

# REPORT ON INSPECTION OF PONY HILLS EAST QUARRY EXTENSION, FAIRVIEW GAS FIELD.

Compiled by BOOBOOK

for

SANTOS

**BOOBOOK**  
113 Euthulla Road  
PO Box 924  
Roma QLD 4455  
Ph. (07) 46222646  
Fax (07) 46221325  
[boobook1@bigpond.com](mailto:boobook1@bigpond.com)  
ABN: 94 617 952 309  
[www.boobook.biz](http://www.boobook.biz)



## DOCUMENT CONTROL

REV	DATE	DETAILS	AUTHOR	VERIFIER	APPROVED
0	26/12/2011	DRAFT V.1	RA	CE	ME
1	26/12/2011	FINAL	RA	CE	CE

## EXECUTIVE SUMMARY

This report provides a summary of the results of a field inspection undertaken by Boobook on 29 and 30 September 2011 at the proposed Pony Hills East quarry extension within the Fairview Gas Field. The site was inspected to determine the presence or absence of sensitive habitats and significant species, as well as to provide an overview of the terrestrial ecology of the site. Descriptions of habitat were made at six sites within the proposed extension area. Data from nine sites recorded during a previous survey (Boobook 2010) is incorporated within this report.

The proposed quarry extension is mapped by DERM as non-remnant vegetation, however, the field survey demonstrated that the entire quarry extension is comprised of remnant vegetation dominated by White Cypress Pine woodland which equates to a **least concern** regional ecosystem type, this being RE 11.10.9. No endangered or of concern regional ecosystems scheduled under the *Vegetation Management Act 1999* or threatened ecological communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* are present within the quarry extension.

No species of fauna scheduled as endangered, vulnerable or near threatened (EVNT) under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999* were detected during the field survey. Habitat within the proposed quarry extension is suitable for at least four species of EVNT fauna, these being Little Pied Bat, Squatter Pigeon, Brigalow Scaly-foot and Golden-tailed Gecko. Significant fauna habitat features, such as log piles and rock outcrops, occur throughout the proposed quarry footprint.

One species of EVNT flora was detected at the site, this being Cliff Bluebell *Wahlenbergia islensis* which is scheduled as Near Threatened under the *Nature Conservation Act 1992*. No significant weeds are present. One weed scheduled as a Class 2 pest under the *Land Protection (Pest and Stock Route Management) Act 2002* was recorded, this being Velvety Tree Pear *Opuntia tomentosa*.

Given that intact vegetation to the north of the existing quarry contains populations of at least one species of EVNT flora, is likely to contain populations of at least four species of EVNT fauna, is known to contain populations of regionally significant fauna and contains locally significant fauna habitat features (i.e. rock walls and outcrops), it is recommended that the proposed quarry expansion avoids the area which contains the greatest concentration of these values, which is approximately the area above the 425m contour.

Conclusions drawn in this report are based on available information at the time of writing. Any additional information may alter such conclusions and the author reserves the right to do so if such information becomes available. This report has been made as at the date of the report and is not to be used after six (6) months and not if there are any material changes meanwhile. In either event it should be referred back for review. To the extent permitted by law BOOBOOK does not accept liability for any loss or damage which any person may suffer arising from any negligence or breach of contract on its part. This report was prepared for the benefit of the party to whom it is directed only and for the purpose identified within.

## TABLE OF CONTENTS

1. BACKGROUND .....	1
2. SITE CONTEXT .....	1
3. TENEMENT .....	1
4. METHODOLOGY .....	1
5. DESKTOP SEARCHES .....	2
6. THREATENED ECOLOGICAL COMMUNITIES (TECs) .....	3
7. REGIONAL ECOSYSTEMS .....	3
8. FAUNA VALUES .....	4
8.1 EVNT FAUNA .....	4
8.2 NON-EVNT FAUNA OF SIGNIFICANCE .....	5
8.3 MIGRATORY SPECIES .....	6
8.4 FAUNA HABITAT VALUES .....	6
9. FLORA VALUES .....	9
9.1 EVNT FLORA .....	9
9.2 NON-EVNT FLORA OF SIGNIFICANCE .....	10
9.3 REGIONAL ECOSYSTEMS .....	11
10. WETLANDS AND WATERCOURSES .....	11
11. WEEDS .....	12
12. POTENTIAL IMPACTS .....	12
12.1 THREATENED ECOLOGICAL COMMUNITIES .....	12
12.2 ENDANGERED REGIONAL ECOSYSTEMS .....	12
12.3 OF CONCERN REGIONAL ECOSYSTEMS .....	13
12.4 LEAST CONCERN REGIONAL ECOSYSTEMS .....	13
12.5 ESSENTIAL HABITAT .....	13
12.6 BIOREGIONAL CORRIDORS .....	13
12.7 EVNT FAUNA .....	13
12.8 NON-EVNT PRIORITY FAUNA .....	13
12.9 MIGRATORY FAUNA .....	13

12.10 EVNT FLORA.....	13
12.11 NON-EVNT FLORA.....	14
12.12 WETLANDS AND WATERCOURSES.....	14
13. RECOMMENDATIONS .....	14
14. REFERENCES.....	14
SITE PHOTOS .....	16

### LIST OF APPENDICES

Appendix One. Regional Ecosystem Map for Pony Hills East quarry.....	23
Appendix Two. Summary of fauna observed at the proposed Pony Hills East quarry extension. ....	24
Appendix Three. Inventory of native flora recorded at the proposed Pony Hills East quarry extension.....	25
Appendix Four. Quaternary sites at the proposed Pony Hills East quarry extension. ....	27

### LIST OF TABLES

Table One. Descriptions of regional ecosystems mapped within the study area. ....	3
Table Two. Summary of likelihood of occurrence of EVNT fauna within the study area.....	4
Table Three. Descriptions of trees with habitat values at the proposed Pony Hills East quarry extension.....	6
Table Four. Descriptions of logs with habitat values at the proposed Pony Hills East quarry extension.....	7
Table Five. Descriptions of habitat features observed at the proposed Pony Hills East quarry extension. ....	9
Table Six. Summary of likelihood of occurrence of EVNT flora within the study area. ....	10
Table Seven. Descriptions of Type A Restricted (TAR) Plant observed within the proposed Pony Hills East quarry extension.....	11
Table Eight. Regional ecosystems observed within the study area. ....	11
Table Nine. Weeds observed at the Pony Hills East quarry extension.....	12

### LIST OF FIGURES

Figure One. <i>Wahlenbergia islensis</i> .....	15
Figure Two. Logs such as HL16 had loose bark and small hollows.....	15
Figure Three. Woodland dominated by White Cypress Pine <i>Callitris glaucophylla</i> at Q3.....	15

<b>Figure Four. A dense midlayer dominated beneath an open canopy seen at Q5 was typical in the rockier areas.....</b>	<b>15</b>
<b>Figure Five. Fauna habitat represented by rock outcrops at site HF3.....</b>	<b>15</b>
<b>Figure Six. Crevices frequent the extensive rock shelf which follows the 425m contour .....</b>	<b>15</b>
<b>Figure Seven. Location of field sites at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery).....</b>	<b>17</b>
<b>Figure Eight. Location of Type A Restricted (TAR) plants at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery) .....</b>	<b>18</b>
<b>Figure Nine. Map of ground-truthed regional ecosystem polygons at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery) .....</b>	<b>19</b>
<b>Figure Ten. Location of habitat trees at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery).....</b>	<b>20</b>
<b>Figure Eleven. Location of habitat logs at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery).....</b>	<b>21</b>
<b>Figure Twelve. Location of habitat features at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery).....</b>	<b>22</b>

# 1. BACKGROUND

At the request of Santos, BOOBOOK was engaged to investigate terrestrial ecological values and fauna/flora management issues associated with the proposed Pony Hills East quarry extension within the Fairview gas field. The site was inspected on 29 and 30 September 2011 by Rosamund Aisthorpe (Graduate Botanist, BOOBOOK), Olivia Warner (Field Assistant, BOOBOOK) and Stephen Gear (Fauna Spotter, BOOBOOK). This follows a previous inspection and ecological assessment by BOOBOOK (2010).

# 2. SITE CONTEXT

The Pony Hills East quarry extension is located within Hallet State Forest approximately 44 kilometres east-northeast of Injune, south central Queensland. The site lies within Province 24 (Carnarvon Ranges) of the Brigalow Belt South bioregion. It is located within a large tract of predominantly intact vegetation dominated by White Cypress Pine woodland on undulating terrain.

# 3. TENEMENT

The Pony Hills East quarry extension is located within PL 100.

# 4. METHODOLOGY

Habitat and vegetation values were assessed during a walking traverse of the study area. Detailed descriptions of vegetation were compiled at six representative sites located within and immediately adjoining the quarry. Data from nine sites recorded during a previous survey (Boobook 2010) is incorporated within this report. These sites were consistent with the quaternary level of assessment as per Neldner et. al. (2005).

Quaternary sites are those 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). Further detail is provided below.

At each 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);
2. dominant flora in each stratum of vegetation;
3. structural formation type (Specht 1970 or Walker and Hopkins 1990): codes as per Table 29 in Neldner et. al. (2005)
4. regional ecosystem type observed;
5. regional ecosystem type mapped;
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. disturbance types (e.g. clearing, grazing, fire history, pest animal diggings): categories as per Neldner et. al. (2005) with some minor modification to suit local variables.

The location of each survey site was determined using a handheld GPS (Garmin GPSmap 76CSx). Tree heights in each stratum were estimated using a clinometer and tree girths were measured (where necessary) using a DBH tape. A ground-truthed regional ecosystem map was produced based on these results and interpretation of aerial and satellite imagery (e.g. Fairview Quickbird and Google Earth). Fauna habitat features were identified which included noting the presence or absence of rocks and boulders, logs, trees with hollows, trees with loose bark, termite mounds and mistletoe.

Active fauna searches were conducted for approximately 5 hours on 30 September 2011 which involved scanning logs with binoculars, rolling rocks and logs, peeling loose bark lifting fallen bark sheets off the ground and raking leaf litter. This was targeting EVNT species including terrestrial (e.g. Common Death Adder *Acanthophis antarcticus*, Brigalow Scaly-foot *Paradelma orientalis*, Yakka Skink *Egernia rugosa*, Dunmall's Snake *Furina dunmalli* and Collared Delma *Delma torquata*) and arboreal reptiles (e.g. Golden-tailed Gecko *Strophurus taenicauda*). Incidental records of fauna seen or heard during the field survey were recorded. This included trace records such as tracks, scats, feeding signs and bones.

The site descriptions provide a snapshot of the species present during the inspection, but do not represent a complete inventory of the native flora, fauna and weeds present at the site. 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 study area, such that site-specific recommendations could be developed.

Desktop assessments were conducted, including searches of relevant databases, on-line mapping and Google Earth imagery.

## 5. DESKTOP SEARCHES

An inventory of significant regional ecosystems and vegetation communities mapped and likely to occur in the project area was compiled from the following sources:

- Queensland Herbarium on-line regional ecosystem mapping;
- EPBC Protected Matters Search Tool.

Detailed descriptions of each regional ecosystem were derived from the Regional Ecosystem Description Database (REDD) in order to field check ecosystem mapping. The extent and condition of regional ecosystems was assessed prior to the field survey using Google Earth on-line satellite imagery.

An inventory of EVNT (endangered, vulnerable, rare or near threatened) flora and fauna known from or likely to occur in the project areas was compiled by obtaining collection and observation records from the following sources:

- Queensland Herbarium database (Herbrecs);
- Queensland Department of Environment and Resource Management (DERM) database (Wildnet);
- EPBC Protected Matters Search Tool;

- DERM Referable Wetlands database;
- DERM Environmentally Sensitive Areas (ESAs).

A Wildnet search was completed within a five kilometre radius around the approximate centre point of the proposed quarry extension, this being 25.78331°S, 149.00327°E.

## 6. THREATENED ECOLOGICAL COMMUNITIES (TECs)

The EPBC Protected Matters Search tool listed the following threatened ecological communities (TECs) as potentially occurring within a five kilometre radius of the approximate centre-point of the project study area:

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

In addition, two other TECs are known to occur in the broader study area, these being “Brigalow (*Acacia harpophylla* dominant and co-dominant) woodland” and “Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions”.

None of these TECs occur within the Pony Hills East quarry extension.

## 7. REGIONAL ECOSYSTEMS

Descriptions of regional ecosystems mapped within a five kilometre radius of the Pony Hills East quarry extension are listed in Table One.

