29 October 2009

Landcom
C/- APP
PO Box 1573
NORTH SYDNEY NSW 2059
Att Owen Burnie

Our ref: 22/14198/1051
Your ref:

Dear Owen

Menangle Park Rezoning
Pimelea spicata Survey and Results

1 Introduction

The DECCW have indicated they require further information regarding the potential distribution, or otherwise, of *Pimelea spicata* across the site before endorsing the proposed offset strategy and negating the need for further assessments for this species at the Development Application (DA) stage.

Previous ecological assessments have indicated the 'potential' for *Pimelea spicata* to occur in four patches across the site, proposed to be cleared, as part of the development. This has increased the constraint value placed on these patches and also placed the DECCW in a position where they can not make a decision regarding the impact to *Pimelea spicata* being significant or otherwise.

GHD has completed additional targeted surveys for this species with the results outlined below.

2 Methodology

Targeted survey for the threatened herb *Pimelea spicata* was undertaken by Teresa James Flora Consultant on 21 September, 2001 with assistance provided by Syke Rivett of GHD. Survey occurred at four sites within the proposed Menangle Park development area (see Attachment 2) and in the vicinity of Cummins Road. No records of this species were previously known from these sites.

The sites were searched using the random meandering technique across the entire remnant as recommended in DECC Environmental Impact Assessment guidelines for this species. Areas of higher quality potential habitat (e.g. below and in close vicinity to prickly shrubs that are more inaccessible to grazing animals) were subject to intensive search. The search times were proportional to the size of remnants, extent of suitable habitat and condition. They are consistent with DECC guidelines of 1 hour per ha of suitable habitat.

In addition, two of the three known *Pimelea spicata* populations within the local area were inspected to provide a guide to the state of growth and extent of flowering which could be expected at the time of survey (see Attachment 3, Threatened Species Records in the Locality).

Reference site 1

Reference site 1 was located south-west of Richardson Road at Narellan, adjacent to the cemetery.

Results – A population of *Pimelea spicata* was observed within a moderate size gentle depression with a mesic influence. A high proportion of the plants observed were flowering. The population is protected by fencing with no evidence of grazing, slashing or mowing.

Reference site 2

Reference site 2 was located at the end of Bryan Smith Drive within the UWS campus, south of Narellan Road.

Results – No plants of *Pimelea spicata* were observed. Search restricted by large size of area and lack of collection details. Site is very disturbed and weedy.

3 Results

The results of the survey are summarised in Table 1, below. Full detailed results are included as Attachment 1.

Table 1 *Pimelea spictata* Targeted Survey Results

Survey Site	Location and Size	Vegetation Type	Landuse and Condition	*Pimelea spicata* and habitat	Likelihood of occurrence
Site 1	South of junction of Menangle Park and Cummins Roads (2-3 ha)	Cumberland Plain Woodland	Horse Grazing Native shrub layer largely replaced by African Box Thorn. High proportion of weeds present in ground layer along with persistent native species. Saline conditions. Dry soil conditions.	No plants found. Potential habitat existing.	**Low -** Low probability of population being present given intense and ongoing disturbance as a result of grazing, and nutrient enrichment of the soil favouring exotic species.
Site 2	Eastern side of Cummins Road (3 ha)	Cumberland Plain Woodland	Horse grazing. Moderate condition with native shrub layer discontinuous but present across the site. Dry soil conditions.	No plants found. Potential habitat exists particularly in close vicinity to denser patches of Native Blackthorn where grazing is restricted.	**Moderate** - Moderate probability of population being present within soil seed bank or as rootstock – less intense & continuous grazing indicated with higher level of naturalness (as measured by vegetation structure & composition).
Site 3	Eastern side of Cummins Road opposite Taber	Cumberland Plain Woodland	Horse grazing (intense). Native shrub layer mostly absent. Ground cover is	No plants found. Potential habitat minimal.	**Low** - very low probability of population being present in view of very

