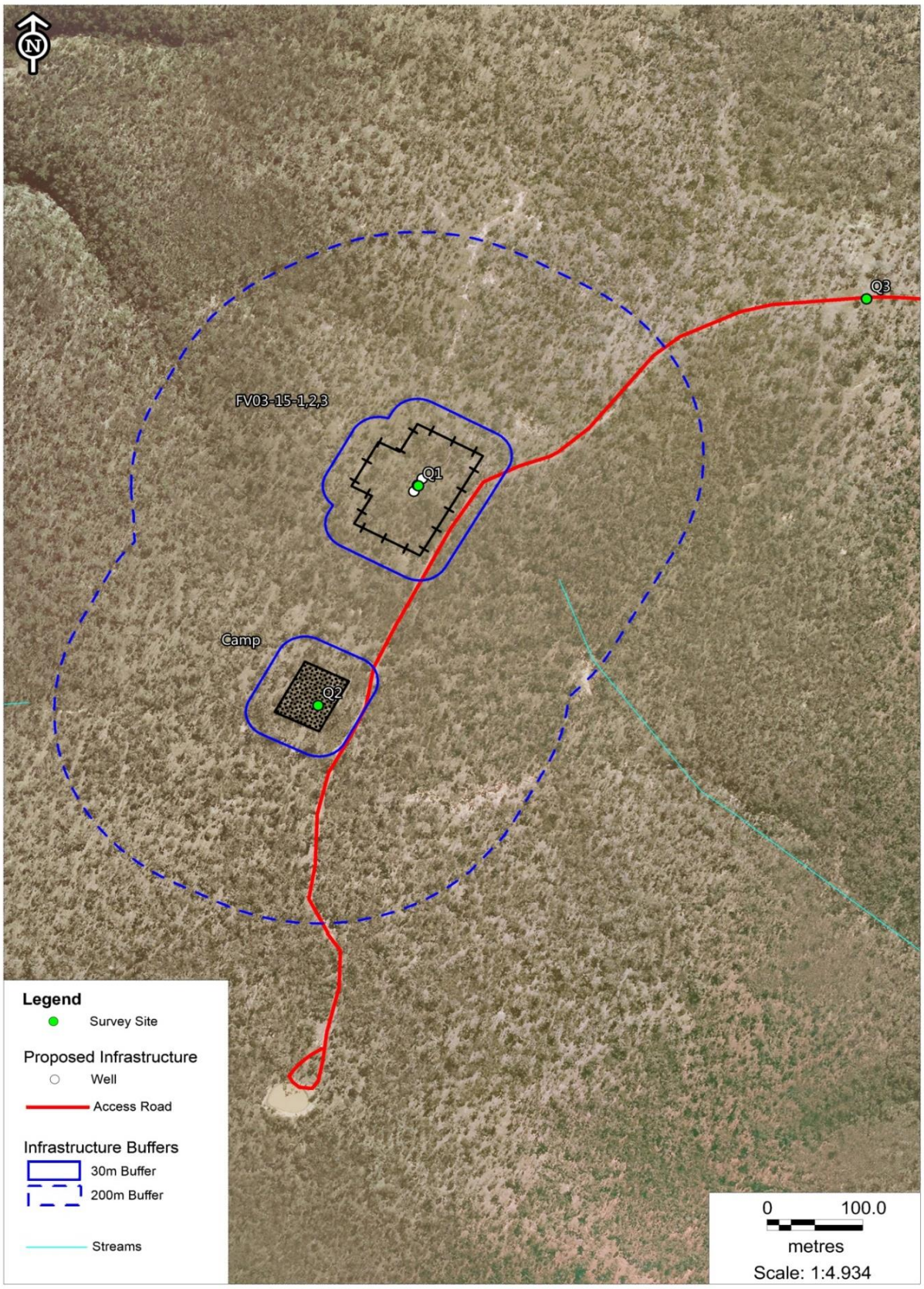
Valentine, P. and Johnson, S. (2012) Pale Imperial Hairstreak Butterfly. In: Curtis, L.K. and Dennis, A.J. (eds) *Queensland's Threatened Animals*. CSIRO Publishing, Melbourne. Pp. 34-35.

Water Act 2000. (Queensland). viewed 27 August 2013. http://www.legislation.qld.gov.au/legisltn/current/w/watera00.pdf

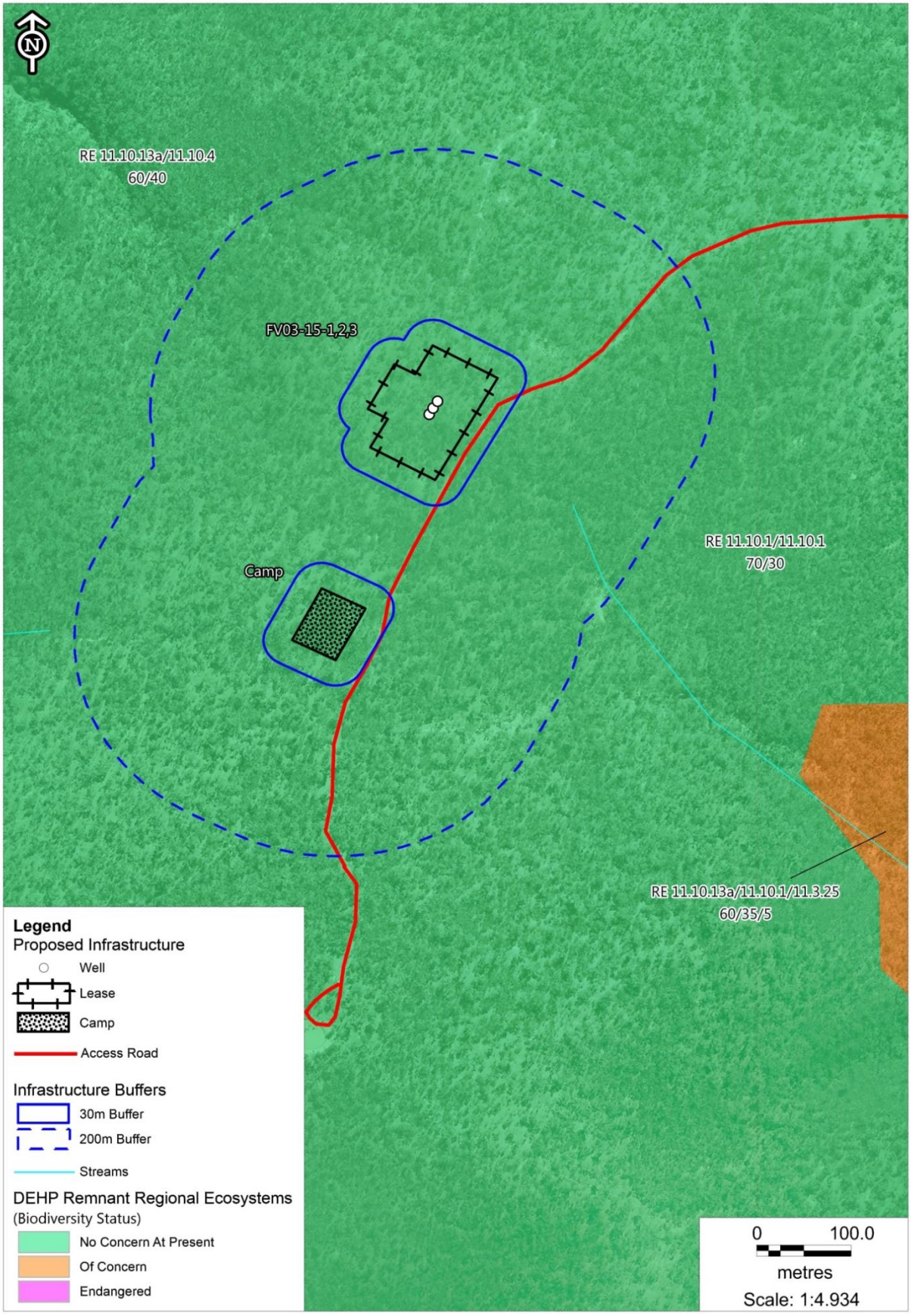
Appendix A: Location of the Lease, Camp and Access Track.



Appendix B: Location of FV03-15 Lease and Camp disturbance footprints and buffers with quaternary survey sites, and access track quaternary survey site



Appendix C: Location of FV03-15 Lease and Camp disturbance footprints with DEHP RE mapping.



Appendix D: Quaternary survey site assessment records for the FV03-15 Lease, Camp and Access Track.

Site No. Q1 **Recorder:** Craig Eddie, Scott Akins-Sellar **Date** 14/08/2013

Purpose FV03-15 detailed ecological assessment **Time** 11:15

Locality: (inc. distance/direction to nearest town) FV03-15 Well lease (hole centre)

Zone: 55J 0700696 **E** 7171883 **N** **Datum** GDA94

Vegetation structure

Median height of the EDL is to be measured

***D** – dense, **M** – mid dense, **S** – sparse, **V** – very sparse*

Stratum	Median height	Height interval	Est. cover density (D,M,S,V) (%)
E			
T1	20	14 - 22	S (15)
T2	4	2.5 - 8	S (12)
T3			
S1	0.8	0.4 – 1.5	V (4)
S2			
S3			
G	0.2	0.05 – 0.8	D (75)

Structural formation: 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 leiocalyx*
T2	S	*Eucalyptus crebra*
S1	C	*Acacia leiocalyx*
S1	A	*Acacia excelsa*
S1	C	*Eucalyptus crebra*
G	S	*Cymbopogon refractus*
G	A	*Arundinella nepalensis*
G	D	*Eremochloa bimaculata*
G	A	*Cheilanthes sieberi*

Geology, landform, soils

Geology code and rock types: sandstone – coarse grained sediments

Landform: ridge – west facing mid slope

Soils: brown clay loam

DEHP Mapped RE Code: 11.10.1 / 11.10.1

Observed RE Code: 11.10.1 **Landzone:** 10

Vegetation Short Description

Eucalyptus crebra woodland; low tree layer dominated by *E. crebra* and *Acacia leiocalyx;* shrub layer dominated by *A. leiocalyx* and *E. crebra* saplings; grassy ground layer dominated by native perennial grasses

Connectivity/Patch Characteristics

site surrounded by intact woodland

Weeds: R = rare (<10 plants observed); U = uncommon (11 – 50 plants observed); C = common = (>50 plants observed)

Cenchrus ciliaris (R), *Opuntia tomentosa* (R), *Glandularia aristigera* (R)

% Weed Cover: <1

EVNT Flora Present & Likely:

Field Wpt Code: QB1

Photo Nos. BBK4 20377 - 20391

Additional Flora:		
Hakea lorea	*Eragrostis brownii*	*Eucalyptus melanophloia*
Aristida sp. (indet)	*Lomandra* sp. (infertile)	*Gahnia aspera*
Zornia muriculata	*Panicum effusum*	*Aristida caput-medusae*
Alphitonia excelsa	*Eragrostis* sp. (indet)	*Petalostigma pubescens*
Chrysocephalum apiculatum	*Spermacoce multicaulis*	*Cassinia laevis*
Brunoniella australis	*Pterocaulon* sp. indet.	*Psydrax oleifolia*
Capparis canescens	*Sporobolus creber*	*Alternanthera nana*
Exocarpos cupressiformis	*Solanum jucundum*	*Eustrephus latifolius*
Marsdenia viridiflora	*Eremophila debilis*	*Jasminum didymum*
Maytenus cunninghamii	*Enneapogon* sp. (indet)	*Leptochloa decipiens*
Eremophila longifolia	*Cyanthillium cinereum*	*Dodonaea triangularis*
Dianella longifolia	*Calotis cuneifolia*	*Corymbia erythrophloia*

Fauna Habitat Features – (note coarse/fine woody debris, rocks/boulders, mistletoe, termite mounds, hollows, leaf litter, burrows, shrubs, food trees, loose bark, soil cracks, caves/crevices)

Density Scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100%.