**Table One. Descriptions of regional ecosystems mapped within the study area.**

**Key:** E = endangered; LC = least concern; NOC = no concern at present; OC = of concern.

RE	RE DESCRIPTION	VMA 1999 status	DERM (biodiversity status)
11.3.2	Poplar Box <i>Eucalyptus populnea</i> woodland on alluvial plains	OC	OC
11.3.25	Queensland Blue Gum <i>Eucalyptus tereticornis</i> or River Red Gum <i>E. camaldulensis</i> woodland fringing drainage lines	LC	OC
11.10.1	Narrow-leaved Ironbark <i>Eucalyptus crebra</i> and/or Spotted Gum <i>Corymbia citriodora</i> var. <i>variegata</i> open forest on coarse-grained sedimentary rocks	LC	NOC
11.10.9	White Cypress Pine <i>Callitris glaucophylla</i> woodland on coarse-grained sedimentary rocks	LC	NOC
11.10.11	Poplar Box <i>Eucalyptus populnea</i> , Silver-leaved Ironbark <i>E. melanophloia</i> +/- White Cypress Pine <i>Callitris glaucophylla</i> woodland on coarse-grained sedimentary rocks	LC	NOC

The proposed Pony Hills East quarry extension is currently mapped as non-remnant vegetation except for the southeastern corner which is part of a large polygon surrounding the site. The mapped remnant polygon is RE 11.10.9 “White Cypress Pine *Callitris glaucophylla* woodland on coarse-grained sedimentary rocks”.

Further discussion regarding regional ecosystems at the site is provided in section 9.3.



## 8. FAUNA VALUES

### 8.1 EVNT FAUNA

No endangered, vulnerable or near threatened (EVNT) fauna was observed during the site inspection at the Pony Hills East quarry extension.

Database searches and previous surveys in the project area have identified 21 EVNT fauna recorded from or likely to occur in the search area (Table Two). Of these species, four are likely to occur in remnant vegetation within the Pony Hills East quarry extension, based on the presence of suitable vegetation and/or microhabitat types. These species are Squatter Pigeon, Little Pied Bat, Brigalow Scaly-foot and Golden-tailed Gecko. At least nine other species could possibly occur at the site. Further targeted searches in accordance with DEWHA (2010) and DWEPAC (2011) would be necessary to confirm the presence of these species.

**Table Two. Summary of likelihood of occurrence of EVNT fauna within the study area.**

**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 (DERM database); 3 = Boobook unpublished fauna data for Fairview gas field; 4 = species predicted to occur in broader study area. **Status:** E = endangered; V = vulnerable; NT = near threatened; LC = least concern.

CLASS/ FAMILY	SPECIES NAME	COMMON NAME	EPBC ACT STATUS	NC ACT STATUS	RECORD SOURCE	LIKELIHOOD OF PRESENCE
Insects Lycaenidae	<i>Jalmenus eubulus</i>	Pale Imperial Hairstreak	not listed	V	4	<b>Unlikely:</b> suitable habitat absent
Amphibians Hylidae	<i>Cyclorana verrucosa</i>	Rough Collared Frog	not listed	NT	2	<b>Possible:</b> recorded within 5km of site
Reptiles Chelidae	<i>Rheodytes leukops</i>	Fitzroy River Turtle	V	V	1	<b>Unlikely:</b> suitable habitat absent
Reptiles Elapidae	<i>Acanthophis antarcticus</i>	Common Death Adder	not listed	NT	4	<b>Possible:</b> suitable habitat present
Reptiles Elapidae	<i>Furina dunmalli</i>	Dunmall's snake	V	V	1, 3	<b>Possible:</b> suitable habitat present
Reptiles Elapidae	<i>Denisonia maculata</i>	Ornamental Snake	V	V	1	<b>Unlikely:</b> suitable habitat absent
Reptiles Gekkonidae	<i>Strophurus taenicauda</i>	Golden-tailed Gecko	not listed	NT	2, 3	<b>Likely:</b> suitable habitat present & recorded within 5km of site
Reptiles Pygopodidae	<i>Delma torquata</i>	Collared Delma	V	V	4	<b>Possible:</b> suitable habitat present
Reptiles Pygopodidae	<i>Paradelma orientalis</i>	Brigalow Scaly- foot	V	V	1, 4	<b>Likely:</b> suitable habitat present
Reptiles Scincidae	<i>Egernia rugosa</i>	Yakka Skink	V	V	1, 4	<b>Possible:</b> suitable habitat present
Birds Accipitridae	<i>Erythrotriorchis radiata</i>	Red Goshawk	V	E	1	<b>Possible:</b> suitable habitat present (may overfly site but resident population unlikely)

CLASS/ FAMILY	SPECIES NAME	COMMON NAME	EPBC ACT STATUS	NC ACT STATUS	RECORD SOURCE	LIKELIHOOD OF PRESENCE
Birds Accipitridae	<i>Lophoictinia isura</i>	Square-tailed Kite	not listed	NT	4	<b>Possible:</b> suitable habitat present (may overfly site but resident population unlikely)
Birds Cacatuidae	<i>Calyptorhynchus lathami</i>	Glossy black-Cockatoo	not listed	V	4	<b>Unlikely:</b> suitable habitat absent but may overfly site
Birds Columbidae	<i>Geophaps scripta scripta</i>	Squatter Pigeon	V	V	1, 3	<b>Likely:</b> suitable habitat present & recorded within 5km of site
Birds Estrillidae	<i>Neochmia ruficauda ruficauda</i>	Star Finch	E	E	1	<b>Unlikely:</b> suitable habitat absent and outside of extant range
Birds Meliphagidae	<i>Grantiella picta</i>	Painted Honeyeater	not listed	V	4	<b>Unlikely:</b> suitable habitat absent
Birds Rostratulidae	<i>Rostratula australis</i>	Australian Painted Snipe	V	V	1	<b>Unlikely:</b> suitable habitat absent
Mammals Dasyuridae	<i>Dasyurus hallucatus</i>	Northern Quoll	E	LC	1	<b>Possible:</b> suitable habitat present
Mammals Vespertilionidae	<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	V	V	1, 3, 4	<b>Possible:</b> roost sites unlikely but may overfly site
Mammals Vespertilionidae	<i>Nyctophilus corbeni</i> (as <i>N. timoriensis</i> )	South-eastern Long-eared Bat	V	V	1, 4	<b>Possible:</b> suitable habitat present
Mammals Vespertilionidae	<i>Chalinolobus picatus</i>	Little Pied Bat	not listed	NT	4	<b>Likely:</b> suitable habitat present

## 8.2 NON-EVNT FAUNA OF SIGNIFICANCE

Non-EVNT priority fauna are those species which are not scheduled as near threatened, vulnerable or endangered under state or commonwealth legislation, but are recognised as being of conservation significance in the Brigalow Belt bioregion due to regional declines, restricted or disjunct distributions or associations with habitat that may be under particular threat. Such species include declining woodland birds, some arboreal and terrestrial mammals and several reptiles. These species have been identified as being significant for the bioregion by an expert panel as part of the Brigalow Belt Biodiversity Planning Assessment (EPA 2008a).

Evidence of one non-EVNT priority fauna was recorded during this survey, this being Common Brushtail Possum *Trichosurus vulpecula* at site HL24. Scats attributable to this species were found on a log. A bandicoot was also sighted at site HL20 but could not be positively identified. Of the two species of bandicoot that occur in the study area, Long-nosed Bandicoot *Perameles nasuta* and Northern Brown Bandicoot *Isodon macroura*, the former is of bioregional significance (EPA 2008a). The Northern Brown Bandicoot is also locally rare, hence, the bandicoot record is significant regardless of the species identity. Speckled Warbler *Chthonicola sagittata* has been previously recorded within the quarry extension area (Boobook 2010) while Bush Stone-curlew *Burhinus grallarius* could also potentially occur.

### 8.3 MIGRATORY SPECIES

One species of fauna scheduled as a migratory species under the EPBC Act 1999 was recorded at the Pony Hills East quarry, this being Rainbow Bee-eater. Several other migratory species are likely to regularly overfly the site, these being White-throated Needletail and Fork-tailed Swift. No suitable habitat exists for migratory water birds.

### 8.4 FAUNA HABITAT VALUES

Fauna habitat features observed within the existing quarry footprint included habitat trees and habitat logs. For the purposes of this report, habitat trees are defined as those that contain hollows or are otherwise of value from a fauna habitat perspective (e.g. they may be a potential food source for a threatened species). Descriptions of these trees are contained within Table Three and their locations are shown in Figure 10.

**Table Three. Descriptions of trees with habitat values at the proposed Pony Hills East quarry extension.**

**KEY:** \* = within 100m of quarry extension boundary

HABITAT TREE CODE	EASTING/NORTHING (55J)	SPECIES	DEAD/A LIVE	APPROX. HEIGHT	HABITAT FEATURES
HT1	700937 7146604	<i>Eucalyptus</i> sp.	dead	12m	medium hollows present
HT2	700920 7146617	<i>Eucalyptus</i> sp.	dead	10m	small, medium and large hollows present; large amount of termite damage
HT3	700931 7146760	<i>Angophora leiocarpa</i>	dead	20m	large hollow present in base of tree
HT4*	701027 7146834	<i>Eucalyptus melanophloia</i>	dead	6m	medium and large hollows present
HT5	700893 7146997	<i>Corymbia</i> sp.	dead	10m	small hollows present; loose bark on trunk
HT6*	700887 7147068	<i>Eucalyptus</i> sp.	dead	15m	small hollows present; trunk burnt
HT7	700885 7147008	<i>Eucalyptus</i> sp.	dead	12m	small and medium sized hollows present
HT8	700699 7146790	<i>Eucalyptus</i> sp.	dead	7m	
HT9	700700 7146857	<i>Eucalyptus</i> sp.	dead	5m	large hollow present; tree burnt at base
HT10	700692 7146929	<i>Eucalyptus melanophloia</i>	dead	12m	small and medium sized hollows present; tree burnt; large amount of loose bark on tree and on ground
HT11	700712 7146942	<i>Eucalyptus melanophloia</i>	dead	10m	small hollow present; tree burnt
HT12	700780 7146953	<i>Eucalyptus melanophloia</i>	dead	6m	medium hollow present; tree burnt
HT13	700793 7146946	<i>Eucalyptus</i> sp.	dead	12m	small, medium and large hollows present; charred at base
HT14	700795 7146855	<i>Eucalyptus melanophloia</i>	dead	8m	medium hollow present; burnt at base
HT15	700785 7146832	<i>Eucalyptus</i> sp.	dead	14m	small and large hollows present; burnt at base
HT16	700764 7146826	<i>Eucalyptus</i> sp.	dead	10m	small and large hollows present; burnt at base

HABITAT TREE CODE	EASTING/NORTHING (55J)	SPECIES	DEAD/A LIVE	APPROX. HEIGHT	HABITAT FEATURES
HT17	700753 7146924	<i>Eucalyptus melanophloia</i>	dead	18m	hollows absent; large sheets of loose bark on tree trunk; tree burnt at base
HT18	700762 7146927	<i>Eucalyptus melanophloia</i>	alive	20m	sheets of loose bark present on tree trunk; tree burnt at base
HT19	700851 7146993	<i>Eucalyptus melanophloia</i>	dead	17m	small hollows present; tree burnt
HT20	700749 7146819	<i>Eucalyptus melanophloia</i>	dead	18m	small and medium hollows present; tree ringbarked; tree burnt at base
HT21	700744 7146802	<i>Eucalyptus sp.</i>	dead	12m	small hollows present

There are numerous small dead trees (likely to have succumbed to prolonged drought prior to the survey) and cut stumps (from logging) which have an abundance of loose bark. These are highly likely to provide shelter sites for at least one significant reptile, this being Golden-tailed Gecko.

Piles of logs and debris resulting from past clearing operations are scattered along the margin of the quarry within the existing cleared footprint. Over 30 habitat logs were recorded within the quarry expansion footprint (Table Four). Their locations are shown in Figure 11. For the purposes of this report, habitat logs are defined as those that contain hollows or are otherwise of value from a fauna habitat perspective (e.g. they may offer a potential basking site for reptiles). Small logs are scattered throughout the remnant vegetation, however, large logs (particularly those with hollows) are rare.