	Street. (2-3 ha)		low with extensive areas of bare soil present. Dry soil conditions and evidence of rabbit activity present.		intense and ongoing disturbance as a result of grazing, and nutrient enrichment of the soil favouring exotic species.
Site 4	500 m east of Cummins Road, opposite Taber Street (2-3 ha).	River-flat Forest	Horse grazing (intense) & other disturbances. Native shrub layer mostly absent. Ground cover is low with extensive areas of bare soil present. Dry soil conditions present.	No plants found. No potential habitat.	**No** probability of population being present. Habitat – River-flat Forest community with localized occurrence of sands not suitable.

3.1 Conclusions

Plants of *Pimelea spicata* were not recorded from any of the four sites surveyed at Menangle Park. Sites 1, 2 and 3 contain CPW which can potential habitat for *Pimelea spicata*. However, *Pimelea spicata* is unlikely to be present as plants, rootstock or seed at sites 1 and 3 due to the intensity and/or long-term effects of grazing. There is a reasonable probability, however, that the species is present at site 2 but probably persisting below ground. If present, regeneration of *Pimelea spicata* could occur after good rains and/or the cessation of grazing. A further survey of this location is recommended after a period of rain to confirm the presence or otherwise of *Pimelea spicata* at site 2.

The prevailing drought conditions were not conducive to growth and flowering of *Pimelea spicata*, a species that is known to respond readily to rains. Although at least one local population is known to be flowering at the time of the survey (reference site 1) this may reflect specific site conditions. The population at the reference site occurred within a damp depression compared to the more exposed and drier conditions observed at sites 1-4. When absent above ground *Pimelea spicata* may still be present within the soil as rootstock or seed. Only site 2, however, has a reasonable probability of *Pimelea spicata* persisting in the soil as sites 1, 3 & 4 are subject to intense and ongoing grazing by horses with significant loss of a native shrub layer, degradation of soils and high levels of exotic species. Although *Pimelea spicata* is capable of maintaining a long-term persistent seed bank, long-term and continuous disturbance will cause local extinctions through the death of plants, decreased seed production and low survival rates of young plants.

Should you have any further enquiries relating to the information above, please contact the undersigned accordingly.

Yours faithfully,

GHD Pty Ltd	
	
Daniel Williams Principal Environmental Consultant 6586 8714	**Teresa James** Flora Consultant 0428 218 502

Attachment 1: Detailed site assessment results
Attachment 2: Site Location Plan
Attachment 3: Threatened Species Records Map

Attachment 1 Detailed Results

The four sites surveyed within the proposed development are shown in Figure 1 and detailed below.

Site 1

Location: South of Menangle Park Road at junction with Cummins Road.

Approximate size: 2-3 ha

Topography: Gentle south-facing slope.

Vegetation: Cumberland Plain Woodland – Grey Box *Eucalyptus moluccana*- Forest Red Gum *Eucalyptus tereticornis* surrounded by open paddocks.

Land-use: Horse grazing.

Condition: Native shrub layer largely replaced by African Box Thorn. High proportion of weeds present in ground layer along with persistent native species. Saline conditions indicated by frequency of *Einadia* & *Atriplex* species. Dry soil conditions; some native groundcover species drying up.

***Pimelea spicata* plants & habitat:** No plants found. Potential habitat existing, however, there is low probability of population being present in view of intense and ongoing disturbance as a result of grazing, and nutrient enrichment of the soil favouring exotic species.

Notes: Canopy cover generally >10% and native dominated. Shrub layer dominated by African Box Thorn *Lycium ferocissimum* and ground layer a mixture of native and exotic species, and bare ground. Large quantities of dead wood occur through the site.