Rocks – embedded	0	Boulders	0	Shrub layer	2	Ground cover	4
Rocks – loose	1	Fallen bark		Leaf litter	1	Bare ground	1

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6 = >100

Crevices/ledges	0	Large logs (>30cm diameter)	2	Trees / logs bearing loose bark	2
Underhangs /overhangs / caves	0	Logs with hollows		Termite mounds	1
Small logs (<30cm diameter.)	3	Hollow bearing trees	2	Mistletoe	0

Other

Soil cracks	nil
Water	nil
Other (e.g. food trees):	1 Grey-crowned Babbler nest in *Acacia leiocalyx* (4m from ground)

Disturbances

fire – low severity (<3 years)

grazing – low severity (<1 year) (cattle, horses, macropods)

Incidental Fauna Observations (HE= heard, SE= seen, EV= evidence, FO= flying over)	**Structure of Woody Strata**		
	Str.	**Stems/ha**	**DBH (cm)**
Buff-rumped Thornbill 1 HE on-site	T1	225	30
Black-faced Cuckoo-shrike 1 SE on-site	T2	150	10
Weebill 1 HE on-site	S1	100	5
Lemon Migrant 1 SE FO			
Caper White 1 SE FO			
White-throated Gerygone 1 HE on-site			
Striated Pardalote 1 HE on-site			
Wanderer 1 SE FO			
Feral horse EV (scats)			
Rabbit EV (scats)			
Noisy Friarbird 1 HE on-site			
Grey-crowned Babbler 1 HE off-site			
Noisy Miner 2 SE on-site			
Grey Shrike-thrush 1 HE on-site			
Grey Fantail 1 HE on-site			
Cryptoblepharus pulcher 1 on HT31	Grey Butcherbird		
Brown-headed Honeyeater 1 HE on-site	White-throated Honeyeater 1 HE off-site		

Additional Notes

Site No.	Q2	**Recorder:**	Rosamund Aisthorpe, Jeroen Lurling	**Date**	15/08/2013
Purpose	FV87 lease, camp and access track ecological assessment			**Time**	09:30

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

Zone: 55J 0700588 **E** 7171622 **N** **Datum** GDA94

Vegetation structure

Median height of the EDL is to be measured
***D** – dense, **M** – mid dense, **S** – sparse, **V** – very sparse*

Stratum	Median height	Height interval	Est. cover density (D,M,S,V) (%)
E			
T1	18	15 - 20	S (10)
T2	8	7 - 9	V (2)
T3			
S1	6	5 - 7	M (45)
S2			
S3			
G	0.2	0.1 – 0.3	D (70)

Structural formation: 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 crebra*
T2	D	*Eucalyptus crebra*
S1	D	*Acacia leiocalyx*
G	D	*Eremochloa bimaculata*

Geology, landform, soils

Geology code and rock types: coarse-grained sedimentary rocks

Landform: plateau

Soils: pale brown sandy loam

DEHP Mapped RE Code: RE 11.10.1

Observed RE Code: 11.10.1 **Landzone:** 10

Vegetation Short Description

Eucalyptus crebra open woodland; shrubby midlayer dominated by *Acacia leiocalyx*; grassy ground layer dominated by *Eremochloa bimaculata*

Connectivity/Patch Characteristics

part of large remnant patch

Weeds: R = rare (<10 plants observed); U = uncommon (11 – 50 plants observed); C = common = (>50 plants observed)
Opuntia tomentosa (R), *O. stricta* (R)

% Weed Cover:	<5
EVNT Flora Present:	nil
EVNT Flora Likely:	nil
Field Wpt Code:	QA1
Photo Nos.	BBK5 11936 - 11947

Additional Flora:	
Hakea lorea	
Petalostigma pubescens	
Dianella caerulea	
Panicum effusum	
Alphitonia excelsa	
Sporobolus sp. (indet)	
Eragrostis sp. (indet)	
Brunoniella australis	
Jacksonia scoparia	
Laxmannia gracilis	
Melichrus sp. (Isla Gorge)	

Fauna Habitat Features – (note coarse/fine woody debris, rocks/boulders, mistletoe, termite mounds, hollows, leaf litter, burrows, shrubs, food trees, loose bark, soil cracks, caves/crevices)

Density Scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100%.

Rocks – embedded	0	Boulders	0	Shrub layer	2	Ground cover	3
Rocks – loose	0	Fallen bark	1	Leaf litter	1	Bare ground	1

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6 = >100

Crevices/ledges	0	Large logs (>30cm diameter)	1	Trees / logs bearing loose bark	2
Underhangs /overhangs / caves	0	Logs with hollows	1	Termite mounds	1
Small logs (<30cm diameter.)	3	Hollow bearing trees	1	Mistletoe	0

Other

Soil cracks	nil
Water	nil
Other (e.g. food trees):	nil

Disturbances

fire – minimal / moderate (5-10 years ago)

Grazing – minimal (<1 year ago)

Incidental Fauna Observations (HE= heard, SE= seen, EV= evidence, FO= flying over)	**Structure of Woody Strata**		
	Str.	**Stems/ha**	**DBH (cm)**
Squatter Pigeon x 2 SE HE on-site	T1	200	25
Grey Butcherbird x 1 HE on-site	T2	100	10
Australian Magpie x 1 HE off-site	S1	2000	5
Torresian Crow x 1 HE off-site			
Pied Currawong x 1 HE on-site			
Noisy Miner x 3 SE HE on-site			
Grey-crowned Babbler x 6 SE HE on-site			
Australian Raven			
Pale-headed Rosella x 1 HE on-site			
White-winged Chough x 3 SE HE on-site			
Striated Pardalote x 1 HE off-site			
Cryptoblepharus pulcher x 1 SE on tree			
Red-spotted Jezebel x 1 SE on-site			
Yellow-faced Whipsnake x 1 SE on-site			
Varanus tristis x 1 SE on dead tree			

Additional Notes

Site No. Q3 **Recorder:** Craig Eddie **Date** 16/08/2013

Purpose FV03-15 detailed ecological assessment **Time** 12:00

Locality:
(inc. distance/direction to nearest town) FV 03-15 access track

Zone: 55J 0701168 **E** 7172099 **N** **Datum** GDA94

Vegetation structure

Median height of the EDL is to be measured

***D** – dense, **M** – mid dense, **S** – sparse, **V** – very sparse*

Stratum	Median height	Height interval	Est. cover density (D,M,S,V) (%)
E			
T1	14	12 – 18	V (2)
T2	4	3 – 5	V (2)
T3			
S1	0.8	0.5 – 1.2	V (2)
S2			
S3			
G	0.6	0.2 – 0.8	D (90)

Structural formation: 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	C	*Eucalyptus crebra*
T1	C	*Eucalyptus melanophloia*
S1	D	*Acacia leiocalyx*
T2	D	*Atalaya hemiglauca*
G	D	Poaceae sp. infertile
G	S	*Bothriochloa decipiens*
G	A	*Dichanthium sericeum*

Geology, landform, soils

Geology code and rock types: coarse grained sediments

Landform: ridge (upper slope)

Soils: brown loam

DEHP Mapped RE Code: 11.10.1

Observed RE Code: 11.10.1 **Landzone:** 10

Vegetation Short Description

Eucalyptus crebra, E. melanophloia open woodland; midlayers dominated by very sparse *Atalaya hemiglauca* and *Acacia leiocalyx* saplings; dense grassy ground layer dominated by native perennial grasses

Connectivity/Patch Characteristics

open area surrounded by *Eucalyptus crebra* woodland

Weeds: R = rare (<10 plants observed); U = uncommon (11 – 50 plants observed); C = common = (>50 plants observed)
Glandularia aristigera (U), *Opuntia tomentosa* (R)

% Weed Cover:	5
EVNT Flora Present:	nil
EVNT Flora Likely:	nil
Field Wpt Code:	QB2
Photo Nos.	BBK4 20614 - 20626

Additional Flora:	
Calotis lappulacea	
Jasminum didymum	
Santalum lanceolatum	
Eremophila debilis	
Arundinella nepalensis	
Eremochloa bimaculata	
Eragrostis sp. (infertile)	
Maireana microphylla	
Alternanthera nana	
Asteraceae sp. (infertile)	

Fauna Habitat Features – (note coarse/fine woody debris, rocks/boulders, mistletoe, termite mounds, hollows, leaf litter, burrows, shrubs, food trees, loose bark, soil cracks, caves/crevices)

Density Scores: 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100%.

Rocks – embedded	0	Boulders	0	Shrub layer	1	Ground cover	4
Rocks – loose	0	Fallen bark	0	Leaf litter	1	Bare ground	1

Abundance Scores: 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6 = >100

Crevices/ledges	0	Large logs (>30cm diameter)	0	Trees / logs bearing loose bark	0
Underhangs /overhangs / caves	0	Logs with hollows	0	Termite mounds	0
Small logs (<30cm diameter.)	1	Hollow bearing trees	1	Mistletoe	0

Other

Soil cracks	nil
Water	nil
Other (e.g. food trees):	

Disturbances

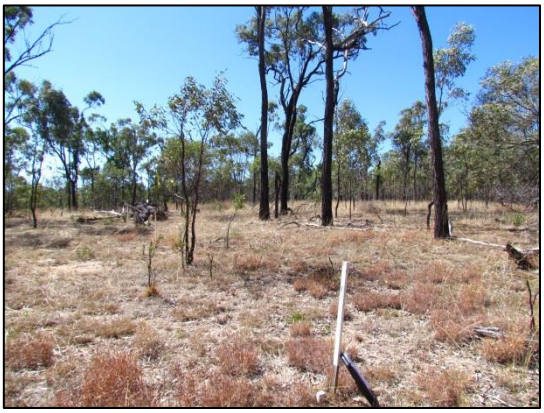
existing vehicle track traverses footprint

Incidental Fauna Observations (HE= heard, SE= seen, EV= evidence, FO= flying over)	**Structure of Woody Strata**		
	Str.	**Stems/ha**	**DBH (cm)**
Noisy Miner x 1 SE HE on-site	T1	40	20
Weebill x 1 HE off-site	T2	40	15
Pied Currawong x 1 SE FO	T3	40	5

Additional Notes

refer to habitat tree sheet for trees to be removed

Appendix E: Photographs of the quaternary assessment survey site at the Lease, Camp and Access Track.



Above: *Eucalyptus crebra* woodland (RE 11.10.1) at proposed FV03-15 lease quaternary assessment site looking north (left) and east (right).

Above: *Eucalyptus crebra* woodland (RE 11.10.1) at proposed FV03-15 lease quaternary assessment site looking west (left) and south (right).

Above: *Eucalyptus crebra* woodland (RE 11.10.1) at proposed FV03-15 camp quaternary assessment site looking north (left) and east (right).

Above: *Eucalyptus crebra* woodland (RE 11.10.1) at proposed FV03-15 camp quaternary assessment site looking west (left) and south (right).

Above: *Eucalyptus crebra* woodland (RE 11.10.1) at proposed FV03-15 access track quaternary assessment site looking north (left) and east (right).

Above: *Eucalyptus crebra* woodland (RE 11.10.1) at proposed FV03-15 access track quaternary assessment site looking west (left) and south (right).

Appendix F: Inventory of flora recorded at the Site.

Key: APC = areas of proposed clearing; LC = least concern; P = present; TAR = Type A Restricted plant; * = non-native plant.