**Table Four. Descriptions of logs with habitat values at the proposed Pony Hills East quarry extension.**

**KEY:** \* = within 100m of quarry extension boundary

HABITAT LOG CODE	EASTING/NORTHING (55J)	SPECIES	APPROX. LENGTH	HABITAT FEATURES
HL1	700964 7146666	<i>Eucalyptus sp.</i>	14m	medium hollow present; log mostly solid apart from base; burnt
HL2	700989 7146781	<i>Eucalyptus sp.</i>	15m	medium hollow present; mostly solid except base
HL3	700889 7146975	<i>Eucalyptus sp.</i>	8m	medium hollow present; burnt at base
HL4	700887 7146981	<i>Eucalyptus sp.</i>	9m	small and medium hollows present; burnt at base
HL5	700877 7147034	<i>Eucalyptus sp.</i>	3m	medium hollow present; burnt at ends
HL6*	700854 7147039	<i>Eucalyptus sp.</i>	12m	small and medium hollows present; burnt at base
HL7	700927 7146961	<i>Eucalyptus sp.</i>	14m	medium hollow present; log shattered and partially collapsed
HL8	700845 7146879	<i>Eucalyptus sp.</i>	3m	medium hollow present; burnt at ends
HL9	700867 7146882	<i>Eucalyptus sp.</i>	11m	small hollows present; burnt at base
HL10	700862 7146869	<i>Eucalyptus sp.</i>	11m	small and medium hollows present; burnt at base

HABITAT LOG CODE	EASTING/NORTHING (55J)	SPECIES	APPROX. LENGTH	HABITAT FEATURES
HL11	700878 7146873	<i>Eucalyptus</i> sp.	14m	small and medium hollows present; burnt at base
HL12	700891 7146878	<i>Eucalyptus</i> sp.	3m	medium hollow present; most of outside burnt
HL13	700898 7146872	<i>Eucalyptus</i> sp.	9m	small and medium hollows present; burnt around base
HL14*	700669 7146782	<i>Eucalyptus</i> sp.	8m	small hollows present; fractured in middle of log
HL15	700728 7146945	<i>Eucalyptus</i> sp.	8m	small and medium hollows present; burnt at base
HL16	700762 7146939	<i>Eucalyptus melanophloia</i>	10m	small hollows present; burnt at base
HL17	700772 7146941	<i>Eucalyptus</i> sp.	9m	medium hollows present; burnt at base
HL18	700793 7146894	<i>Eucalyptus</i> sp.	12m	small and large hollows present; burnt around outside of log
HL19	700801 7146875	<i>Eucalyptus</i> sp.	6m	small hollows; burnt at base
HL20	700797 7146869	<i>Eucalyptus</i> sp.	4m	small hollows present; burnt at base
HL21	700799 7146864	<i>Eucalyptus</i> sp.	8m	medium hollow present
HL22	700790 7146835	<i>Eucalyptus</i> sp.	6m	small and medium hollows present
HL23	700799 7146826	<i>Eucalyptus</i> sp.	8m	small hollows present; burnt at ends
HL24	700813 7146800	<i>Eucalyptus</i> sp.	7m	small and large hollows present; log burnt
HL25	700816 7146789	<i>Eucalyptus</i> sp.	8m	small hollows present
HL26	700821 7146798	<i>Eucalyptus</i> sp.	4m	small and medium hollows present; various small hollow logs next to main log
HL27	700769 7146863	<i>Eucalyptus</i> sp.	7m	medium and large hollows present; log burnt
HL28	700798 7146961	<i>Eucalyptus</i> sp.	7m	small and medium hollows present; log burnt
HL29	700805 7146973	<i>Eucalyptus</i> sp.	2.5m	small and medium hollows present; smaller piece with hollows separated from main log
HL30	700853 7146959	<i>Eucalyptus</i> sp.	4m	large hollows present; log burnt
HL31	700853 7146916	<i>Eucalyptus</i> sp.	4m	medium hollows present; log badly burnt
HL32	700812 7146848	<i>Eucalyptus</i> sp.	4m	medium hollows present
HL33	700744 7146883	<i>Eucalyptus</i> sp.	9m	small and medium hollows present; log badly burnt
HL34	700831 7146810	<i>Eucalyptus</i> sp.	5m	small and medium hollows; log burnt
HL35	700855 7146840	<i>Eucalyptus</i> sp.	2m	large hollows present; log badly burnt

In addition to habitat trees and logs, fauna habitat features identified within the intact vegetation to the north of the existing quarry include rock benches and walls (Table Five and Figure 12).

Associated with these rock benches and walls (approximately at the 425m contour) are piles of loose rock, cavities and ledges which provide shelter sites for small terrestrial fauna, particularly reptiles, potentially including significant species such as Brigalow Scaly-foot and Collared Delma.

**Table Five. Descriptions of habitat features observed at the proposed Pony Hills East quarry extension.**

**KEY:** \* = within 100m of quarry extension boundary

HABITAT FEATURE CODE	EASTING/NORTHING (55J)	FEATURE	HABITAT VALUES
HF1 *	701050 7146820	Small log pile	Habitat for EVNT reptiles e.g. Golden-tailed Gecko, Dunmall's Snake
HF2	700967 7146844	Outcrop with embedded and loose rock	Habitat for EVNT reptiles e.g. Brigalow Scaly-foot, Collared Delma
HF3	700956 7146942	Rock shelf with crevices and loose rock	Habitat for EVNT reptiles e.g. Brigalow Scaly-foot, Collared Delma
HF4	700680 7146782	Rock shelf with crevices, loose rock and boulders	Habitat for EVNT reptiles e.g. Brigalow Scaly-foot, Collared Delma
HF5	700857 7147005	Outcrop with crevices, embedded and loose rock	Habitat for EVNT reptiles e.g. Brigalow Scaly-foot, Collared Delma

In addition to the fauna habitat identified inside the proposed quarry extension there were two habitat trees (HT4 and HT6); two logs (HL6 and HL14) and a log pile (HF1) recorded within a 100m buffer surrounding the proposed quarry expansion footprint. This demonstrates that similar kinds of fauna habitat extend into the surrounding Hallet State Forest.

## 9. FLORA VALUES

### 9.1 EVNT FLORA

A search of the EPBC Act 1999 Protected Matters Search Tool database returned records of three species of EVNT flora (*Cadellia pentastylis*, *Commersonia argentea*, *Tylophora linearis*) which could potentially occur in the study area. None of these occur at the site.

Previous surveys by Boobook in the Fairview gas field have detected populations of an additional eight species of EVNT flora (Table Six). One of these species was detected at the Pony Hills East quarry extension, this being Cliff Bluebell *Wahlenbergia islensis* which is scheduled as Near Threatened under the *Nature Conservation Act 1992*. *W. islensis* was identified from site HF4 along the western side of the proposed quarry expansion footprint. This population comprised approximately 30 individuals and extended along the base of a rock wall for at least 30 metres.

**Table Six. Summary of likelihood of occurrence of EVNT flora within the study area.**

**KEY:** EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999*; NC Act = *Nature Conservation Act 1992*. **Record Source:** 1 = EPBC search; 2 = Boobook unpublished flora data for Fairview gas field; note no EVNT flora records were returned for the Wildlife on-line (DERM database) 5km search area **Status:** E = endangered; V = vulnerable; NT = near threatened; LC = least concern.

CLASS/ FAMILY	SPECIES NAME	COMMON NAME	EPBC ACT STATUS	NC ACT STATUS	RECORD SOURCE	LIKELIHOOD OF PRESENCE
Acanthaceae	<i>Xerothamnella herbacea</i>	Herbaceous Xerothamnella	E	E	2	<b>Absent:</b> suitable habitat is not present
Apocynaceae	<i>Tylophora linearis</i>	Slender Tylophora	E	E	1	<b>Absent:</b> suitable habitat is not present
Byttneriaceae	<i>Commersonia argentea</i>	A shrub	V	LC	1	<b>Absent:</b> suitable habitat is not present
Campanulaceae	<i>Wahlenbergia islensis</i>	Cliff Bluebell	not listed	NT	2	<b>Confirmed:</b> patchy suitable habitat is present
Celastraceae	<i>Apatophyllum teretifolium</i>	Sandstone Prickle-bush	not listed	NT	2	<b>Absent:</b> suitable habitat is not present
Ericaceae	<i>Leucopogon grandiflorus</i>	Whorl-leaved Heath	not listed	NT	2	<b>Absent:</b> suitable habitat is not present
Haloragaceae	<i>Gonocarpus urceolatus</i>	Rock Raspwort	not listed	NT	2	<b>Absent:</b> suitable habitat is not present
Mimosaceae	<i>Acacia calantha</i>	Cracow Wattle	not listed	NT	2	<b>Absent:</b> suitable habitat is not present
Myrtaceae	<i>Melaleuca irbyana</i>	Swamp Paperbark	not listed	E	2	<b>Absent:</b> suitable habitat is not present
Myrtaceae	<i>Sannantha brachypoda</i>	A Heath-myrtle	not listed	NT	2	<b>Absent:</b> suitable habitat is not present
Surianaceae	<i>Cadellia pentastylis</i>	Ooline	V	V	1	<b>Absent:</b> suitable habitat is not present
Zamiaceae	<i>Macrozamia fearnsidei</i>	Curly-leaved Zamia	V	LC	2	<b>Absent:</b> suitable habitat is not present

## 9.2 NON-EVNT FLORA OF SIGNIFICANCE

No non-EVNT priority flora as per EPA 2008 were detected. These are species which are not scheduled as near threatened, vulnerable or endangered under state or commonwealth legislation, but are recognised as being of regional conservation significance.

One species of local significance was recorded this being Thyme Honey-myrtle *Melaleuca thymifolia*. A single plant was observed at site Q6. This species is represented in the Queensland Herbarium by less than 10 collections from the Leichhardt pastoral district, and is a rare and highly localised species within the Fairview Gas Field.

One species of Type A Restricted (TAR) plant was observed at the study area, this being Kurrajong *Brachychiton populneus*. Descriptions are given in Table Seven and mapped locations are shown in Figure Eight for the plants recorded during the field inspection.

**Table Seven. Descriptions of Type A Restricted (TAR) plants observed within the proposed Pony Hills East quarry extension.**

**KEY:** \* = within 100m buffer

CODE	EASTING/ NORTHING (55J)	SPECIES	COMMENTS
TAR1	700954 7146766	<i>Brachychiton populneus</i>	sapling c. 1.5m high
TAR2	700831 7146768	<i>Brachychiton populneus</i>	two mature trees side by side av. 12m high

### 9.3 REGIONAL ECOSYSTEMS

Current regional ecosystem mapping describes the site as non-remnant, however, ground-truthing indicates the whole area within the proposed extension is dominated by White Cypress Pine *Callitris glaucophylla* and Silver-leaved Ironbark *Eucalyptus melanophloia* woodland which equates to remnant RE 11.10.9 (see Table Eight). Refer to quaternary site descriptions in Appendix Four (sites Q1, Q2, Q3, Q4, Q5 and Q6) and Figure Nine for further detail.

**Table Eight. Regional ecosystems observed within the study area.**

**Key:** E = endangered; LC = least concern; NOC = no concern at present; OC = of concern.

RE	RE DESCRIPTION	VMA 1999 status	DERM (biodiversity status)
11.10.9	White Cypress Pine <i>Callitris glaucophylla</i> woodland on coarse-grained sedimentary rocks	LC	NOC

Parts of the proposed quarry extension appear to have been severely affected by past wildfire and/or drought. In these areas, living canopy trees are sparse and the understory is characterised by a very dense midlayer of even-aged *Acacia longispicata*.

No endangered or of concern regional ecosystem types were observed within the proposed quarry extension.

The existing disturbed footprint of the Pony Hills East quarry comprises a clearing with a pit, gravel piles and steep banks resulting from previous excavations. No mature trees are present within the existing quarry footprint.

## 10. WETLANDS AND WATERCOURSES

No watercourses or wetlands of national, regional or local significance occur within the project area. The nearest watercourse (stream order 1) lies approximately 500m to the southeast of the site.



## 11. WEEDS

Eleven species of non-native flora were recorded at the Pony Hills East quarry (Table Nine). One species scheduled as a Class 2 pest under the *Land Protection (Pest and Stock Route Management) Act 2002* was recorded, this being Velvety Tree Pear *Opuntia tomentosa*. This species is in low abundance and is subject to biological control. No other weeds are of management concern.

**Table Nine. Weeds observed at the Pony Hills East quarry extension.**

**KEY:** \*Status as per *Land Protection (Pest and Stock Route Management) Act 2002*; **Abundance:** Rare = <10 plants observed; Uncommon = 11 – 50 plants observed; common = >50 plants observed; ND = not declared; # = March 2010 survey record.