Common native species observed at the site:

Einadia species

Atriplex semibaccata

Dichondra repens

Centella asiatica

Eragrostis leptostachya

Microlaena stipoides

Chloris ventricosa

Vittadinia species

Glycine species

Oxalis perrenans

Desmodium varians

Austrodanthonia species

Common weeds:

African Box Thorn

African Olive

Patersons Curse

Fireweed

Cape Weed

St. Johns Wort

Site 2

Location: Eastern side of Cummins Road.

Approximate size: 3 ha

Topography: Moderate west-facing slope.

Vegetation: Cumberland Plain Woodland dominated by Narrow-leaved Ironbark Eucalyptus crebra surrounded by open paddocks.

Land-use: Horse grazing.

Condition: Moderate condition with native shrub layer discontinuous but present across the site. Dry conditions.

Pimelea spicata plants & habitat: No plants found. Potential habitat exists particularly in close vicinity to denser patches of Native Blackthorn where grazing is restricted. Moderate probability of population being present within soil seed bank or as rootstock – less intense & continuous grazing indicated with higher level of naturalness as measured by vegetation structure & composition. Lack of visible plants could be caused by the very dry conditions evident at the site.

Notes: Canopy cover generally >10% and native dominated. Shrub layer scattered with Native Blackthorn *Bursaria spinosa* and Native Indigo *Indigofera australis* well represented; African Box Thorn *Lycium ferocissimum* locally dominant particularly along edge areas. Ground cover is good with a mixture of native and exotic species.

Common native species observed at the site:

Einadia species

Dichondra repens

Eragrostis leptostachya

Microlaena stipoides

Chloris ventricosa

Vittadinia species

Glycine species

Oxalis perrenans

Desmodium varians

Austrodanthonia species

Sida corrugata

Eremophila debile

Crassula sieberiana

Calotis lappulacea

Asperula conferta

Common weeds:

African Box Thorn

African Olive

Fireweed

St. Johns Wort

Blackberry

Panic Veldt Grass

Site 3

Location: Eastern side of Cummins Road opposite Taber Street.

Approximate size: 2-3 ha

Topography: Gentle north-west facing slope.

Vegetation: Cumberland Plain Woodland dominated by Forest Red Gum *Eucalyptus tereticornis* and Narrow-leaved Ironbark *Eucalyptus crebra.*

Land-use: Horse grazing (intense).

Condition: Native shrub layer mostly absent. Ground cover is low with extensive areas of bare soil present. Dry soil conditions and evidence of rabbit activity present.

Pimelea spicata plants & habitat: No plants found. Potential habitat minimal, however, there is very low probability of population being present in view of very intense and ongoing disturbance as a result of grazing, and nutrient enrichment of the soil favouring exotic species.

Notes: Canopy cover generally >10% and native dominated, however, considerable die-back occurring. Shrub layer dominated by African Box Thorn *Lycium ferocissimum* and African Olive *Olea cuspidata* ground layer a mixture of native and exotic species, and extensive areas of bare ground. Mesic influence is evident although presently very dry. Large quantities of dead wood occur through the site.

Common native species observed at the site:

Einadia species

Commelina cyanea

Dichondra repens

Microlaena stipoides

Chloris ventricosa

Glycine species

Oxalis perrenans

Austrodanthonia species

Urtica incisa

Rumex brownii

Cyperus sp.

Common weeds:

African Box Thorn

African Olive

Fireweed

Blackberry

St. Johns Wort

Site 4

Location: Approx. 500 m east of Cummins Road, opposite Taber Street.

Approximate size: 2-3 ha

Topography: Upper gully head.

Vegetation: River-flat Forest dominated by Forest Red Gum *Eucalyptus tereticornis* and Swamp Oak *Casuarina glauca.* Localised sand deposits with *Banksia integrifolia, Duboisia myoporoides* and Bracken *Pteridium esculentum*.

Land-use: Horse grazing (intense) & other disturbances.

Condition: Native shrub layer mostly absent. Ground cover is low with extensive areas of bare soil present. Dry soil conditions present.