Family	Scientific Name	Common Name	NC Act Status	EPBC Act Status	FV 03-15 Lease	Camp	Access Track (APC & Q3 only)
Acanthaceae	*Brunoniella australis*	Blue Trumpet	LC	not listed	P	P	
Adiantaceae	*Cheilanthes sieberi*	Mulga Fern	LC	not listed	P		
Amaranthaceae	*Alternanthera nana*	Hairy Joyweed	LC	not listed	P		P
Apocynaceae	*Marsdenia viridiflora*	Native Pear	LC	not listed	P	P	
Asteraceae	Asteraceae sp. (infertile)	A Daisy		not listed			P
Asteraceae	*Calotis cuneifolia*	Purple Burr Daisy	LC	not listed	P		
Asteraceae	*Calotis lappulacea*	Yellow Burr Daisy	LC	not listed			P
Asteraceae	*Cassinia laevis*	Cough Bush	LC	not listed	P		
Asteraceae	*Chrysocephalum apiculatum*	Yellow Buttons	LC	not listed	P		
Asteraceae	*Coronidium oxylepis*	An Everlasting Daisy	LC	not listed			P
Asteraceae	*Cyanthillium cinereum*	Vernonia	LC	not listed	P		
Asteraceae	*Pterocaulon* sp. (infertile)	Applebush	LC	not listed	P		
Byttneriaceae	*Keraudrenia corollata*	A Velvet-flower	LC	not listed			P
Cactaceae	*Opuntia stricta**	Common Pest Pear	LC	not listed		P	
Cactaceae	*Opuntia tomentosa**	Velvety Tree Pear	not listed	not listed	P	P	P
Capparaceae	*Capparis canescens*	Wild Orange, Wild Pomegranate	LC	not listed	P		
Casuarinaceae	*Allocasuarina inophloia*	Thready-bark She-oak	LC	not listed			P
Celastraceae	*Maytenus cunninghamii*	Yellow Berry Bush	LC	not listed	P	P	
Chenopodiaceae	*Maireana microphylla*	Cotton Bush	LC	not listed			P
Cupressaceae	*Callitris endlicheri*	Black Cypress Pine	LC	not listed			P
Cyperaceae	*Gahnia aspera*	Rough Saw-sedge	LC	not listed	P		
Ericaceae	*Melichrus* sp. (Isla Gorge P.Sharpe+ 601)	An urn-heath	LC	not listed		P	

Family	Scientific Name	Common Name	NC Act Status	EPBC Act Status	FV 03-15 Lease	Camp	Access Track (APC & Q3 only)
Fabaceae	*Jacksonia scoparia*	Dogwood	LC	not listed		P	
Fabaceae	*Zornia muriculata*		LC	not listed	P		
Goodeniaceae	*Goodenia glabra*	Smooth Goodenia	LC	not listed	P		
Hemerocallidaceae	*Dianella caerulea*	Blue Flax-lily	LC	not listed		P	
Hemerocallidaceae	*Dianella longifolia*	Smooth Flax-lily	LC	not listed	P		
Laxmanniaceae	*Eustrephus latifolius*	Wombat Berry	LC	not listed	P		
Laxmanniaceae	*Laxmannia gracilis*	Slender Wire Lily	LC	not listed		P	
Laxmanniaceae	*Lomandra* sp. (infertile)	Matrush	LC	not listed	P		
Mimosaceae	*Acacia decora*	Pretty Wattle	LC	not listed			P
Mimosaceae	*Acacia jucunda*		LC	not listed			P
Mimosaceae	*Acacia everistii*		LC	not listed			P
Mimosaceae	*Acacia excelsa*	Ironwood	LC	not listed	P		
Mimosaceae	*Acacia leiocalyx*	Early Flowering Black Wattle	LC	not listed	P	P	P
Mimosaceae	*Acacia longispicata*	Slender-flowered Wattle	LC	not listed			P
Mimosaceae	*Acacia shirleyi*	Lancewood	LC	not listed			P
Myoporaceae	*Eremophila debilis*	Winter Apple	LC	not listed	P		P
Myoporaceae	*Eremophila longifolia*	Long-leaved Emu Bush, Berrigan	LC	not listed	P		
Myrtaceae	*Angophora leiocarpa*	Smooth-barked Apple, Rusty Gum	LC	not listed			P
Myrtaceae	*Corymbia erythrophloia*	Red Bloodwood	LC	not listed	P		
Myrtaceae	*Corymbia trachyphloia*	Brown Bloodwood	LC	not listed			P
Myrtaceae	*Eucalyptus crebra*	Narrow-leaved Ironbark	LC	not listed	P	P	P
Myrtaceae	*Eucalyptus fibrosa* subsp. *nubila*	Dusky-leaved Ironbark	LC	not listed			P
Myrtaceae	*Eucalyptus melanophloia*	Silver-leaved Ironbark	LC	not listed	P		P
Myrtaceae	*Eucalyptus* sp. (indet.)	An Ironbark	LC	not listed			P

Family	Scientific Name	Common Name	NC Act Status	EPBC Act Status	FV 03-15 Lease	Camp	Access Track (APC & Q3 only)
Myrtaceae	*Eucalyptus tenuipes*	Narrow-leaved White Mahogany	LC	not listed			P
Myrtaceae	*Eucalyptus tereticornis*	Queensland Blue Gum, Forest red Gum	LC	not listed			P
Oleaceae	*Jasminum didymum*	Jasmine	LC	not listed	P		P
Picrodendraceae	*Petalostigma pubescens*	Quinine Tree	LC	not listed	P	P	
Poaceae	*Aristida* sp. (indet.)	A Wiregrass	LC	not listed	P		
Poaceae	*Aristida caput-medusae*	Many-headed Wiregrass	LC	not listed	P		
Poaceae	*Arundinella nepalensis*	Reedgrass	LC	not listed	P		P
Poaceae	*Bothriochloa decipens*	Pitted Blue Grass	LC	not listed			P
Poaceae	*Cenchrus ciliaris**	Buffel Grass	not listed	not listed	P		
Poaceae	*Cymbopogon refractus*	Barbed-wire Grass	LC	not listed	P		
Poaceae	*Dichanthium sericeum*	Queensland Blue Grass	LC	not listed			P
Poaceae	*Enneapogon* sp. (indet.)	A Bottle Washer Grass	LC	not listed	P		
Poaceae	*Eragrostis* sp. (indet.)		LC	not listed	P	P	
Poaceae	*Eragrostis* sp. (infertile)		-	not listed			P
Poaceae	*Eragrostis brownii*		LC	not listed	P		
Poaceae	*Eremochloa bimaculata*	Poverty Grass	LC	not listed	P	P	P
Poaceae	*Heteropogon contortus*	Black Spear Grass	LC	not listed			P
Poaceae	*Leptochloa decipiens*	Slender Canegrass	LC	not listed	P		
Poaceae	*Panicum effusum*	Hairy Panic	LC	not listed	P	P	
Poaceae	Poaceae sp. (infertile)	A Grass	-	not listed			P
Poaceae	*Sporobolus creber*	Western Rat's Tail Grass	LC	not listed	P		
Poaceae	*Sporobolus* sp. (indet.)		LC	not listed		P	
Poaceae	*Themeda triandra*	Kangaroo Grass	LC	not listed			P
Proteaceae	*Hakea lorea*	Bootlace Oak	LC	not listed	P	P	
Rhamnaceae	*Alphitonia excelsa*	Red Ash, Soap Tree	LC	not listed	P	P	
Rubiaceae	*Psydrax oleifolia*	Myrtle Tree	LC	not listed	P		

Family	Scientific Name	Common Name	NC Act Status	EPBC Act Status	FV 03-15 Lease	Camp	Access Track (APC & Q3 only)
Rubiaceae	*Spermacoce multicaulis*	No common name	LC	not listed	P		
Santalaceae	*Exocarpos cupressiformis*	Native Cherry	LC	not listed	P		
Santalaceae	*Santalum lanceolatum*	Sandalwood	LC	not listed			
Sapindaceae	*Atalaya hemiglauca*	Whitewood	LC	not listed			
Sapindaceae	*Dodonaea triangularis*	Small-leaved Hopbush	LC	not listed	P		
Solanaceae	*Solanum jucundum*	Potato Bush	LC	not listed	P		
Verbenaceae	*Glandularia aristigera**	Mayne's Pest	not listed	not listed	P		

Appendix G: Inventory of fauna recorded at the Site.

KEY: * = non-native species; EV = evidence (e.g. feather, scat, scratches); HE = heard; LC = least concern; V = vulnerable; M = migratory; P = present; SE = seen.

CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS	FV03-15 LEASE	FV03-15 LEASE / CAMP BUFFER	CAMP	ACCESS TRACK
Amphibians	Bufonidae	*Rhinella marina*	Cane Toad*	-	-				P
Birds	Acanthizidae	*Acanthiza reguloides*	Buff-rumped Thornbill	LC		P(HE)			P
Birds	Acanthizidae	*Gerygone albogularis*	White-throated Gerygone	LC		P(HE)			P
	Acanthizidae	*Gerygone fusca*	Western Gerygone						
Birds	Acanthizidae	*Smicrornis brevirostris*	Weebill	LC		P(HE)	P (W1, W4)		P
Birds	Accipitridae	*Aquila audax*	Wedge-tailed Eagle	LC					P (wpt #20)
Birds	Accipitridae	*Milvus migrans*	Black Kite	LC					P
Birds	Anatidae	*Chenonetta jubata*	Australian Wood Duck	LC					P
Birds	Artamidae	*Cracticus tibicen*	Australian Magpie	LC			P (W3)	P(HE)	P
Birds	Artamidae	*Cracticus nigrogularis*	Pied Butcherbird	LC					P
Birds	Artamidae	*Cracticus torquatus*	Grey Butcherbird	LC		P		P(HE)	P (wpt #35)
Birds	Artamidae	*Strepera graculina*	Pied Currawong	LC				P(HE)	P
Birds	Cacatuidae	*Cacatua galerita*	Sulphur-crested Cockatoo	LC					P
Birds	Cacatuidae	*Calyptorhynchus funereus*	Yellow-tailed Black-cockatoo	LC					P (wpt #37)
Birds	Cacatuidae	*Eolophus roseicapillus*	Galah	LC					P