FAMILY	SCIENTIFIC NAME	COMMON NAME	STATUS*	ABUNDANCE
Asteraceae	<i>Bidens pilosa</i>	Cobbler's Pegs	ND	rare
Asteraceae	<i>Conyza bonariensis</i>	Tall Fleabane	ND	uncommon
Asteraceae	<i>Gamochaeta calviceps</i>	Cudweed	ND	uncommon
Asteraceae	<i>Gamochaeta pennsylvanica</i>	Cudweed	ND	uncommon
Asteraceae	<i>Sonchus oleraceus</i>	Common Sowthistle	ND	uncommon
Amaranthaceae	<i>Gomphrena celosioides</i>	Soft Khaki Burr	ND	common <sup>#</sup>
Brassicaceae	<i>Lepidium bonariense</i>	Argentine Peppergrass	ND	rare
Cactaceae	<i>Opuntia tomentosa</i>	Velvety Tree Pear	Class 2	rare
Poaceae	<i>Melinis repens</i>	Red Natal Grass	ND	common <sup>#</sup>
Poaceae	<i>Cenchrus ciliaris</i>	Buffel Grass	ND	uncommon
Verbenaceae	<i>Verbena aristigera</i>	Mayne's Pest	ND	common

## 12. POTENTIAL IMPACTS

### 12.1 THREATENED ECOLOGICAL COMMUNITIES

The project will not impact upon any Threatened Ecological Communities listed under the EPBC Act 1999.

### 12.2 ENDANGERED REGIONAL ECOSYSTEMS

The project will not impact upon any regional ecosystems scheduled as endangered under the *Vegetation Management Act 1999* or with a DERM biodiversity status of endangered.

### **12.3 OF CONCERN REGIONAL ECOSYSTEMS**

The project will not impact upon any regional ecosystems scheduled as of concern under the *Vegetation Management Act 1999* or with a DERM biodiversity status of of concern.

### **12.4 LEAST CONCERN REGIONAL ECOSYSTEMS**

The project could potentially impact upon approximately 11.5ha of a least concern regional ecosystem type (RE 11.10.9). Note this entire area is currently unmapped by DERM.

### **12.5 ESSENTIAL HABITAT**

The site is not within 1km of any mapped Essential Habitat for any scheduled EVNT fauna or flora.

### **12.6 BIOREGIONAL CORRIDORS**

The project will potentially contribute to further disturbance to a large vegetated remnant which is within a Category C Environmentally Sensitive Area.

### **12.7 EVNT FAUNA**

Further expansion of the quarry is likely to have most impact on threatened reptiles which may occur at the site. These potentially include Brigalow Scaly-foot, Yakka Skink, Golden-tailed Gecko, Dunmall's Snake and Collared Delma which inhabit microhabitat features present at the quarry including logs, fallen bark, loose bark or rock outcrops. The project is also likely to impact upon several species of bat including Little Pied Bat, Large-eared Pied Bat and South-eastern Long-eared Bat which may roost or forage within habitat present at the proposed quarry extension. Should the quarry be expanded northwards, especially above approximately the 425m contour, there is a **high likelihood** of destruction of habitat likely to be occupied by these species. The presence of microhabitat features known to support these species has been demonstrated during the field inspection.

### **12.8 NON-EVNT PRIORITY FAUNA**

The project could potentially result in the loss of habitat for several non-EVNT priority fauna that are known to occupy the site, including Speckled Warbler, Common Brush-tailed Possum and a species of bandicoot (identity unconfirmed).

### **12.9 MIGRATORY FAUNA**

Although several birds listed as a migratory species under the EPBC Act 1999 are known from the general area (e.g. Fork-tailed Swift, White-throated Needletail, Rainbow Bee-eater), and are likely to overfly the site, these are widespread and common species which are unlikely to be negatively impacted by the proposed quarry expansion.

### **12.10 EVNT FLORA**

One species of EVNT flora is likely to be negatively impacted by the project should clearing extend beyond approximately the 425m contour, this being Cliff Bluebell *Wahlenbergia islensis*. The population of this species within the project area is highly localised and could be completely destroyed by the proposed quarry expansion.

### 12.11 NON-EVNT FLORA

At least one locally significant species of flora could be negatively impacted by the proposed quarry extension, this being Thyme Honey-myrtle *Melaleuca thymifolia*. The population within the proposed quarry extension is represented by a single plant. Three individuals of TAR plants could potentially be impacted by the proposed quarry extension

### 12.12 WETLANDS AND WATERCOURSES

No wetlands or watercourses will be negatively impacted by the project.

## 13. RECOMMENDATIONS

1. Due to the presence of habitat features highly likely to support significant fauna (especially EVNT species such as Golden-tailed Gecko, Brigalow Scaly-foot, Collared Delma, Yakka Skink, Little Pied Bat, Large-eared Pied Bat, Eastern Long-eared Bat and Squatter Pigeon) within remnant vegetation at and above approximately the 425m contour, no expansion of the quarry is recommended above this area. A practical buffer to avoid the rock walls, rock piles and population of Cliff Bluebell *Wahlenbergia islensis* should be determined in the field with Santos staff prior to the commencement of any clearing at the site.

Any proposed clearing including and beyond the 425 m contour would require further pre-clearance surveys for EVNT fauna, especially Golden-tailed Gecko, Brigalow Scaly-foot, Collared Delma, Yakka Skink, Little Pied Bat, Large-eared Pied Bat and Eastern Long-eared Bat. Such surveys would need to be in accordance with federal guidelines (i.e. DEWHA 2010, DSEWPAC 2011) for EPBC listed species.

2. Due to the potential presence of EVNT reptiles associated with log and debris piles surrounding the existing quarry, it is recommended that a fauna spotter be present to implement fauna management measures during any proposed clearing operations likely to interfere with these piles. A fauna spotter should be present throughout any other clearing operations at the site.

3. Avoid disturbance to TAR plants where possible. If disturbance is unavoidable, TAR plants should be translocated, where practical, in accordance with internal procedures.

4. Weed hygiene practices should be implemented for all vehicles and equipment entering the site to minimise the potential introduction of additional weeds to the site.

5. Slow vehicle speeds (maximum 40m/h) should be maintained within 100 metres of the site to reduce the chance of collisions with Squatter Pigeons which are likely to utilise the site.

## 14. REFERENCES

Boobook (2010). *Report on Inspection of Pony Hills Central Quarry, Fairview Gas Field*. Unpublished consultancy report to Santos.

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

Department of Sustainability, Environment, Water, Population and Communities (2011). *Survey Guidelines for Australia's Threatened Reptiles*. DSEWPAC, Canberra.

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

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

Neldner, V.J., Wilson, B. A., Thompson, E.J. and Dillewaard, H.A. (2005) *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland. Version 3.1*. Updated September 2003. Queensland Herbarium, Environmental Protection Agency, Brisbane.

## SITE PHOTOS



Figure One (left). Cliff Bluebell *Wahlenbergia islensis* at site HF4. Figure Two (right). Logs are scattered throughout the proposed quarry extension such as HL16 which had loose bark and small hollows.



Figure Three (left). Woodland dominated by White Cypress Pine *Callitris glaucophylla* within the Pony Hills East quarry extension at Q3. Figure Four (right). A dense midlayer dominated by Slender-flowered Wattle *Acacia longispicata* beneath an open canopy of White Cypress Pine and Silver-leaved Ironbark *Eucalyptus melanophloia* seen at Q5 which was typical of communities in the rockier areas.



Figure Five (left). Fauna habitat represented by rock outcrops surrounded by White Cypress Pine woodland at site HF3. Figure Six (right). Crevices are present in the extensive rock shelf which approximately follows the 425m contour.

Figure Seven. Location of field sites at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery)

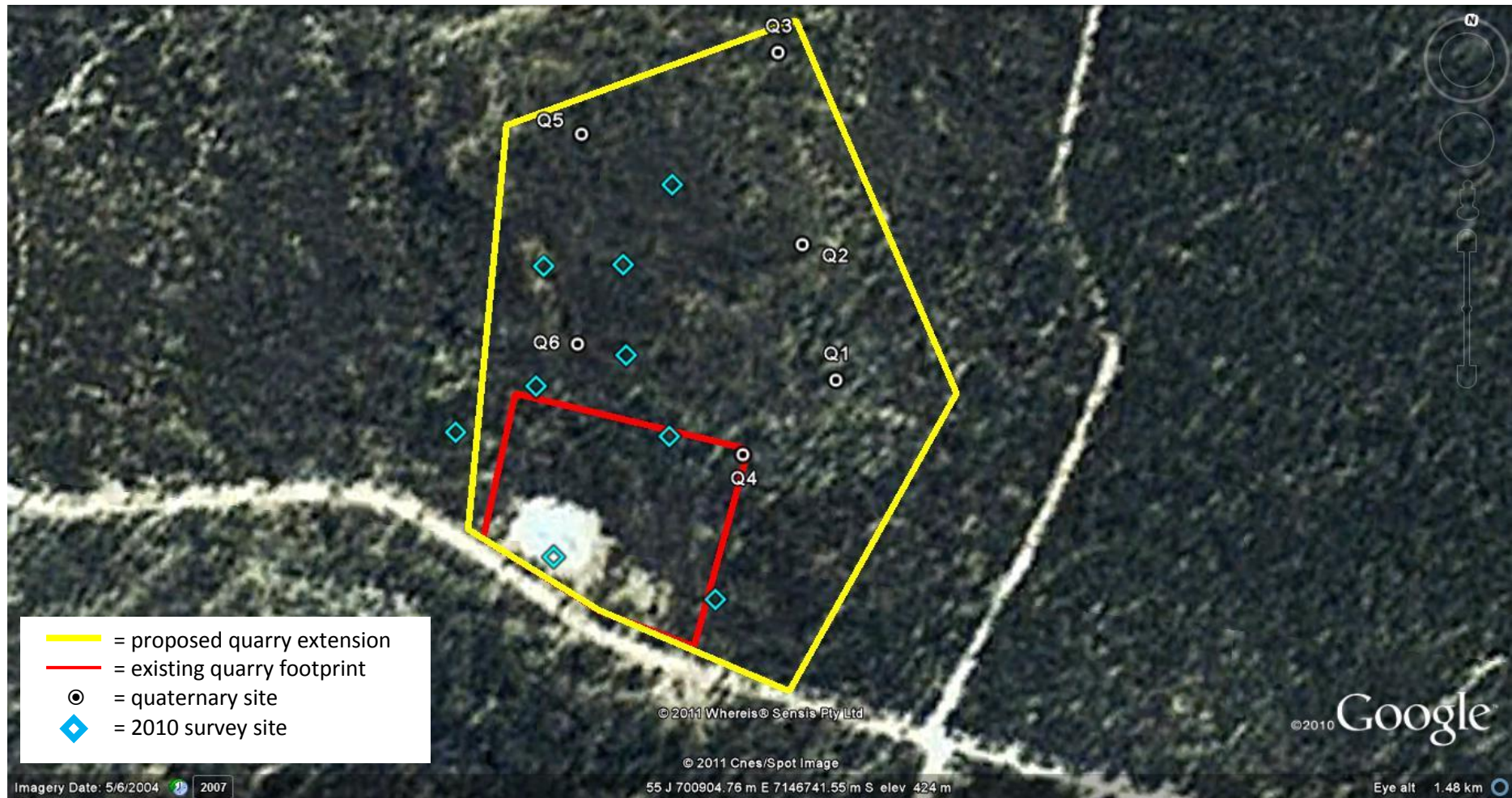


Figure Eight. Location of Type A Restricted (TAR) plants at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery)



Figure Nine. Map of ground-truthed regional ecosystem polygons at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery)

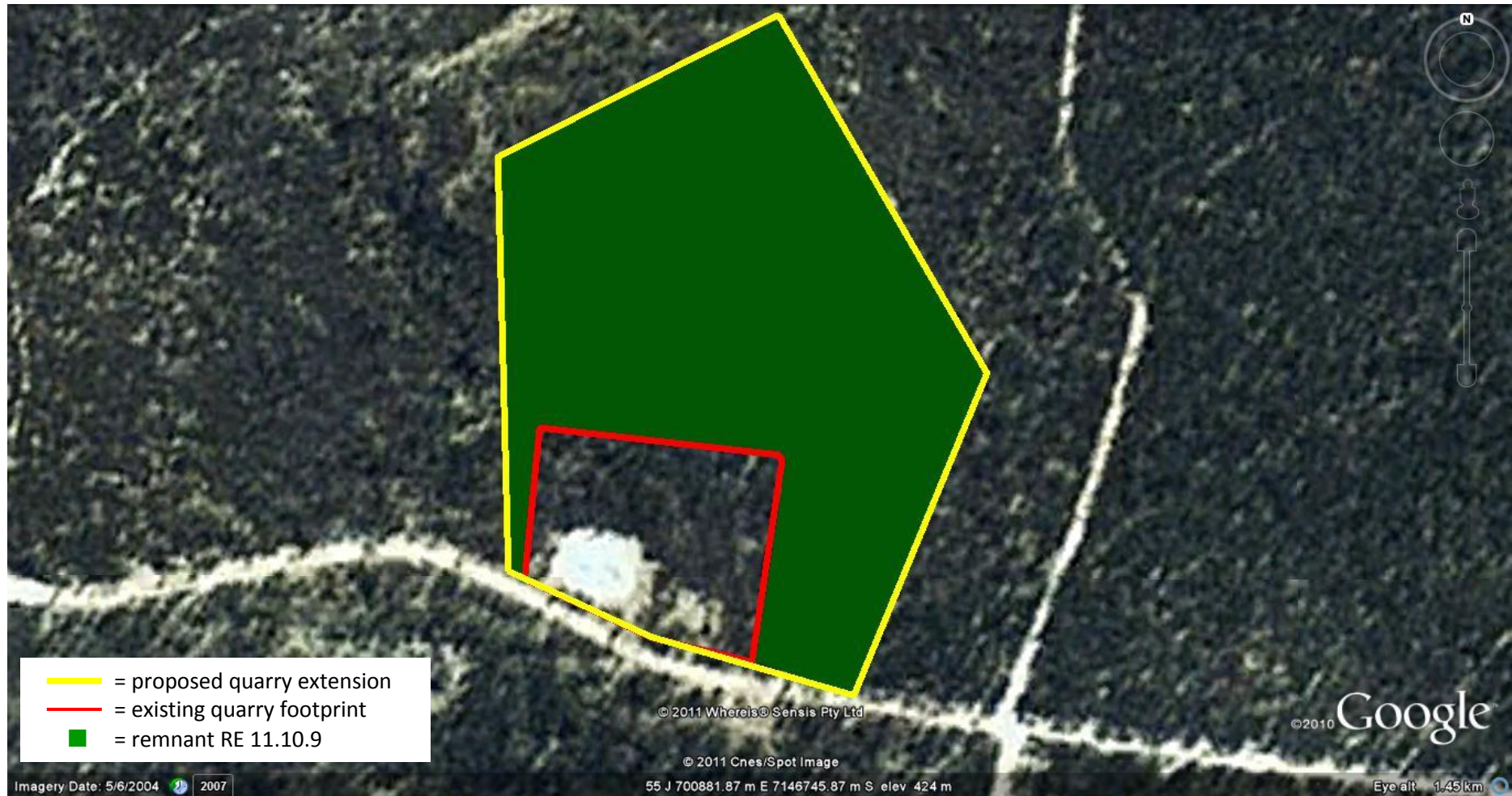




Figure Ten. Location of habitat trees at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery)

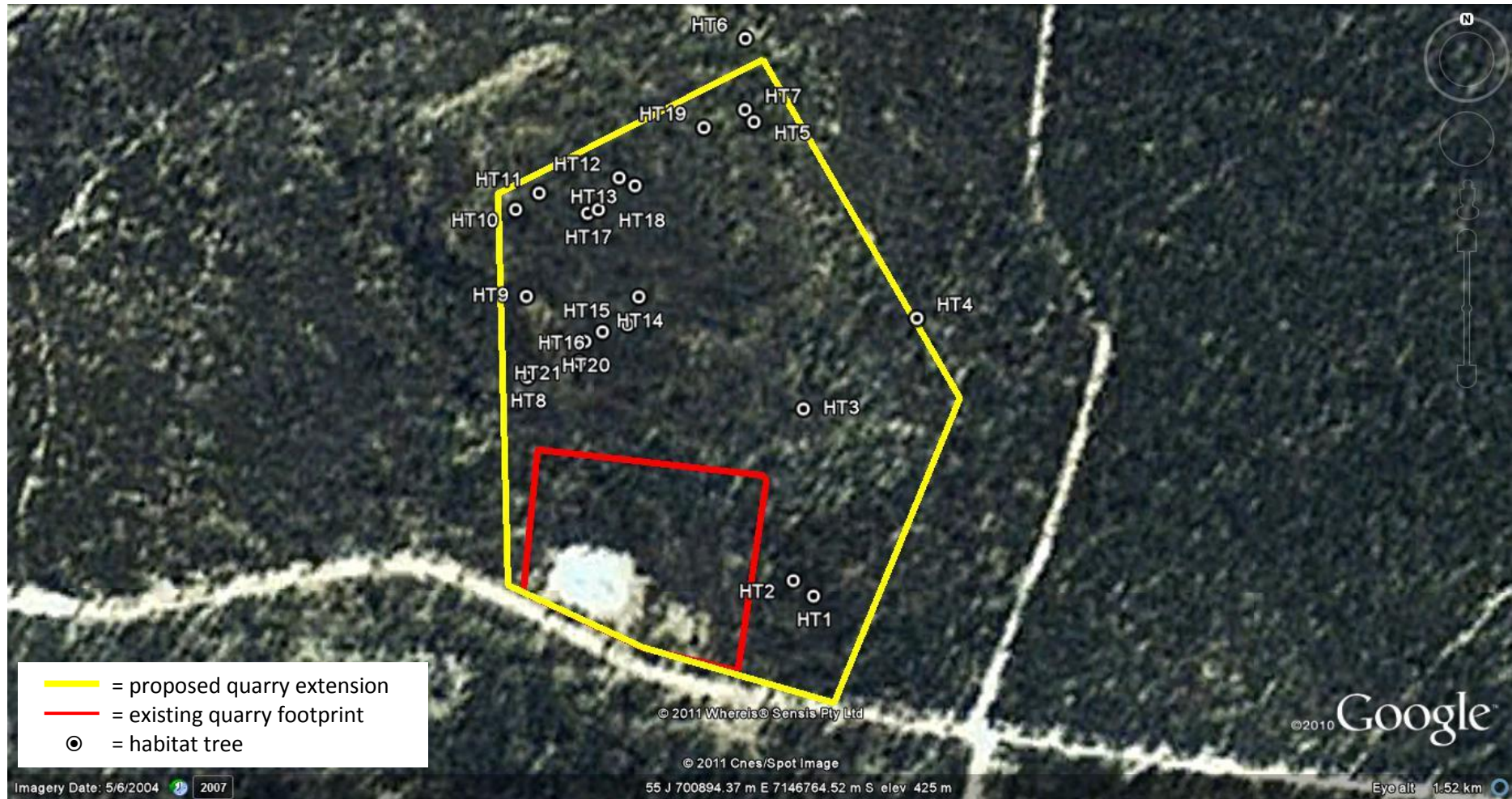


Figure Eleven. Location of habitat logs at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery)

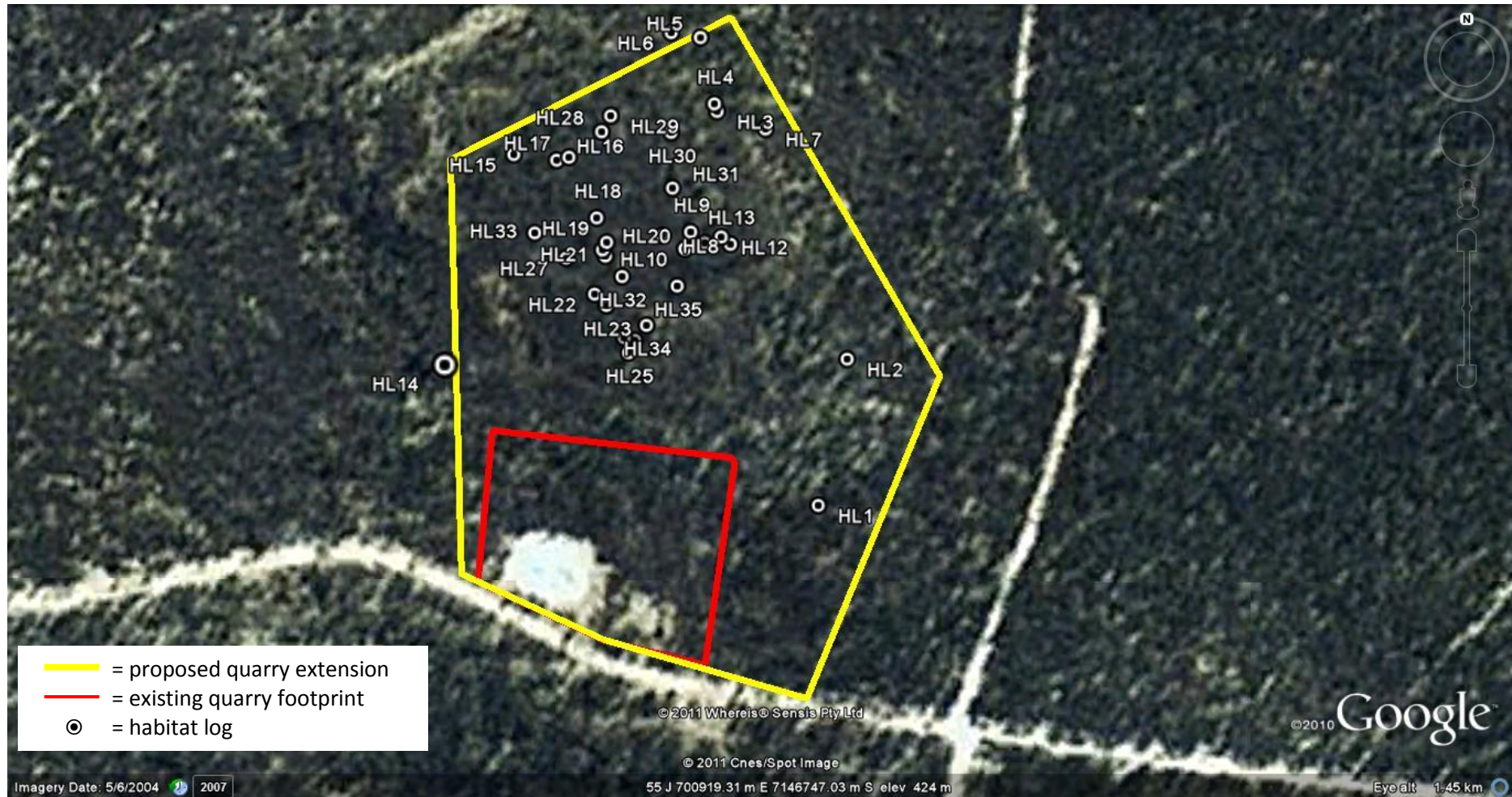
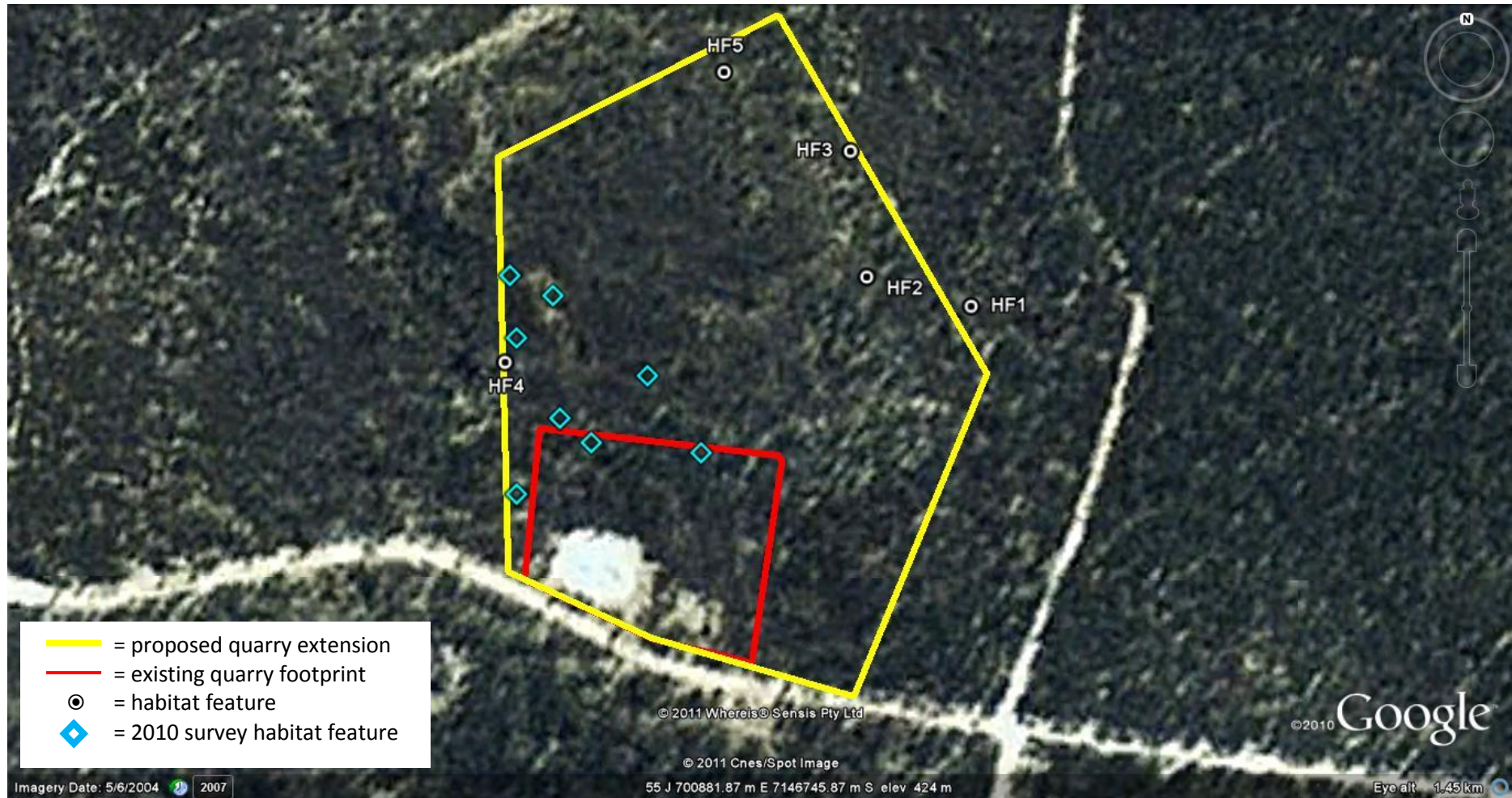
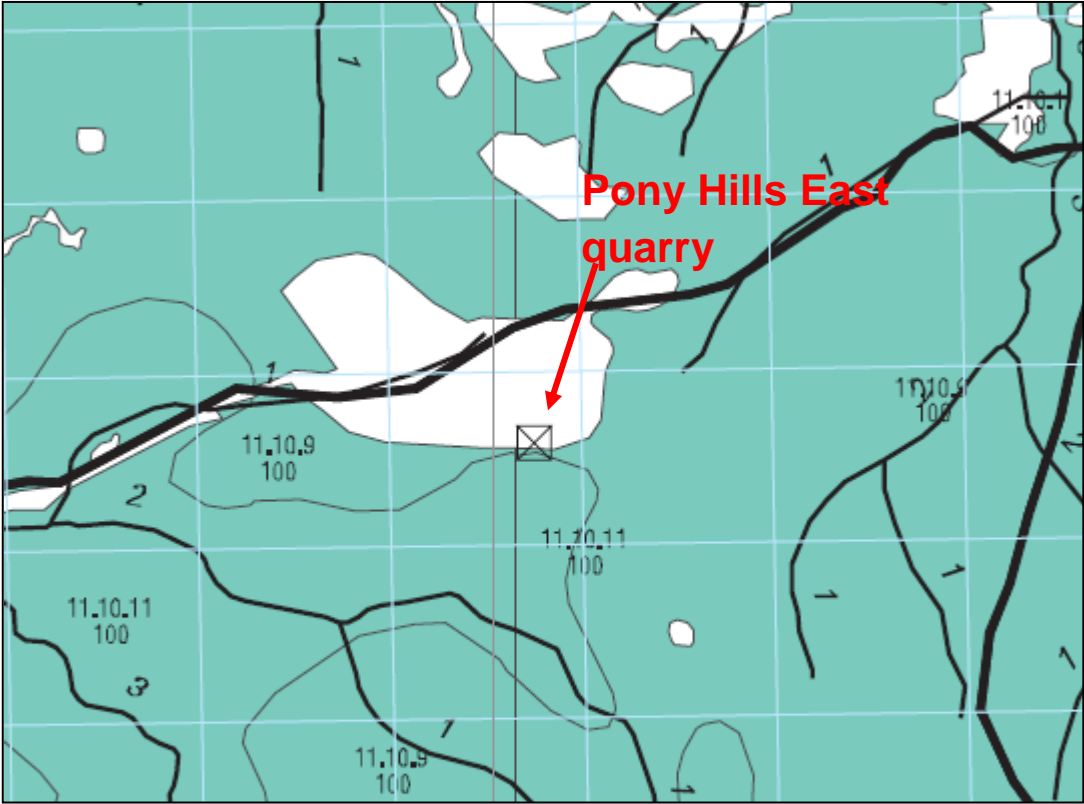


Figure Twelve. Location of habitat features at the proposed Pony Hills East quarry extension (over Google Earth 2004 imagery)



**Appendix One. Regional Ecosystem Map for Pony Hills East quarry**



## Appendix Two. Summary of fauna observed at the proposed Pony Hills East quarry extension.

**KEY:** \* = introduced species; # = March 2010 survey record; NC Act = *Nature Conservation Act 1992*; EPBC Act = *Environment Protection and Biodiversity Conservation Act 1999*. **Status:** E = endangered; V = vulnerable; R = rare; NT = near threatened; LC = least concern.

CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
Amphibians	Bufo	<i>Rhinella marina</i>	Cane Toad*		
Bird	Acanthizidae	<i>Chthonicola sagittata</i>	Speckled Warbler <sup>#</sup>	C	
Birds	Artamidae	<i>Cracticus torquatus</i>	Grey Butcherbird <sup>#</sup>	LC	
Birds	Artamidae	<i>Strepera graculina</i>	Pied Currawong	LC	
Bird	Columbidae	<i>Geopelia striata</i>	Peaceful Dove <sup>#</sup>	C	
Birds	Corcoracidae	<i>Struthidea cinerea</i>	Apostlebird	LC	
Bird	Corvidae	<i>Corvus orru</i>	Torresian Crow	C	
Birds	Halcyonidae	<i>Dacelo novaeguineae</i>	Laughing Kookaburra	LC	
Birds	Meliphagidae	<i>Philemon corniculatus</i>	Noisy Friarbird	C	
Birds	Meropidae	<i>Merops ornatus</i>	Rainbow Bee-eater	LC	M
Bird	Pachycephalidae	<i>Colluricincla harmonica</i>	Grey Shrike-thrush <sup>#</sup>	C	
Bird	Pardalotidae	<i>Pardalotus striatus</i>	Striated Pardalote	C	
Birds	Psittacidae	<i>Aprosmictus erythropterus</i>	Red-winged Parrot	LC	
Birds	Psittacidae	<i>Platycercus adscitus</i>	Pale-headed Rosella	LC	
Bird	Rhipiduridae	<i>Rhipidura leucophrys</i>	Willie Wagtail	C	
Birds	Turnicidae	<i>Turnix sp.</i>	Button-quail unidentified	LC	
Mammals	Peramelidae		Unidentified bandicoot		
Mammals	Macropodidae	<i>Macropus rufogriseus</i>	Red-necked Wallaby	LC	
Reptiles	Gekkonidae	<i>Gehyra dubia</i>	Dubious Dtella	LC	
Reptiles	Gekkonidae	<i>Heteronotia binoei</i>	Bynoe's Gecko	LC	
Reptiles	Scincidae	<i>Lerista fragilis</i>	Eastern Mulch Slider	LC	

## Appendix Three. Inventory of native flora recorded at the proposed Pony Hills East quarry extension.

**KEY:** # = March 2010 survey record; **Class:** C = conifer; F = fern; HD = higher dicots; LD = lower dicots; M = monocots; **Status:** NC Act = *Nature Conservation Act 1992*; LC = common.

CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
HD	Acanthaceae	<i>Brunoniella australis</i>	Blue Trumpet <sup>#</sup>	LC	
F	Adiantaceae	<i>Cheilanthes</i> sp.(infertile)	Mulga Fern	LC	
HD	Amaranthaceae	<i>Alternanthera nana</i>	Lesser Joyweed <sup>#</sup>	LC	
HD	Apocynaceae	<i>Alstonia constricta</i>	Bitterbark	LC	
HD	Apocynaceae	<i>Carissa ovata</i>	Currantbush	LC	
HD	Asteraceae	<i>Calotis dentex</i>	A Daisy-burr	LC	
HD	Asteraceae	<i>Calotis lappulacea</i>	Yellow Daisy-burr <sup>#</sup>	LC	
HD	Asteraceae	<i>Centipeda minima</i>	Desert Sneezeweed	LC	
HD	Asteraceae	<i>Chrysocephalum apiculatum</i>	Billy Buttons <sup>#</sup>	LC	
HD	Asteraceae	<i>Euchiton sphaericus</i>	Cudweed	LC	
HD	Asteraceae	<i>Pterocaulon</i> sp. (infertile)	A Fruit Salad Plant	LC	
HD	Asteraceae	<i>Senecio brigalowensis</i>	Fireweed	LC	
HD	Asteraceae	<i>Xerochrysum bracteatum</i>	Golden Everlasting Daisy	LC	
HD	Bignoniaceae	<i>Pandorea pandorana</i>	Wonga Vine	LC	
HD	Campanulaceae	<i>Wahlenbergia</i> sp.	A Bluebell	LC	
HD	Capparaceae	<i>Capparis canescens</i>	Wild Orange, Wild Pomegranate	LC	
HD	Caryophyllaceae	<i>Polycarpaea corymbosa</i> var. <i>minor</i>	Pretty Polly	LC	
HD	Casuarinaceae	<i>Allocasuarina luehmannii</i>	Bulloak	LC	
HD	Chenopodiaceae	<i>Einadia hastata</i>	Berry Saltbush <sup>#</sup>	LC	
HD	Chenopodiaceae	<i>Maireana microphylla</i>	Cotton Bush	LC	
HD	Clusiaceae	<i>Hypericum gramineum</i>	St. John's Wort	LC	
HD	Crassulaceae	<i>Crassula tetramera</i>	A stonecrop	LC	
C	Cupressaceae	<i>Callitris glaucophylla</i>	White Cypress Pine	LC	
M	Cyperaceae	<i>Bulbostylis barbata</i>	A sedge <sup>#</sup>	LC	
M	Cyperaceae	<i>Fimbristylis dichotoma</i>	Common Fringe-rush <sup>#</sup>	LC	
M	Cyperaceae	<i>Fuirena incrassata</i>		LC	
M	Cyperaceae	<i>Schoenus apogon</i>	Common Bog-rush, Fluke Bog-rush	LC	
HD	Droseraceae	<i>Drosera burmannii</i>	Tropical Sundew	LC	
HD	Euphorbiaceae	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>		LC	
M	Hemerocallidaceae	<i>Dianella</i> sp. (infertile)	A flax-lily	LC	
M	Juncaceae	<i>Juncus</i> sp. (infertile)	A Rush	LC	

CLASS	FAMILY	SCIENTIFIC NAME	COMMON NAME	NC ACT STATUS	EPBC ACT STATUS
HD	Lamiaceae	<i>Plectranthus parviflorus</i>	Cockspur Flower <sup>#</sup>	LC	
M	Laxmanniaceae	<i>Lomandra multiflora</i>	Many-headed Mat-rush	LC	
HD	Loganiaceae	<i>Mitrasacme paludosa</i>	A Mitrewort	LC	
HD	Malvaceae	<i>Hibiscus sturtii</i>	Hill Hibiscus <sup>#</sup>	LC	
HD	Malvaceae	<i>Sida</i> sp.	A Flannel Weed	LC	
HD	Mimosaceae	<i>Acacia leiocalyx</i>	Early-flowering Black Wattle	LC	
HD	Mimosaceae	<i>Acacia longispicata</i>	Slender-spiked Wattle	LC	
HD	Moraceae	<i>Ficus rubiginosa</i>	Rock Fig	LC	
HD	Myrtaceae	<i>Angophora leiocarpa</i>	Smooth-barked Apple	LC	
HD	Myrtaceae	<i>Corymbia clarksoniana</i>	Clarkson's Bloodwood	LC	
HD	Myrtaceae	<i>Corymbia tessellaris</i>	Carbeen, Moreton Bay Ash	LC	
HD	Myrtaceae	<i>Eucalyptus populnea</i>	Poplar Box	LC	
HD	Myrtaceae	<i>Eucalyptus melanophloia</i>	Silver-leaved Ironbark	LC	
HD	Myrtaceae	<i>Melaleuca thymifolia</i>	Thyme Honey-myrtle	LC	
HD	Picrodendraceae	<i>Petalostigma pubescens</i>	Quinine Tree	LC	
M	Poaceae	<i>Ancistrachne uncinulata</i>	Hooky Grass	LC	
M	Poaceae	<i>Aristida caput-medusae</i>	Many-headed Wiregrass	LC	
M	Poaceae	<i>Aristida</i> sp.	Wire Grass <sup>#</sup>	LC	
M	Poaceae	<i>Cymbopogon obtectus</i>	Silkyheads	LC	
M	Poaceae	<i>Eragrostis</i> spp. (infertile)	A Love Grass	LC	
M	Poaceae	<i>Eulalia aurea</i>	Silky Browntop Grass	LC	
HD	Proteaceae	<i>Hakea lorea</i>	Bootlace Oak	LC	
M	Poaceae	<i>Panicum</i> sp.	A Panic Grass <sup>#</sup>	LC	
M	Poaceae	<i>Paspalidium</i> sp.	A Grass <sup>#</sup>	LC	
M	Poaceae	<i>Perotis rara</i>	Comet Grass <sup>#</sup>	LC	
M	Poaceae	<i>Setaria surgens</i>	Pigeon Grass	LC	
HD	Sapindaceae	<i>Dodonaea heteromorpha</i>	Variable-leaved Hopbush	LC	
HD	Scrophulariaceae	<i>Gratiola pedunculata</i>	Stalked Brooklime	LC	
HD	Sterculiaceae	<i>Brachychiton populneus</i>	Kurrajong	LC	
HD	Stylidiaceae	<i>Stylidium debile</i>	Trigger Plant	LC	