Pimelea spicata plants & habitat: No plants found. No potential habitat –river-flat forest community with localized occurrence of sands.

Notes: Canopy cover generally >10% and native dominated. Shrub layer is sparse and weedy. Ground-layer is a mixture of native and exotic species with areas of bare ground. Mesic influence is evident although quite dry at present.

Common native species observed at the site:

Eucalyptus amplifolia

Melaleuca linariifolia

Einadia species

Commelina cyanea

Dichondra repens

Microlaena stipoides

Oxalis perrenans

Rumex brownii

Cyperus sp.

Isolepis sp.

Persicaria decipiens

Alternanthera denticulata

Pteridium esculentum

Hydrocotyle sp.

Common weeds:

African Box Thorn

African Olive

Blackberry

St. Johns Wort

Mt Annan Botanic Gardens

North 3

North 2

North 1

Middle 3

Middle 1

Middle 2

Middle 3

Middle 4

Southern 3

Southern 1

Southern 2

Category 1

Category 2

Category 3

Main Southern Railway

South Western Freeway

Nepean River

Menangle Road

Site 1

Site 2

Site 3

Site 4

LEGEND

Ecological Constraint
- High
- Moderate
- Low

Streams

Cadastre

Study Area

Kilometres

0 0.1 0.2 0.3 0.4 0.5 1

N

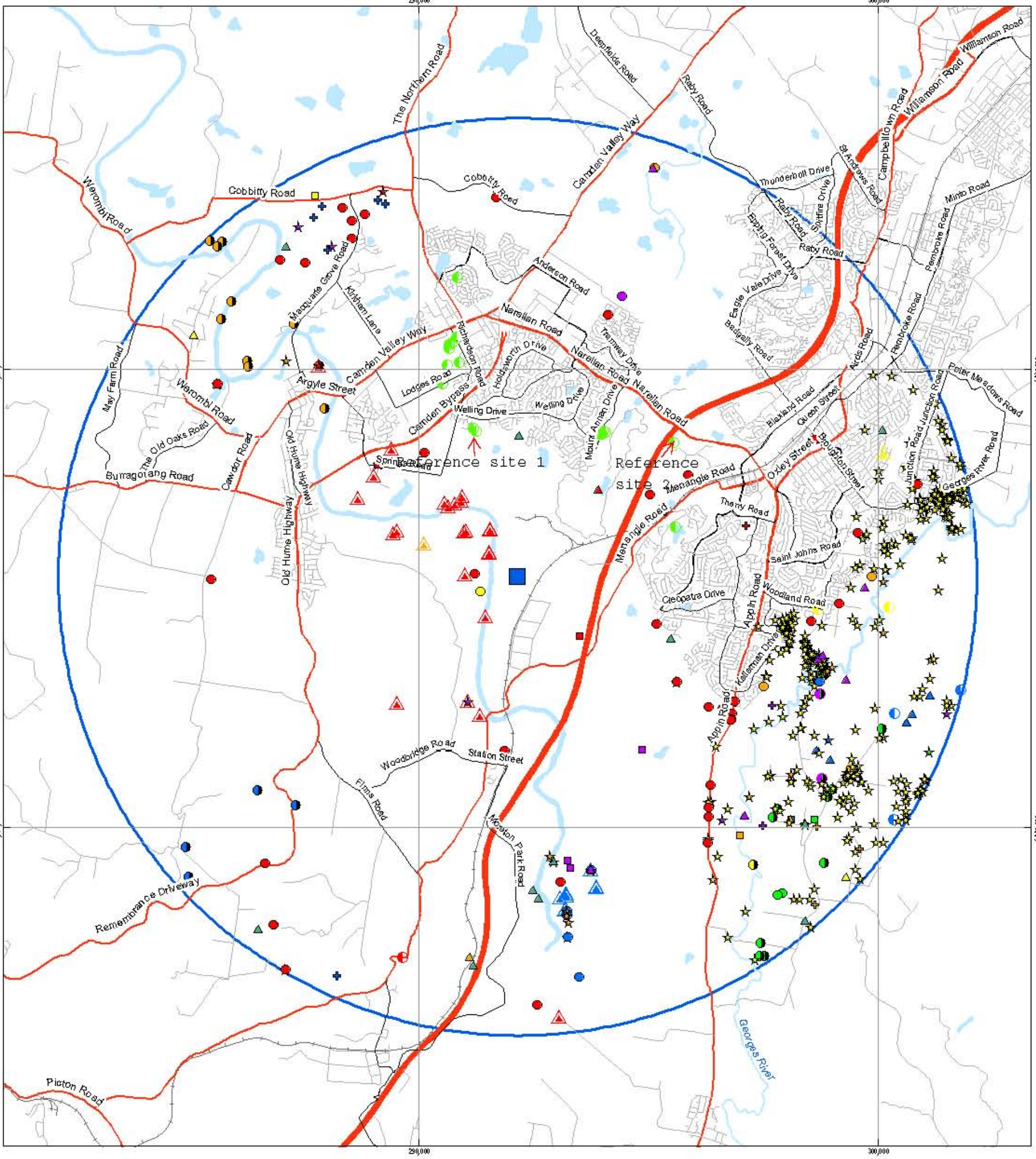
menanglepark

SCALE	KEY	PROJECT
1:15000 @ A3		Menangle Park Project
FILE NAME	DATE & ISSUE	DESCRIPTION
vegetation_1.pdf	30/03/07 ISSUE 1	EXISTING VEGETATION

PROJECT PARTNERS

campbelltown city council

LANDCOM



Legend

Site Location

10km Radius of Site

Threatened Fauna Records

- Black-necked Stork
- Blue-billed Duck
- Broad-headed Snake