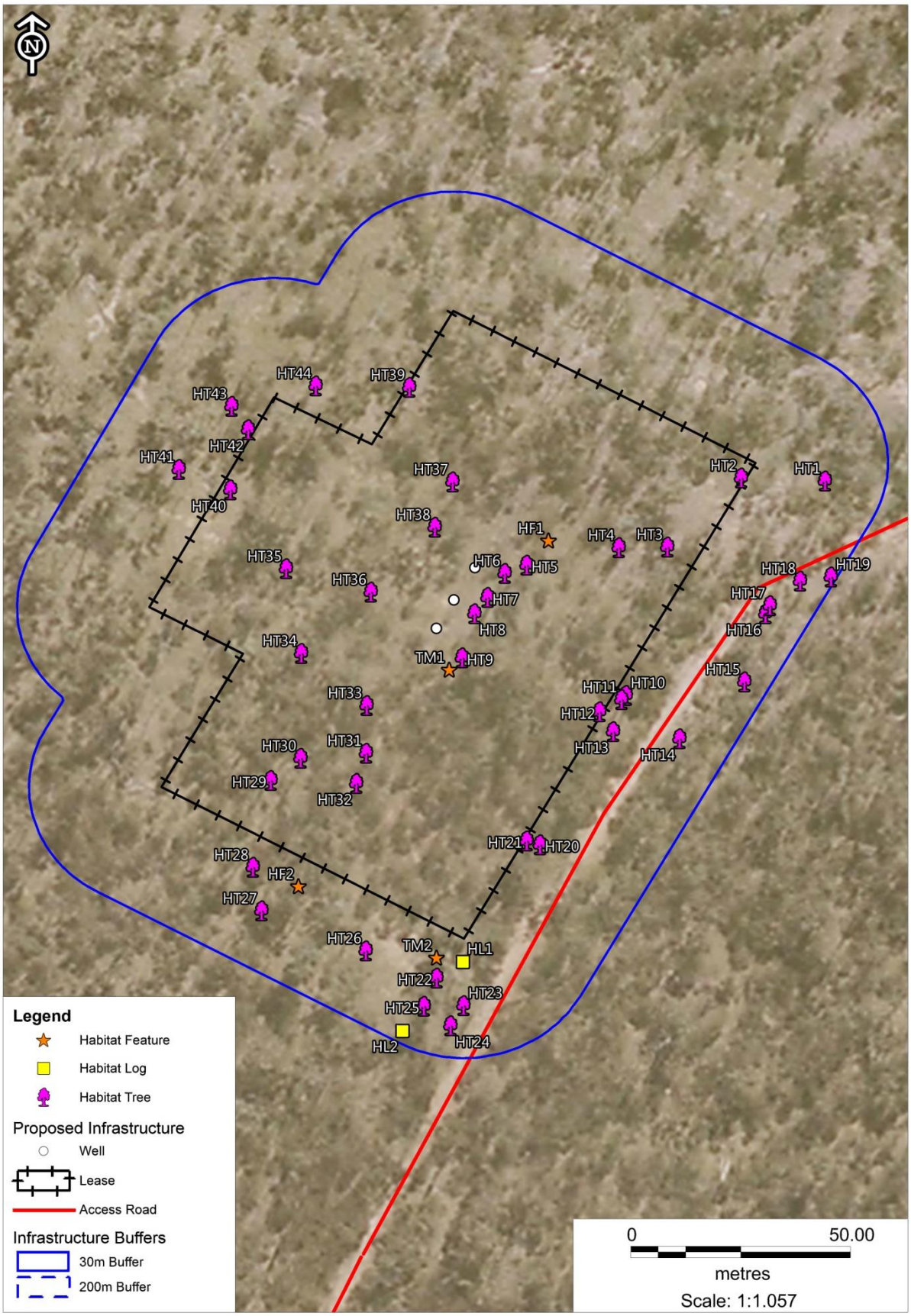
CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS	FV03-15 LEASE	FV03-15 LEASE / CAMP BUFFER	CAMP	ACCESS TRACK
Birds	Campephagidae	*Coracina novaehollandiae*	Black-faced Cuckoo-shrike	LC		P(SE)			P
Birds	Charadriidae	*Vanellus miles*	Masked Lapwing	LC					P
Birds	Climacteridae	*Cormobates leucophaea*	White-throated Treecreeper	LC					P (wpt #35)
Birds	Columbidae	*Geopelia humeralis*	Bar-shouldered Dove	LC					P
birds	Columbidae	Geophaps scripta scripta	Squatter Pigeon (Southern Subspecies)	V				P(SE/HE)	P (refer Table 16)
Birds	Columbidae	*Ocyphaps lophotes*	Crested Pigeon	LC					P
Birds	Columbidae	*Phaps chalcoptera*	Common Bronzewing	LC					P (wpt #20)
Birds	Corcoracidae	*Corcorax melanorhamphos*	White-winged Chough	LC				P(SE/HE)	P
Birds	Corcoracidae	*Struthidea cinerea*	Apostlebird	LC					P (wpts #29, 44)
Birds	Corvidae	*Corvus orru*	Torresian Crow	LC			P	P(HE)	P
Birds	Estrildidae	*Taeniopygia bichenovii*	Double-barred Finch	LC					P
Birds	Falconidae	*Falco cenchroides*	Nankeen Kestrel	LC					P
Birds	Halcyonidae	*Dacelo novaeguineae*	Laughing Kookaburra	LC			P (W3, W5)		P
Birds	Maluridae	*Malurus cyaneus*	Superb Fairy-wren	LC			P (W1)		P
Birds	Maluridae	*Malurus melanocephalus*	Red-backed Fairy-wren	LC					P (wpt SQPI1)

CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS	FV03-15 LEASE	FV03-15 LEASE / CAMP BUFFER	CAMP	ACCESS TRACK
Birds	Meliphagidae	*Entomyzon cyanotis*	Blue-faced Honeyeater	LC					P
Birds	Meliphagidae	*Lichenostomus chrysops*	Yellow-faced Honeyeater	LC					P
Birds	Meliphagidae	*Lichenostomus leucotis*	White-eared Honeyeater	LC					P
Birds	Meliphagidae	*Manorina melanocephala*	Noisy Miner	LC		P(SE)	P (W2, W3, W4)	P(SE/HE)	P
Birds	Meliphagidae	*Meliphaga lewinii*	Lewin's Honeyeater	LC					P
Birds	Meliphagidae	*Melithreptus albogularis*	White-throated Honeyeater	LC		P(HE)			P (wpt #28)
birds	Meliphagidae	Melithreptus brevirostris	Brown-headed Honeyeater	LC		P(HE)			
Birds	Meliphagidae	*Philemon corniculatus*	Noisy Friarbird	LC		P(HE)			P
Birds	Nectariniidae	*Dicaeum hirundinaceum*	Mistletoebird	LC					P
Birds	Monarchidae	*Grallina cyanoleuca*	Magpie-lark	LC					P
Birds	Pachycephalidae	*Colluricincla harmonica*	Grey Shrike-thrush	LC		P(HE)			P
Birds	Pachycephalidae	*Pachycephala rufiventris*	Rufous Whistler	LC			P (W4, W5)		P
Birds	Pardalotidae	*Pardalotus striatus*	Striated Pardalote	LC		P(HE)	P (W5)	P(HE)	P
Birds	Petroicidae	*Eopsaltria australis*	Eastern Yellow Robin	LC					P
Birds	Pomatostomidae	*Pomatostomus temporalis*	Grey-crowned Babbler	LC		P(HE)	P (W3, W4)	P(SE/HE)	P
Birds	Psittacidae	*Alisterus scapularis*	Australian King-parrot	LC					P(wpt #29)
Birds	Psittacidae	*Aprosmictus erythropterus*	Red-winged Parrot	LC					P

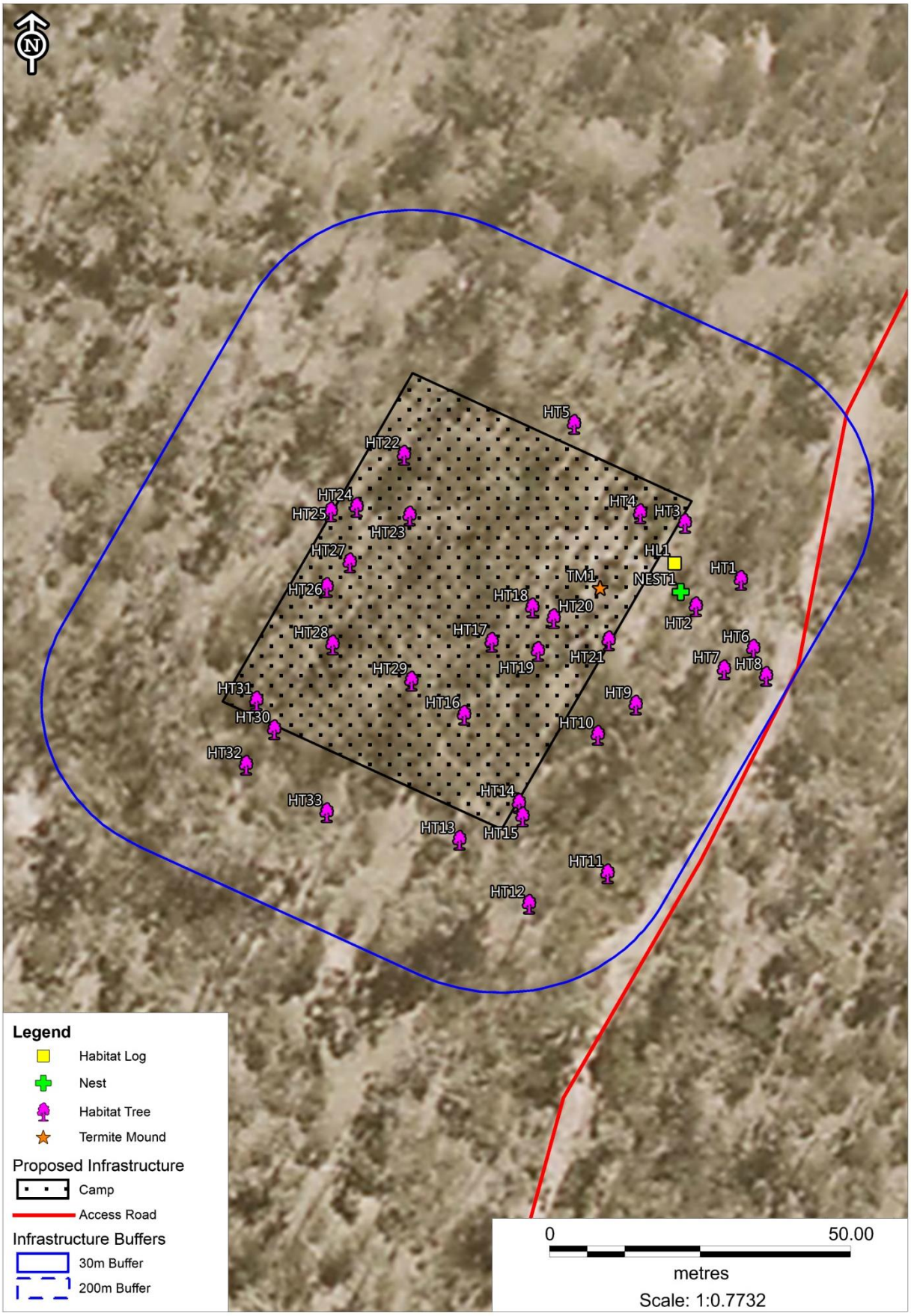
CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS	FV03-15 LEASE	FV03-15 LEASE / CAMP BUFFER	CAMP	ACCESS TRACK
Birds	Psittacidae	*Glossopsitta pusilla*	Little Lorikeet	LC					P
Birds	Psittacidae	*Platycercus adscitus*	Pale-headed Rosella	LC			P (W3)	P(HE)	P
Birds	Psittacidae	*Trichoglossus chlorolepidotus*	Scaly-breasted Lorikeet	LC					P
Birds	Psittacidae	*Trichoglossus haematodus moluccanus*	Rainbow Lorikeet	LC					P
Birds	Rhipiduridae	*Rhipidura albiscapa*	Grey Fantail	LC		P(HE)			P
Birds	Rhipiduridae	*Rhipidura leucophrys*	Willie Wagtail	LC					P (wpt #58)
Birds	Timaliidae	*Zosterops lateralis*	Silvereye	LC					P
Insects	Nymphalidae	*Danaus plexippus*	Monarch*						P
Insects	Nymphalidae	*Danaus chrysippus*	Lesser Wanderer			P(SE)			
Insects	Nymphalidae	*Junonia villida calybe*	Meadow Argus				P (W1)		P (CRK-B)
Insects	Papilionidae	*Papilio anactus*	Dingy Swallowtail				P (W1)		P
Insects	Pieridae	*Belenois java teutonia*	Caper White			P(SE)			
Insects	Pieridae	*Catopsilia pomona*	Lemon Migrant			P(SE)			
Insects	Pieridae	*Delias aganippe*	Red-spotted Jezebel					P(SE)	
Mammals	Canidae	*Canis lupus dingo*	Dingo						P (wpt #71)
Mammals	Equidae	*Equus caballus*	Horse			P(EV)			P
Mammals	Leporidae	*Oryctolagus cuniculus*	Rabbit			P(EV)			
Mammals	Macropodidae	*Macropus giganteus*	Eastern Grey Kangaroo	LC					P
Mammals	Macropodidae	*Macropus parryi*	Whiptail Wallaby	LC					P
Mammals	Macropodidae	*Macropus robustus*	Common Wallaroo	LC					P (wpt #19)

CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS	FV03-15 LEASE	FV03-15 LEASE / CAMP BUFFER	CAMP	ACCESS TRACK
Mammals	Suidae	*Sus scrofa*	Pig*						P (Hungry Creek)
Reptiles	Elapidae	*Demansia psammophis*	Yellow-faced Whip Snake	LC				P(SE)	
Reptiles	Scincidae	*Carlia pectoralis*	A Rainbow Skink	LC					P
Reptiles	Scincidae	*Cryptoblepharus pulcher*	Elegant Snake-eyed Skink	LC		P(SE)		P(SE)	P(wpt #55, CRK-B)
Reptiles	Varanidae	*Varanus tristis*	Black-tailed Monitor	LC				P(SE)	

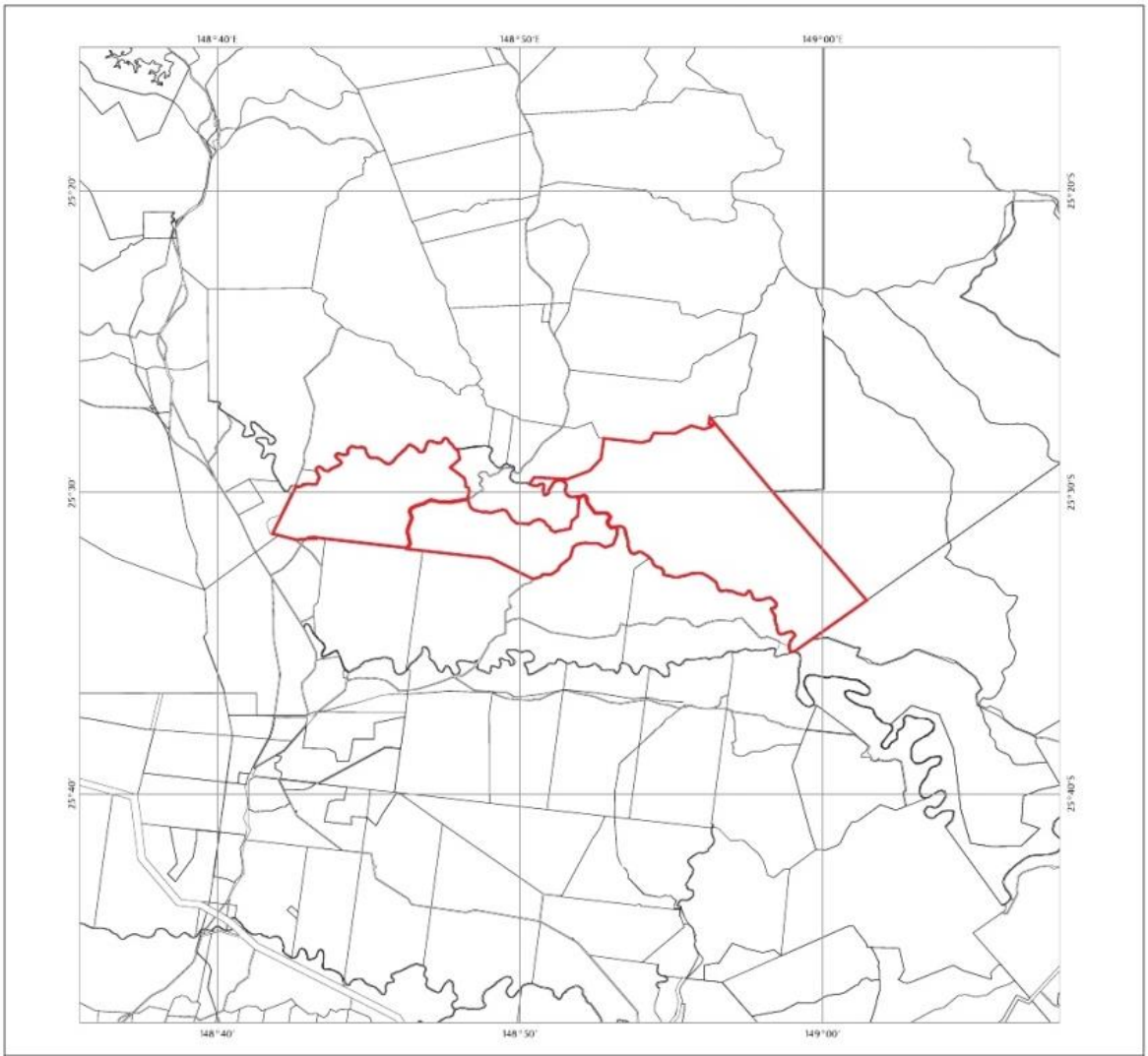
Appendix H: Locations of fauna habitat features recorded at the proposed Lease.



Appendix I: Locations of fauna habitat features recorded at the proposed Camp.



Appendix J: Referable wetlands map for the Lease and Camp



Map of Referable Wetlands
Wetland Protection Areas

Requested By: ANGELA.BENDALL@BOOBOOK.BIZ
Date: 01 Aug 13 Time: 12.55.42

Centered on Lot on Plan:
807 PH1979

Legend
- Selected Land Parcel
- Property Boundary

Wetland Protection Areas
- HES Wetland
- Trigger Area

Queensland Government

LOCALITY DIAGRAM

This scale bar is approximate only
Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)
This product is unprojected and is not suitable for measuring distances

Note:
This map shows the location of wetland protection areas which are defined under the Environmental Protection Regulation 2008.

Within wetland protection areas, certain types of development involving high impact earthworks are made assessable under Schedule 3 of the Sustainable Planning Regulation 2009.

The Department of Environment and Heritage Protection has been made a concurrence agency under Schedule 7 of the Sustainable Planning Regulation 2009 for assessable development involving high impact earthworks within wetland protection areas.

The policy outcome and assessment criteria for assessing these applications are described in the State Planning Policy 4/11: Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments.

This map is produced at a scale relevant to the size of the lot on plan identified and should be printed at A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Heritage Protection at <www.ehp.qld.gov.au> or email <planning.support@ehp.qld.gov.au>

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Map of Referable Wetlands for the Environmental Protection Act 1994

Requested By: ANGELA.BENDALL@BOOBOOK.BIZ
Date: 01 Aug 13 Time: 12.55.44

Centered on Lot on Plan:
807 PH1979

Legend

- Selected Land Parcel
- Property Boundary
- HES Wetland GBR Catchments
- HES Wetland
- GES Wetland

Queensland Government

LOCALITY DIAGRAM

This scale bar is approximate only
Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)
This product is unprojected and is not suitable for measuring distances

Note:
This map shows the location of wetlands on the Map of Referable Wetlands which are defined under the Environmental Protection Regulation 2008.

Wetlands are assessed for ecological significance using the environmental values for wetlands in section 81A of the Environmental Protection Regulation 2008. Wetlands are considered either High Ecological Significance (HES) or of General Ecological Significance (GES) for the purposes of the environmental values.

This map is produced at a scale relevant to the size of the lot on plan identified and should be printed at A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Heritage Protection at <www.ehp.qld.gov.au> or email <planning.support@ehp.qld.gov.au>

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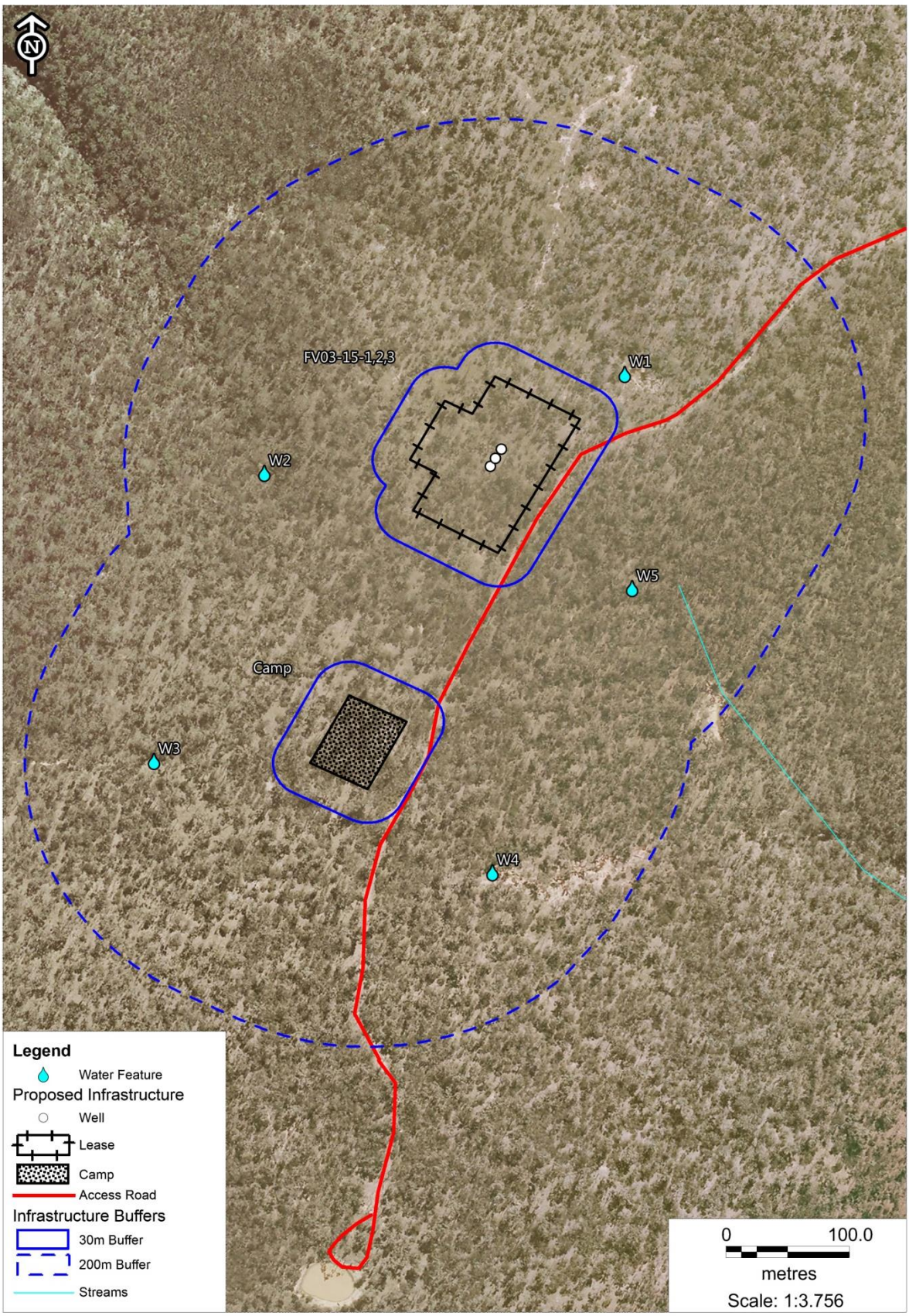
Appendix K: Drainage features recorded within the Lease and Camp 100m buffer.



Appendix L: Photographs of drainage features recorded within the Lease and Camp 100m buffer.


Above: Drainage feature W1 (left and right).

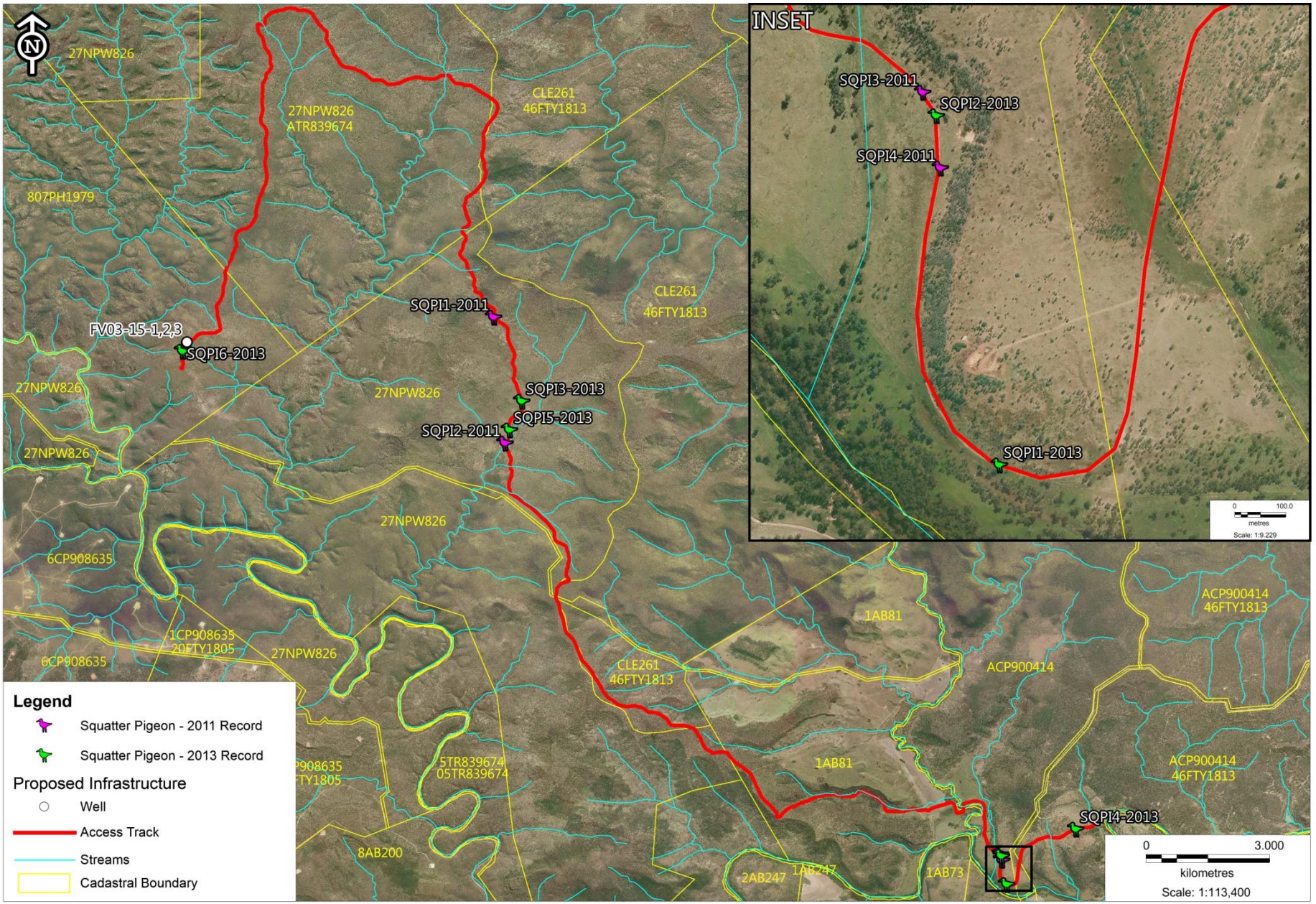

Above: Drainage feature W2 (left and right).


Above: Drainage feature W3 (left and right).

Above: Drainage feature W4 (left and right).

Above: Drainage feature W5 (left and right).

Appendix M: Locations of MNES fauna recorded during the survey.



Appendix N: Fauna habitat features recorded within areas of proposed clearing along the Access Track.

Note: Features within Expedition (Limited Depth) National Park are shaded green.

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#25	HT1	*Eucalyptus* sp. (ironbark)	D	30cm	18m	2	S	25%	**Potential EPBC fauna:** Eastern Long-eared Bat	
#25	HT2	*Eucalyptus* sp. (ironbark)	D	20cm	18m	1	S	5%	**Potential EPBC fauna:** Eastern Long-eared Bat	
#25	HT3	*Eucalyptus* sp. (ironbark)	D	20cm	16m	1	S	50%	**Potential EPBC fauna:** Eastern Long-eared Bat	
#26	HT4	*Eucalyptus* sp. (ironbark)	D`	60cm	23m	3 1	S M	40%	**Potential EPBC fauna:** Eastern Long-eared Bat	
#27	HT5	*Eucalyptus* sp. (ironbark)	D	60cm	13m	1 1	S M	5%	Aerial termite mound present; no obvious excavations **Potential EPBC fauna:** Eastern Long-eared Bat	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#27	HT6	*Eucalyptus crebra*	A	50cm	25m	3	S	5%	Some small dead branches **Potential EPBC fauna:** Eastern Long-eared Bat	
#28	HT7	*Eucalyptus crebra*	A	50cm	23m	3	S	5%	**Potential EPBC fauna:** Eastern Long-eared Bat	
#29	HT8	*Corymbia citriodora* subsp. *variegata*	D	60cm	25m	3	M	–	**Potential EPBC fauna:** Eastern Long-eared Bat	
#30	HT9	*Corymbia citriodora* subsp. *variegata*	A	17cm	12m	2	S	–	One main limb to be lopped **Potential EPBC fauna:** Eastern Long-eared Bat, Koala	
#31	HT10	*Eucalyptus fibrosa*	D	50cm	25m	4	M	–	Tree has a burnt trunk **Potential EPBC fauna:** Eastern Long-eared Bat	
#33	HT11	*Eucalyptus fibrosa*	A	60cm	25m	1 3	S M	5%	**Potential EPBC fauna:** Eastern Long-eared Bat	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#34	HT12	*Eucalyptus crebra*	A	20cm	18	–	–	–		
#34	HT13	*Eucalyptus crebra*	A	20cm	23m	1	S	–	**Potential EPBC fauna:** Eastern Long-eared Bat	
#34	HT13	Unidentified log	D	-	-	-	-	-	**Potential EPBC fauna:** Dunmall's Snake	
#35	HT14	*Callitris endlicheri*	A	10cm	8m	–	–	–		
#35	HT14	*Eucalyptus fibrosa*	A	15cm	10m	–	–	–		
#35	HT14	Unidentified logs	D	-	-	-	-	-	**Potential EPBC fauna:** Dunmall's Snake, Yakka Skink	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#36	HT15	*Acacia leiocalyx*	A	5cm	6m	–	–	–	Clump of saplings	
#36 - 37	-	-	-	-	-	-	-	-	Numerous small rocks present on slope of ridge **Potential EPBC fauna:** Dunmall's Snake, Collared Delma	No image available
#37	–	*Acacia leiocalyx*	A	1cm	0.3m	–	–	–	Single sapling to be removed **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon	
Creek crossing between #37 - 38	-	*Acacia leiocalyx*	A	2cm	1m	-	-	-	Large rocks at crossing to be avoided	
CRK A (between #38 & 39)	CRK-A log1	Unidentified logs + *Acacia leiocalyx*	D	multiple	-	-	-	-	Logs and *A. leiocalyx* saplings to be removed **Potential EPBC fauna:** Dunmall's Snake, Collared Delma	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
CRK A (between #38 & 39)	CRK-A log1	Unidentified log	D	60cm	12m	1	L	50%	Large log to be shifted **Potential EPBC fauna:** Dunmall's Snake, Yakka Skink	
#39	HT16	*Eucalyptus* sp. (ironbark)	A	30cm	7m	1	M	20%	**Potential EPBC fauna:** Eastern Long-eared Bat	
#40	HT17	*Eucalyptus* sp. (ironbark)	1 D 3 A	15 - 20cm	8 - 10m	1	M	20%	Clump of 4 trees **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon	
#41	HT18	*Eucalyptus* sp. (ironbark)	A	20cm	17m	–	–	–		
#41	HT19	*Eucalyptus* sp. (ironbark)	A	30cm	20m	–	–	–		
#42	HT20	*Eucalyptus* sp. (ironbark)	A	10 - 60cm	6 – 25m	2	M	–	Clump of 6 trees; mixed species **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#43	HT21	*Eucalyptus crebra*	A	10 - 20cm	10 - 14m	–	–	–	3 trees	
#43	HT21	Terrestrial termite mound	-	-	-	-	-	-	Termite mound present with small hole/excavation **Potential EPBC fauna:** Dunmall's Snake,	
#44	HT22	*Eucalyptus crebra*	4 A 1 D	10 - 20cm	10 - 20m	3	S	50%	**Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon	
#45	HT23	*Eucalyptus crebra*	A	25cm	20m	–	–	–	**Potential EPBC fauna:** Squatter Pigeon	
#46	HT24	*Eucalyptus crebra* (x4), *Acacia leiocalyx* (x1)	A	10 - 30cm	5 - 20m	2	S	20%	**Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon	
#47	HT25	Unknown sp.	D	15cm	12m	1	M	5%	Burnt trunk **Potential EPBC fauna:** Eastern Long-eared Bat	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#48	HT26	*Eucalyptus fibrosa, E. crebra, Acacia leiocalyx, Corymbia citriodora variegata*	A	10 - 20cm	6 - 20m	–	–	–	1 x *E. fibrosa*, 1 x *E. crebra*, 1 x *A. leiocalyx*, 2 x *Corymbia citriodora variegata* **Potential EPBC fauna:** Squatter Pigeon, Koala	
#49	HT27	*Corymbia citriodora variegata*	A	–	–	–	–	–	Small patch of saplings **Potential EPBC fauna:** Squatter Pigeon, Koala	
#50	HT28	*Eucalyptus fibrosa, E. melanophloia*	A	15 - 20cm	10m	2 2	S M	5%	2 trees separated by c. 40m **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon	
#51	HT29	*Acacia leiocalyx*	A	5 - 10cm	3m	–	–	–	Patch of saplings; small rocks present **Potential EPBC fauna:** Squatter Pigeon, Collared Delma	
#51	HT29	*Corymbia erythrophloia*	A	5 - 10cm	6m	–	–	–	small rocks present **Potential EPBC fauna:** Squatter Pigeon, Collared Delma	
#52	HT30	*Corymbia citriodora variegata*	A	60cm	25m	3	S	–	**Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon, Koala	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#53	HT31	*Corymbia citriodora variegata* (x4)	A	20 - 50cm	25m	3	S	–	**Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon, Koala	
#53	HT31	*Eucalyptus* sp.	D	20cm	20m	1	M	–	Tree is split **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon	
#53	HT31	*Eucalyptus melanophloia*	A	10cm	8m	–	–	–	4 saplings **Potential EPBC fauna:** Squatter Pigeon	
#53	HT31	*Acacia leiocalyx*	A	5cm	6m	–	–	–	Multiple saplings **Potential EPBC fauna:** Squatter Pigeon	
#54	HT32	*Eucalyptus melanophloia*	A	30cm	12m	–	–	–		
#55	HT33	*Acacia leiocalyx*	A	5cm	6m	–	–	–		

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#55	HT33	*Eucalyptus melanophloia*	A	30cm	18m	–	–	–		
#56	HT34	*Eucalyptus crebra*	A	40cm	20m	7	S	–	**Potential EPBC fauna:** Eastern Long-eared Bat	
#57	HT35	*Eucalyptus crebra*	A	40cm	20m	–	–	5%		
#57	HT35	*Corymbia citriodora variegata*	A	30cm	24m	1	S	–	**Potential EPBC fauna:** Eastern Long-eared Bat, Koala	
#57	HT35	*Acacia leiocalyx, A. everistii*	A	–	–	–`	–	–	Multiple saplings **Potential EPBC fauna:** Squatter Pigeon	No image available
#58	HT36	*Eucalyptus crebra*	A	20cm	10m	1	S	5%	**Potential EPBC fauna:** Eastern Long-eared Bat	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#59	HT37	*Corymbia citriodora variegata*	A	40cm	28m	1 1	S M	–	Scattered saplings <30cm high **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon, Koala	
#60	HT38	*Corymbia citriodora variegata*	A	50cm	30m	6 1	S M	–	Tree located in the middle of the road **Potential EPBC fauna:** Eastern Long-eared Bat, Koala	
#61	HT39	*Corymbia citriodora variegata*	A	40cm	30m	4	S	–	**Potential EPBC fauna:** Eastern Long-eared Bat, Koala	
#62	HT40	*Eucalyptus* sp., *E. crebra, Acacia leiocalyx*	-	20 - 30cm	-	1	L	–	2 x *Eucalyptus* sp. (dead), 8 x *E. crebra*, 8 x *A. leiocalyx.* Rocks present on bank and bed of watercourse. **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon, Collared Delma, Dunmall's Snake	
#63	HT44	*Eucalyptus crebra*	A	30cm	18m	3	S	5%	An extra 3 mature *Eucalyptus crebra* without hollows & several *Acacia leiocalyx* saplings being cleared on outside of corner; another 2 x 12m high *E. crebra* trees further along	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
									track. Scattered small logs present. **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon, Collared Delma, Dunmall's Snake	
#64	HT45	*Eucalyptus crebra*	A	60cm	30m	1 1 1	S M L	5%	Small tree will be removed; also 1 x 30cm x 20m *E. crebra* to be removed **Potential EPBC fauna:** Eastern Long-eared Bat, Squatter Pigeon	
#65	HT46	*Eucalyptus crebra*	A	15 - 30cm	12 - 18m	1	S	10%	3 trees to be cleared **Potential EPBC fauna:** Eastern Long-eared Bat	
#65	HT46	Unidentified log	D	-	-	1	L	0	Large log to be avoided **Potential EPBC fauna:** Yakka Skink, Dunmall's Snake	
#65	HT46	*Acacia leiocalyx*	A	5cm	6m	–	–	–	2 saplings to be cleared	

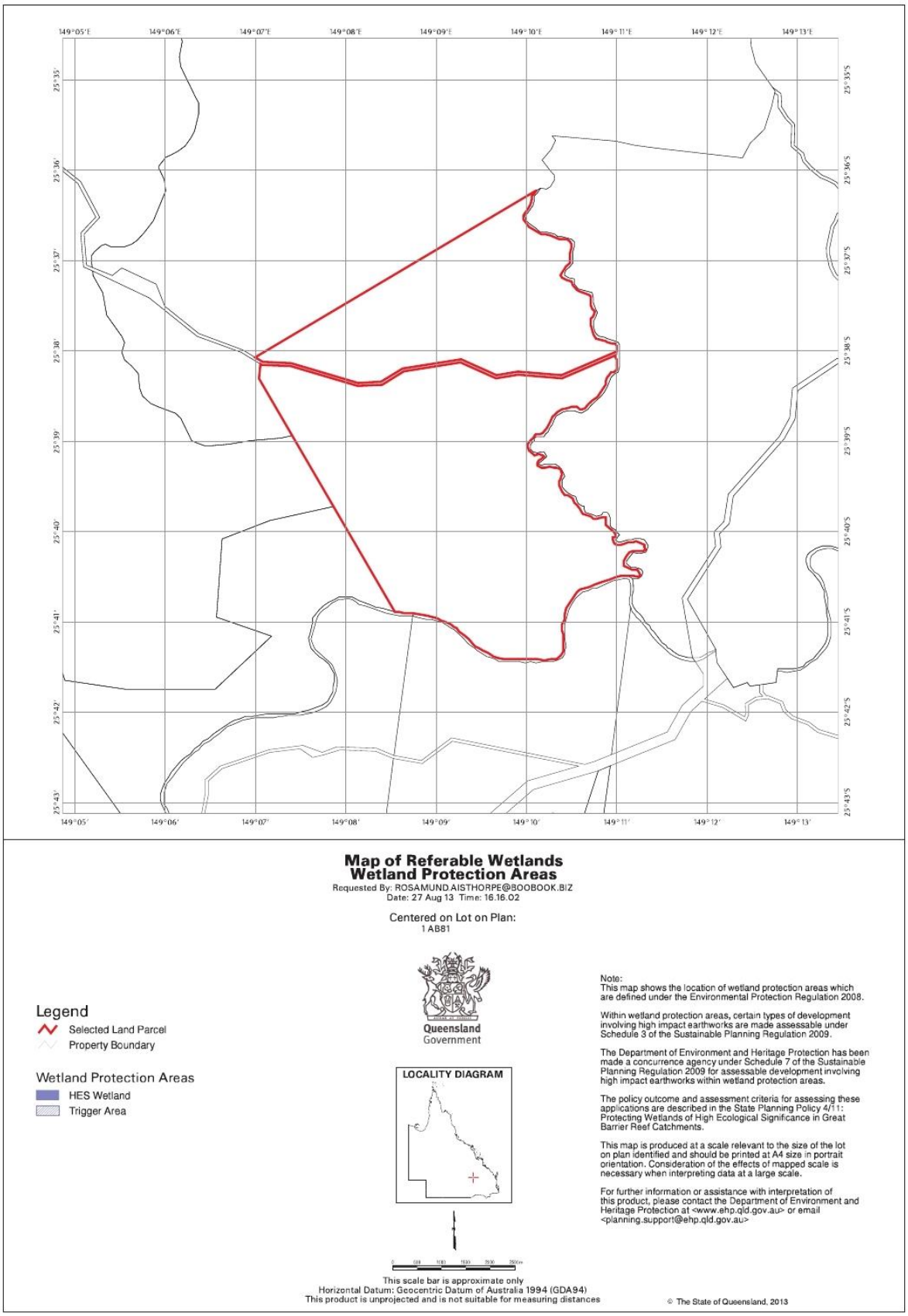
SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#66	HT47	*Eucalyptus crebra*	A	50cm	20m	4	S	5%	1 tree to be cleared **Potential EPBC fauna:** Eastern Long-eared Bat	
#66	HT47	*Eucalyptus tenuipes*	A	20cm	15m	–	–	–	2 trees to be cleared and 1 *Acacia* sp. (dead)	
#67	HT48	*Eucalyptus crebra*	A	30cm	18m	–	–	–	1 tree to be cleared	
#67	HT48	*Eucalyptus tenuipes*	A	30cm	14m	–	–	–	2 trees to be cleared	
#68 - #69	HT49	*Eucalyptus crebra*	A	20cm	20m	–	–	–	2 x *E. crebra* trees to be cleared **Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	
#70	HT50	*Corymbia trachyphloia*	A	50cm	18m	6	M	–	**Potential EPBC fauna:** Eastern Long-eared Bat	

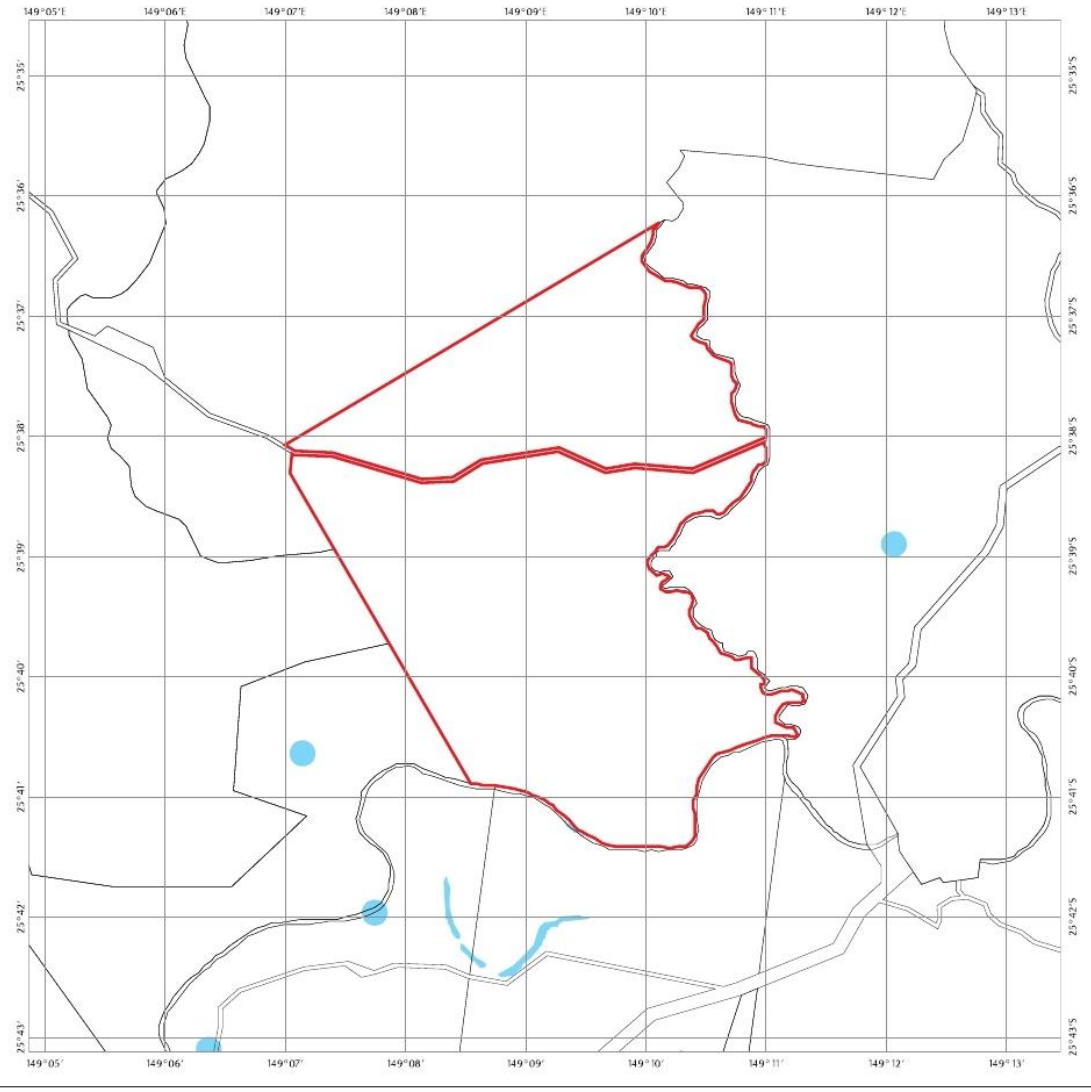
SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#71	HT51	*Eucalyptus crebra*	D	30cm	12m	–	–	10%		
#71 - #72	HT60	*Corymbia* sp., *Eucalyptus crebra, Acacia shirleyi*	A	10 - 15cm	4 – 8m	–	–	–	Multiple small trees **Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	
#71 - #72	–	*Acacia shirleyi*	D	5 - 10cm	4 – 8m	–	–	–	All saplings to be mulched; *Corymbia citriodora variegata* to remain **Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	
#71 - #72	HT58	*Eucalyptus fibrosa* subsp. *nubila*	A	15cm	10m	1	S	–	**Potential EPBC fauna:** Eastern Long-eared Bat	
#71 - #72	HT59	*Corymbia* sp.	A	30cm	10m	3	S	5%	Some small hollows in trunk; multiple saplings either side will be cleared **Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#72	HT57	*Corymbia citriodora* log	D	20cm	6m	1	M	-	Logs beside track that may be avoided **Potential EPBC fauna:** Collared Delma, Dunmall's Snake	
#73	HT56	*Acacia shirleyi*	D	10cm	12m	–	–	–	5 saplings also to be cleared **Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	
#73 - #74	HT54	*Acacia shirleyi, Allocasuarina inophloia*, *Eucalyptus* sp.	A	5 – 20cm	12m	1	S	5%	**Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake, Eastern Long-eared Bat	
#73 - #74	–	*Acacia shirleyi*	A	5cm	4 – 6m	–	–	–	Saplings either side of the road being mulched **Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	
#73 - #74	HT55	*Acacia shirleyi*	A	5 -10cm	6 – 8m	1	S	70%	**Potential EPBC fauna:** Eastern Long-eared Bat	
#74	HT53	*Acacia shirleyi*	A	10 - 15cm	8m	–	–	–	2 saplings **Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	

SANTOS POINT CODE	WPT CODE	SPECIES/DESCRIPTION	DEAD/ ALIVE	DBH (cm)	EST. HEIGHT (Metres)	HABITAT FEATURES			COMMENTS	IMAGE
						NO. HOLLOWS	HOLLOW SIZE S = <10cm; M = 10-30cm; L = >30cm	LOOSE BARK (%)		
#75 - #76	–	*Eucalyptus fibrosa nubila*	A	4cm	4 – 6m	–	–	–	2 saplings on corner to be mulched **Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	
#75 - #76	–	*Acacia shirleyi*	A	4cm	4 - 6m	–	–	–	**Potential EPBC fauna:** Squatter Pigeon, Collared Delma, Dunmall's Snake	
#77	HT52	*Eucalyptus crebra*	A	20 - 30cm	14m	–	–	5%		

Appendix O: Referable wetlands for properties traversed by the Access Track.





Map of Referable Wetlands for the Environmental Protection Act 1994

Requested By: ROSAMUND.AISTHORPE@BOOBOOK.BIZ
Date: 27 Aug 13 Time: 16.16.03

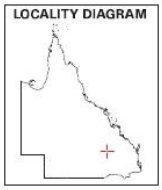
Centered on Lot on Plan:
1 AB81

Legend

- Selected Land Parcel
- Property Boundary
- HES Wetland GBR Catchments
- HES Wetland
- GES Wetland

Queensland Government

LOCALITY DIAGRAM



This scale bar is approximate only
Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)
This product is unprojected and is not suitable for measuring distances

Note:
This map shows the location of wetlands on the Map of Referable Wetlands which are defined under the Environmental Protection Regulation 2008.

Wetlands are assessed for ecological significance using the environmental values for wetlands in section 81A of the Environmental Protection Regulation 2008. Wetlands are considered either High Ecological Significance (HES) or of General Ecological Significance (GES) for the purposes of the environmental values.

This map is produced at a scale relevant to the size of the lot on plan identified and should be printed at A4 size in portrait orientation. Consideration of the effects of mapped scale is necessary when interpreting data at a large scale.

For further information or assistance with interpretation of this product, please contact the Department of Environment and Heritage Protection at <www.ehp.qld.gov.au> or email <planning.support@ehp.qld.gov.au>

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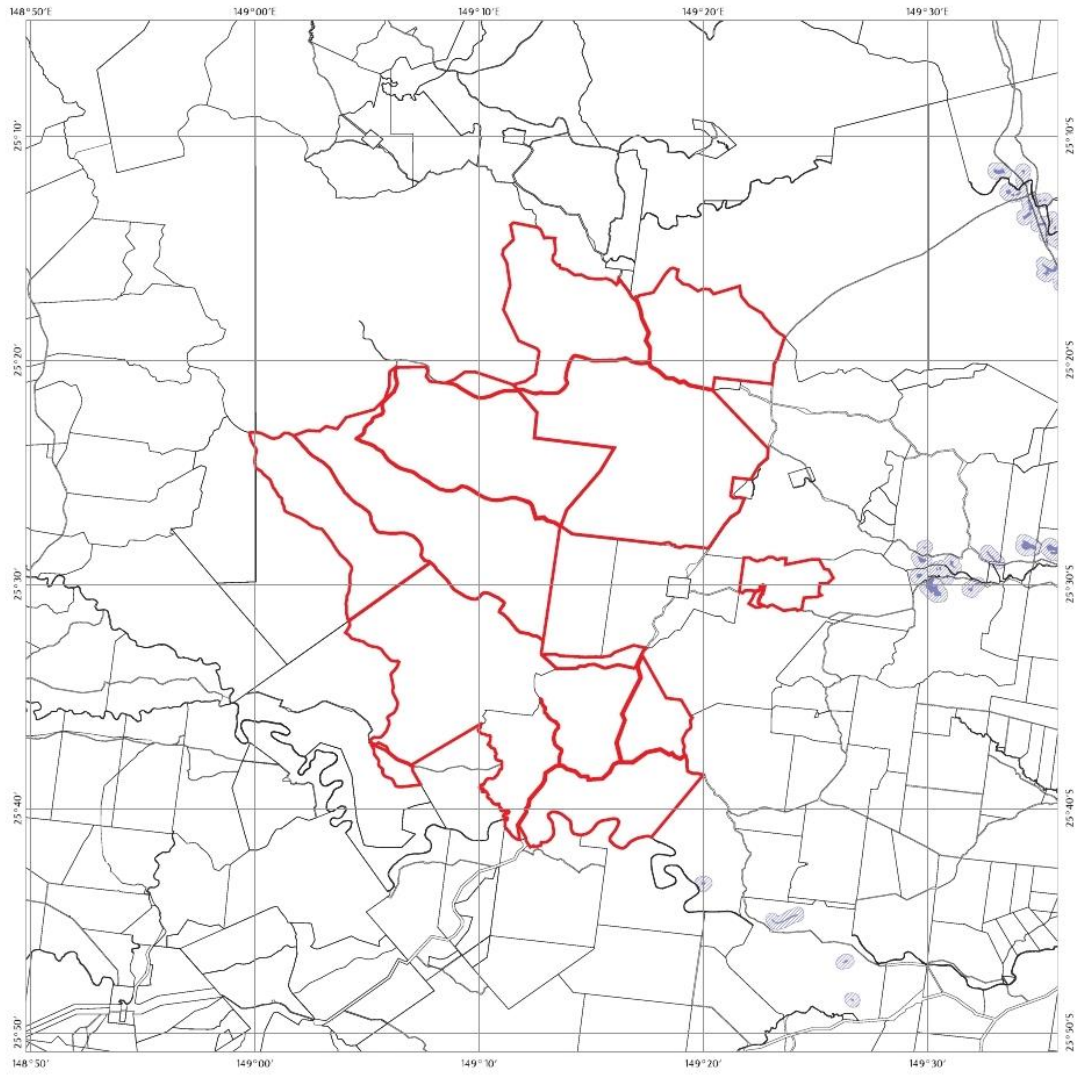

Map of Referable Wetlands
Wetland Protection Areas

Requested By: ROSAMUND.AISTHORPE@BOOBOOK.BIZ
Date: 27 Aug 13 Time: 16.16.54

Centered on Lot on Plan:
46 FTY1813

Queensland Government

Legend

- Selected Land Parcel
- Property Boundary

Wetland Protection Areas

- HES Wetland
- Trigger Area

LOCALITY DIAGRAM

This scale bar is approximate only
Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)
This product is unprojected and is not suitable for measuring distances

Note:
This map shows the location of wetland protection areas which are defined under the Environmental Protection Regulation 2008.

Within wetland protection areas, certain types of development involving high impact earthworks are made assessable under Schedule 3 of the Sustainable Planning Regulation 2009.

The Department of Environment and Heritage Protection has been made a concurrence agency under Schedule 7 of the Sustainable Planning Regulation 2009 for assessable development involving high impact earthworks within wetland protection areas.

The policy outcome and assessment criteria for assessing these applications are described in the State Planning Policy 4/11: Protecting Wetlands of High Ecological Significance in Great Barrier Reef Catchments.

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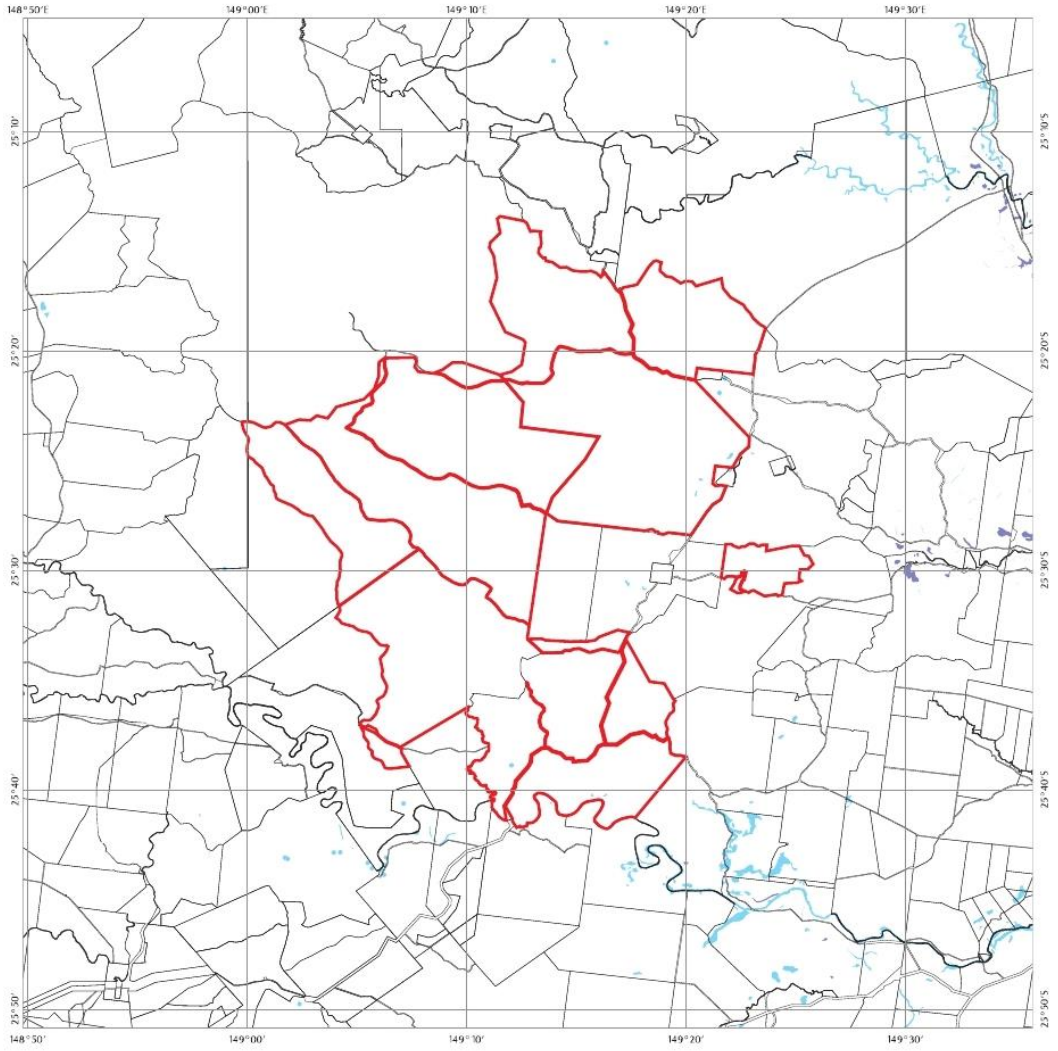


Map of Referable Wetlands for the Environmental Protection Act 1994

Requested By: ROSAMUND.AISTHORPE@BOOBOOK.BIZ
Date: 27 Aug 13 Time: 16.16.55

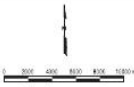
Centered on Lot on Plan:
46 FTY1813

Queensland Government

Legend

- Selected Land Parcel
- Property Boundary
- HES Wetland GBR Catchments
- HES Wetland
- GES Wetland

LOCALITY DIAGRAM



This scale bar is approximate only
Horizontal Datum: Geocentric Datum of Australia 1994 (GDA94)
This product is unprojected and is not suitable for measuring distances

Note:
This map shows the location of wetlands on the Map of Referable Wetlands which are defined under the Environmental Protection Regulation 2008.

Wetlands are assessed for ecological significance using the environmental values for wetlands in section 81A of the Environmental Protection Regulation 2008. Wetlands are considered either High Ecological Significance (HES) or of General Ecological Significance (GES) for the purposes of the environmental values.

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