## Appendix Four. Quaternary sites at the proposed Pony Hills East quarry extension.

<b>Site No.</b>	Q1	<b>Recorder:</b>	Rose Aisthorpe, Olivia Warner	<b>Date</b>	29/9/2011
<b>Purpose</b>	Pony Hills East quarry extensions			<b>Time</b>	0750
<b>Locality:</b> (inc. distance/direction to nearest town)	Hallet State Forest				
<b>Zone:</b>	55J	700963 E	7146767 N	<b>Datum</b>	WGS84

### Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval (m)	Est. cover density (D,M,S,V)
E			
T1	14.0	12.0 - 15.0	S
T2	4.5	3.0 - 6.0	M
T3			
S1			
S2			
S3			
G	0.2	0.1 - 0.3	M
<b>Structural formation:</b> Woodland			
<b>Ecologically dominant layer:</b> T1			

### Plant species

Record relative (numerical) dominance for each stratum;

**d** – dominant; **c** – codominant; **s** - subdominant, **a** – associated.

Str.	Rel. dom.	Scientific Name
T1	D	<i>Callitris glaucophylla</i>
T2	D	<i>Acacia longispicata</i>
G	D	<i>Vittadinia</i> sp. (infertile)
G	S	<i>Setaria surgens</i>

### Geology, landform, soils

<b>Geology code and rock types:</b>	Coarse-grained sandstone
<b>Landform:</b>	Ridge slope
<b>Soils:</b>	Pale brown sandy loam
<b>DERM Mapped RE Code:</b>	11.10.9
<b>Observed RE Code:</b>	11.10.9
<b>Landzone:</b>	10

### Vegetation Short Description

*Callitris glaucophylla* woodland; midlayer dominated by *Acacia longispicata*; ground layer composed of *Vittadinia* sp. and *Setaria surgens*

### Connectivity/Patch Characteristics

State Forest (previously logged)

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

*Gamochaeta pensylvanica* (C), *Verbena aristigera* (U), *Cenchrus ciliaris* (R), *Conyza bonariensis* (R), *Opuntia tomentosa* (R), *Sonchus oleraceus* (R)

**% Weed Cover:** <10%



<b>EVR Flora Present:</b>	Nil						
<b>EVR Flora Likely:</b>	Nil						
<b>Additional Flora:</b>							
<i>Brachychiton populneus</i>							
<i>Corymbia clarksoniana</i>							
<i>Alphitonia excelsa</i>							
<i>Petalostigma pubescens</i>							
<i>Cheilanthes</i> sp. (infertile)							
<i>Senecio brigalowensis</i>							
<i>Xerochrysum bracteatum</i>							
<i>Podolepis longipedata</i>							
<i>Juncus</i> sp. (infertile)							
<i>Allocasuarina luehmannii</i>							
<i>Calotis dentex</i>							
<i>Wahlenbergia</i> sp.							
<i>Sida</i> sp. (infertile)							
<b>Fauna Habitat Features</b> – (note coarse/fine woody debris, rocks/boulders, mistletoe, termite mounds, hollows, leaf litter, burrows, shrubs, food trees, loose bark, soil cracks, caves/crevices)							
<b>Density Scores:</b> 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100%.							
Rocks - embedded	1	Boulders	0	Shrub layer	3	Ground cover	4
Rocks - loose	0	Fallen bark	1	Leaf litter	1	Bare ground	0
<b>Abundance Scores:</b> 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	1		
Underhangs /overhangs / caves	0	Logs with hollows	0	Termite mounds	0		
Small logs (<30cm diameter.)	1	Hollow bearing trees	1	Mistletoe	0		
<b>Other</b>							
<b>Soil cracks</b>	Nil						
<b>Water</b>	Nil						
<b>Other (eg. food trees):</b>	Nil						
<b>Disturbances</b>							
Logging (moderate)							
Grazing (minimal)							
<b>Incidental Fauna Observations</b> (HE= heard, SE= seen, EV= evidence, FO= flying over)							
Pied Currawong x1 HE calling offsite				Squatter Pigeon			
Pale-headed Rosella x1 HE calling offsite				Little Pied Bat			
Laughing Kookaburra x1 HE calling offsite				Eastern Long-eared Bat			
Button-quail sp. platelets				Brigalow Scaly-foot			
				Golden-tailed Gecko			
				Dunmall's Snake			
<b>Additional Notes</b>							

**Site No.** Q2 **Recorder:** Rose Aisthorpe, Olivia Warner **Date** 29/9/2011  
**Purpose** Pony Hills East quarry extensions **Time** 0900  
**Locality:**  
 (inc. distance/direction to nearest town) Hallet State Forest  
**Zone:** 55J 700925 E 7146872 N **Datum** WGS84

**Vegetation structure**

Median height of the EDL is to be measured

Stratum	Median height	Height interval (m)	Est. cover density (D,M,S,V)
E	19.5	18.0 - 21.0	V
T1	11.0	10.0 - 12.0	V
T2	4.0	2.5 - 5.0	M
T3			
S1			
S2			
S3			
G	0.2	0.1 - 0.3	M

**Structural formation:** Open woodland  
**Ecologically dominant layer:** E

**Plant species**

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

Str.	Rel. dom.	Scientific Name
E	D	<i>Eucalyptus melanophloia</i>
T1	D	<i>Callitris glaucophylla</i>
T2	D	<i>Acacia longispicata</i>
T2	A	<i>Callitris glaucophylla</i>
G	D	<i>Eragrostis</i> spp. (infertile)
G	A	<i>Aristida caput-medusae</i>
G	A	<i>Setaria surgens</i>

**Geology, landform, soils**

**Geology code and rock types:** Coarse-grained sandstone  
**Landform:** Ridge slope  
**Soils:** Shallow brown loam  
**DERM Mapped RE Code:** 11.10.9  
**Observed RE Code:** 11.10.9 **Landzone:** 10

**Vegetation Short Description**

*Eucalyptus melanophloia* and *Callitris glaucophylla* open woodland; midlayer dominated by *Acacia longispicata* with scattered *C. glaucophylla* saplings; grassy ground layer

**Connectivity/Patch Characteristics**

State Forest (previously logged)

**Weeds:** R = rare (<10 plants observed); U = uncommon (11 – 50 plants observed); C = common = (>50 plants observed)  
*Verbena aristigera* (R), *Cenchrus ciliaris* (R), *Conyza bonariensis* (R)

**% Weed Cover:** <5%  
**EVR Flora Present:** Nil

<b>EVR Flora Likely:</b>	Nil						
<b>Additional Flora:</b>							
<i>Angophora leiocarpa</i>	<i>Dianella</i> sp. (infertile)						
<i>Corymbia clarksoniana</i>							
<i>Alphitonia excelsa</i>							
<i>Petalostigma pubescens</i>							
<i>Cheilanthes</i> sp. (infertile)							
<i>Capparis canescens</i>							
<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>							
<i>Dodonaea heteromorpha</i>							
<i>Juncus</i> sp. (infertile)							
<i>Alstonia constricta</i>							
<i>Calotis dentex</i>							
<i>Wahlenbergia</i> sp.							
<i>Sida</i> sp. (infertile)							
<b>Fauna Habitat Features</b> – (note coarse/fine woody debris, rocks/boulders, mistletoe, termite mounds, hollows, leaf litter, burrows, shrubs, food trees, loose bark, soil cracks, caves/crevices)							
<b>Density Scores:</b> 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100%.							
Rocks - embedded	2	Boulders	0	Shrub layer	3	Ground cover	3
Rocks - loose	2	Fallen bark	0	Leaf litter	1	Bare ground	1
<b>Abundance Scores:</b> 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	1		
Underhangs /overhangs / caves	0	Logs with hollows	0	Termite mounds	0		
Small logs (<30cm diameter.)	1	Hollow bearing trees	1	Mistletoe	0		
<b>Other</b>							
<b>Soil cracks</b>	Nil						
<b>Water</b>	Nil						
<b>Other (eg. food trees):</b>	Nil						
<b>Disturbances</b>							
Logging (moderate)							
Grazing (minimal)							
<b>Incidental Fauna Observations</b> (HE= heard, SE= seen, EV= evidence, FO= flying over)				<b>EVNT Fauna Likely</b>			
Pied Currawong x1 HE calling offsite				Squatter Pigeon			
Pale-headed Rosella x1 HE calling offsite				Little Pied Bat			
Torresian Crow x1 HE calling offsite				Eastern Long-eared Bat			
Apostlebird x1 HE onsite				Brigalow Scaly-foot			
				Golden-tailed Gecko			
				Dunmall's Snake			
<b>Additional Notes</b>							

**Site No.** Q3    **Recorder:** Rose Aisthorpe, Olivia Warner    **Date** 29/9/2011  
**Purpose** Pony Hills East quarry extensions    **Time** 1015  
**Locality:**  
 (inc. distance/direction to nearest town)    Hallet State Forest  
**Zone:** 55J    700889 E    7147022 N    **Datum** WGS84

**Vegetation structure**

Median height of the EDL is to be measured

Stratum	Median height	Height interval (m)	Est. cover density (D,M,S,V)
E			
T1	12.0	11.0 - 14.0	S
T2	4.0	3.0 - 5.0	S-M
T3			
S1	1.5	1.0 - 2.0	S
S2			
S3			
G	0.3	0.1 - 0.4	M
<b>Structural formation:</b> Woodland			
<b>Ecologically dominant layer:</b> T1			

**Plant species**

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

Str.	Rel. dom.	Scientific Name
T1	D	<i>Callitris glaucophylla</i>
T1	S	<i>Allocasuarina luehmannii</i>
T2	D	<i>Acacia longispicata</i>
S1	D	<i>Callitris glaucophylla</i>
G	D	<i>Setaria surgens</i>
G	A	<i>Aristida caput-medusae</i>

**Geology, landform, soils**

**Geology code and rock types:** Coarse-grained sandstone  
**Landform:** Ridge slope  
**Soils:** Pale brown sandy loam  
**DERM Mapped RE Code:** 11.10.9  
**Observed RE Code:** 11.10.9    **Landzone:** 10

**Vegetation Short Description**

*Callitris glaucophylla* and *Allocasuarina luehmannii* woodland; midlayer composed of *Acacia longispicata* and *C. glaucophylla*; ground layer dominated by *Setaria surgens* and *Aristida caput-medusae*

**Connectivity/Patch Characteristics**

State Forest (previously logged)

**Weeds:** R = rare (<10 plants observed); U = uncommon (11 – 50 plants observed); C = common = (>50 plants observed)  
*Opuntia tomentosa* (R), *Cenchrus ciliaris* (U), *Sonchus oleraceus* (R), *Lepidium bonariense* (R), *Bidens pilosa* (R)

**% Weed Cover:** <10%  
**EVR Flora Present:** Nil

<b>EVR Flora Likely:</b>	Nil						
<b>Additional Flora:</b>							
<i>Angophora leiocarpa</i>	<i>Dianella</i> sp. (infertile)						
<i>Corymbia clarksoniana</i>							
<i>Alphitonia excelsa</i>							
<i>Petalostigma pubescens</i>							
<i>Cheilanthes</i> sp. (infertile)							
<i>Capparis canescens</i>							
<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>							
<i>Dodonaea heteromorpha</i>							
<i>Juncus</i> sp. (infertile)							
<i>Alstonia constricta</i>							
<i>Calotis dentex</i>							
<i>Wahlenbergia</i> sp.							
<i>Sida</i> sp. (infertile)							
<b>Fauna Habitat Features</b> – (note coarse/fine woody debris, rocks/boulders, mistletoe, termite mounds, hollows, leaf litter, burrows, shrubs, food trees, loose bark, soil cracks, caves/crevices)							
<b>Density Scores:</b> 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100%.							
Rocks - embedded	2	Boulders	0	Shrub layer	3	Ground cover	3
Rocks - loose	2	Fallen bark	0	Leaf litter	1	Bare ground	1
<b>Abundance Scores:</b> 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	1		
Underhangs /overhangs / caves	0	Logs with hollows	0	Termite mounds	0		
Small logs (<30cm diameter.)	1	Hollow bearing trees	1	Mistletoe	0		
<b>Other</b>							
<b>Soil cracks</b>	Nil						
<b>Water</b>	Nil						
<b>Other (eg. food trees):</b>	Nil						
<b>Disturbances</b>							
Logging (moderate)							
Grazing (minimal)							
<b>Incidental Fauna Observations</b> (HE= heard, SE= seen, EV= evidence, FO= flying over)				<b>EVNT Fauna Likely</b>			
Pied Currawong x1 HE calling offsite				Squatter Pigeon			
Pale-headed Rosella x1 HE calling offsite				Little Pied Bat			
Torresian Crow x1 HE calling offsite				Eastern Long-eared Bat			
Apostlebird x1 HE onsite				Brigalow Scaly-foot			
				Golden-tailed Gecko			
				Dunmall's Snake			
<b>Additional Notes</b>							

**Site No.** Q4    **Recorder:** Rose Aisthorpe, Olivia Warner    **Date** 29/9/2011  
**Purpose** Pony Hills East quarry extensions    **Time** 1445  
**Locality:**  
(inc. distance/direction to nearest town) Hallet State Forest  
**Zone:** 55J    700895 E    7146700 N    **Datum** WGS84

**Vegetation structure**

Median height of the EDL is to be measured

Stratum	Median height	Height interval (m)	Est. cover density (D,M,S,V)
E			
T1			
T2			
T3			
S1			
S2			
S3			
G	0.5	0.1 - 0.8	M

**Structural formation:**

**Ecologically dominant layer:** G

**Plant species**

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

Str.	Rel. dom.	Scientific Name
G	D	<i>Juncus</i> spp. (infertile)
G	S	<i>Stylidium debile</i>
G	A	<i>Gamochaeta calviceps</i>
G	A	<i>Gamochaeta pensylvanica</i>
G	A	<i>Setaria surgens</i>

**Geology, landform, soils**

**Geology code and rock types:** Coarse-grained sandstone  
**Landform:** Ridge slope  
**Soils:** Pale brown sandy loam  
**DERM Mapped RE Code:** 11.10.9  
**Observed RE Code:** 11.10.9    **Landzone:** 10

**Vegetation Short Description**

Quarry fringed by *Juncus* spp., *Stylidium debile*, *Gamochaeta calviceps*, *G. pensylvanica* and *Setaria surgens*; surrounded by *Callitris glaucophylla* woodland with midlayer of *Acacia longispicata*

**Connectivity/Patch Characteristics**

Adjoined by Hallet State Forest and quarry to South

**Weeds:** R = rare (<10 plants observed); U = uncommon (11 – 50 plants observed); C = common (= >50 plants observed)  
*Bidens pilosa* (R), *Conyza bonariensis* (R)

**% Weed Cover:** <5%

**EVR Flora Present:** Nil

<b>EVR Flora Likely:</b>	Nil						
<b>Additional Flora:</b>							
<i>Schoenus apogon</i>							
<i>Fuirena incrassata</i>							
<i>Hypericum gramineum</i>							
<i>Brachyscome</i> sp. (infertile)							
<i>Cheilanthes</i> sp. (infertile)							
<i>Centipeda minima</i>							
<i>Gratiola pedunculata</i>							
<i>Mitrasacme paludosa</i>							
<i>Xerochrysum bracteatum</i>							
<i>Drosera burmanni</i>							
<i>Calotis dentex</i>							
<i>Wahlenbergia</i> sp.							
<i>Euchiton sphaericus</i>							
<b>Fauna Habitat Features</b> – (note coarse/fine woody debris, rocks/boulders, mistletoe, termite mounds, hollows, leaf litter, burrows, shrubs, food trees, loose bark, soil cracks, caves/crevices)							
<b>Density Scores:</b> 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	3
Rocks - loose	0	Fallen bark	0	Leaf litter	1	Bare ground	1
<b>Abundance Scores:</b> 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	0	Mistletoe	0		
<b>Other</b>							
<b>Soil cracks</b>	Nil						
<b>Water</b>	Artificially dammed by quarry banks						
<b>Other (eg. food trees):</b>	Nil						
<b>Disturbances</b>							
Clearing (severe)							
<b>Incidental Fauna Observations</b> (HE= heard, SE= seen, EV= evidence, FO= flying over)				<b>EVNT Fauna Likely</b>			
Pied Currawong x1 HE calling offsite				Squatter Pigeon			
Willie Wagtail x1 HE onsite				Little Pied Bat			
Red-winged Parrot x1 HE onsite				Eastern Long-eared Bat			
Apostlebird x1 HE onsite				Brigalow Scaly-foot			
Striated Pardalote x1 HE calling offsite				Golden-tailed Gecko			
				Dunmall's Snake			
<b>Additional Notes</b>							

**Site No.** Q5    **Recorder:** Rose Aisthorpe, Olivia Warner    **Date** 29/9/2011  
**Purpose** Pony Hills East quarry extensions    **Time** 1545  
**Locality:**  
 (inc. distance/direction to nearest town)    Hallet State Forest  
**Zone:**    55J    700740 E    7146941 N    **Datum** WGS84

**Vegetation structure**

Median height of the EDL is to be measured

Stratum	Median height	Height interval (m)	Est. cover density (D,M,S,V)
E			
T1	18.0	15.0 - 21.0	V
T2	3.0	1.5 - 5.0	D
T3			
S1			
S2			
S3			
G	0.2	0.1 - 0.4	M
<b>Structural formation:</b> Open woodland			
<b>Ecologically dominant layer:</b> T1			

**Plant species**

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

Str.	Rel. dom.	Scientific Name
T1	D	<i>Eucalyptus melanophloia</i>
T2	D	<i>Acacia longispicata</i>
G	D	<i>Eragrostis</i> spp. (infertile)
G	A	<i>Aristida</i> spp. (infertile)

**Geology, landform, soils**

**Geology code and rock types:**    Coarse-grained sandstone  
**Landform:**    Ridge slope  
**Soils:**    Brown sandy loam  
**DERM Mapped RE Code:**    11.10.9  
**Observed RE Code:** 11.10.9    **Landzone:** 10

**Vegetation Short Description**  
*Eucalyptus melanophloia* open woodland; midlayer dominated by *Acacia longispicata*; grassy ground layer of native perennials

**Connectivity/Patch Characteristics**  
 State Forest (previously logged)

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

**% Weed Cover:** <5%

**EVR Flora Present:** Nil

**EVR Flora Likely:** Nil



<b>Additional Flora:</b>							
<i>Eucalyptus populnea</i>							
<i>Callitris glaucophylla</i>							
<i>Carissa ovata</i>							
<i>Dodonaea heteromorpha</i>							
<i>Alstonia constricta</i>							
<i>Acacia leiocalyx</i>							
<i>Alphitonia excelsa</i>							
<i>Calotis dentex</i>							
<i>Maireana microphylla</i>							
<i>Ancistrachne uncinulata</i>							
<b>Fauna Habitat Features</b> – (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	3	Ground cover	3
Rocks - loose	0	Fallen bark	1	Leaf litter	2	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	1		
Underhangs /overhangs / caves	0	Logs with hollows	1	Termite mounds	0		
Small logs (<30cm diameter.)	1	Hollow bearing trees	1	Mistletoe	0		
<b>Other</b>							
<b>Soil cracks</b>	Nil						
<b>Water</b>	Nil						
<b>Other (eg. food trees):</b>	Nil						
<b>Disturbances</b>							
Logging (severe)							
Fire (moderate)							
<b>Incidental Fauna Observations</b> (HE= heard, SE= seen, EV= evidence, FO= flying over)				<b>EVNT Fauna Likely</b>			
				Squatter Pigeon			
				Little Pied Bat			
				Eastern Long-eared Bat			
				Brigalow Scaly-foot			
				Golden-tailed Gecko			
				Dunmall's Snake			
<b>Additional Notes</b>							

**Site No.** Q6 **Recorder:** Rose Aisthorpe, Olivia Warner **Date** 30/9/2011  
**Purpose** Pony Hills East quarry extensions **Time** 0930  
**Locality:** (inc. distance/direction to nearest town) Hallet State Forest  
**Zone:** 55J 700754 E 7146774 N **Datum** WGS84

### Vegetation structure

Median height of the EDL is to be measured

Stratum	Median height	Height interval (m)	Est. cover density (D,M,S,V)
E			
T1	17.0	14.0 - 21.0	V
T2	4.5	3.0 - 6.0	M
T3			
S1			
S2			
S3			
G	0.2	0.1 - 0.4	M

**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	<i>Callitris glaucophylla</i>
T1	A	<i>Eucalyptus melanophloia</i>
T2	D	<i>Acacia longispicata</i>
T2	A	<i>Callitris glaucophylla</i>
G	C	<i>Aristida caput-medusae</i>
G	C	<i>Eragrostis</i> sp. (infertile)

### Geology, landform, soils

**Geology code and rock types:** Coarse-grained sandstone  
**Landform:** Ridge slope  
**Soils:** Pale brown sandy loam (shallow)  
**DERM Mapped RE Code:** 11.10.9  
**Observed RE Code:** 11.10.9 **Landzone:** 10

### Vegetation Short Description

*Callitris glaucophylla* and *Eucalyptus melanophloia* open woodland; midlayer dominated by *Acacia longispicata* and scattered *C. glaucophylla* saplings; grassy ground layer

### Connectivity/Patch Characteristics

State Forest (previously logged)

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

*Cenchrus ciliaris* (U), *Verbena aristigera* (U), *Opuntia tomentosa* (R), *Conyza bonariensis* (R), *Sonchus oleraceus* (R)

**% Weed Cover:** <15%

**EVR Flora Present:** Nil

**EVR Flora Likely:** Nil

**Additional Flora:**

*Alphitonia excelsa*

*Crassula tetramera*

<i>Hakea lorea</i>							
<i>Xerochrysum bracteatum</i>							
<i>Dodonaea heteromorpha</i>							
<i>Pterocaulon</i> sp. (infertile)							
<i>Sida</i> sp. (infertile)							
<i>Dianella</i> sp. (infertile)							
<i>Calotis dentex</i>							
<i>Cheilanthes</i> sp. (infertile)							
<i>Petalostigma pubescens</i>							
<i>Allocasuarina luehmannii</i>							
<i>Capparis canescens</i>							
<i>Melaleuca thymifolia</i>							
<b>Fauna Habitat Features</b> – (note coarse/fine woody debris, rocks/boulders, mistletoe, termite mounds, hollows, leaf litter, burrows, shrubs, food trees, loose bark, soil cracks, caves/crevices)							
<b>Density Scores:</b> 0 = 0%; 1 = <25%; 2 = 26-50%; 3 = 51-75%; 4 = 75-99%; 5 = 100%.							
Rocks - embedded	2	Boulders	0	Shrub layer	3	Ground cover	3
Rocks - loose	1	Fallen bark	1	Leaf litter	2	Bare ground	1
<b>Abundance Scores:</b> 0 = absent; 1 = 1-5; 2 = 6-20; 3 = 21-50; 4 = 51-75; 5 = 76-100; 6 = >100							
Crevices/ledges	1	Large logs (>30cm diameter)	0	Trees / logs bearing loose bark	1		
Underhangs /overhangs / caves	0	Logs with hollows	0	Termite mounds	0		
Small logs (<30cm diameter.)	1	Hollow bearing trees	1	Mistletoe	0		
<b>Other</b>							
Soil cracks	Nil						
Water	Nil						
Other (eg. food trees):	Nil						
<b>Disturbances</b>							
Logging (severe)							
Fire (minimal)							
<b>Incidental Fauna Observations</b> (HE= heard, SE= seen, EV= evidence, FO= flying over)							
Rainbow Bee-eater x1 HE offsite	Squatter Pigeon						
Red-necked Wallaby x1 SE offsite	Little Pied Bat						
Torresian Crow x1 HE calling in distance	Eastern Long-eared Bat						
Pied Currawong x1 HE calling in distance	Brigalow Scaly-foot						
Striated Pardalote x1 HE offsite	Golden-tailed Gecko						
<i>Rhinella marina</i> x1 SE dead on ground	Dunmall's Snake						
<i>Heteronotia binoei</i> x4 SE under rocks							
<i>Gehyra dubia</i> x1 SE under bark							
<i>Lerista fragilis</i> x1 SE under rocks							
<b>Additional Notes</b>							