- Brown Treecreeper
- Brown Treecreeper (eastern subspecies)
- Bush Stone-curlew
- Cumberland Plain Land Snail
- Diamond Firetail
- Eastern Bentwing-bat
- Eastern False Pipistrelle
- Eastern Freetail-bat
- Eastern Pygmy-possum
- Freckled Duck
- Gang-gang Cockatoo
- Giant Burrowing Frog
- Glossy Black-Cockatoo
- Greater Broad-nosed Bat
- Grey-headed Flying-fox
- Hooded Robin
- Koala
- Large-eared Pied Bat
- Large-footed Myotis
- Powerful Owl
- Red-crowned Toadlet
- Regent Honeyeater
- Rosenberg's Goanna
- Speckled Warbler
- Spotted-tailed Quoll
- Squirrel Glider
- Swift Parrot
- Yellow-bellied Sheathtail-bat

Threatened Flora Records

- Acacia bynoeana
- Callistemon linearifolius
- Cynanchum elegans
- Eucalyptus benthamii
- Genoplesium baueri
- Grevillea parviflora subsp. parviflora
- Gyrostemon thesioides
- Leucopogon exolasius
- Melaleuca deanei
- Persoonia hirsuta subsp. hirsuta
- Persoonia hirsuta subsp. hirsuta/evolut
- Pimelea spicata
- Pomaderris brunnea
- Pterostylis saxicola
- Pultenaea pedunculata
- Thesium australe

0 380 760 1,520 2,280 3,040

Metres

Map Projection: Transverse Mercator
Horizontal Datum: Geocentric Datum of Australia
Grid: Map Grid of Australia 1994, Zone 56

N

GHD

CLIENTS | PEOPLE | PERFORMANCE

Client Name
Project Name

Job Number 22/14198
Revision

Date 11 May 2009

Threatened Species Records in the Locality

Figure

G:\21\18482\CAD\GIS\Map Documents\21.18482.2003_ThreatenedSpeciesRecordsInTheLocality.mxd

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Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by: