

Appendix J
Vegetation and Flora Survey Report

FLORA AND VEGETATION
IN THE
PROPOSED COBURN MINERAL SAND MINE
COBURN, HAMELIN AND MEADOW STATIONS
- SHARK BAY -

Prepared for:

URS Australia Pty Ltd

On behalf of:

Gunson Resources Ltd

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1. SUMMARY

Mattiske Consulting Pty Ltd was commissioned by URS Australia Pty Ltd on behalf of Gunson Resources Ltd to undertake a flora and vegetation study of a proposed mineral sand mining area and associated access roads on Coburn, Hamelin and Meadow Stations, near Shark Bay. The study was conducted via foot and vehicle traverses and through the establishment of 56 permanent vegetation plots. These plots were established in the various vegetation communities defined and mapped during surveys in August 2003 and April 2004 (Mattiske Consulting Pty Ltd, 2004). Additional surveys were conducted during September 2004, to collect annual and short-lived ephemeral species following winter rainfall and in November 2004, to survey two extensions of the initial survey area and an additional access road.

A total of 231 taxa (including subspecies and varieties) from 132 genera and 51 families were recorded within the survey area. Some taxa were not identified to the species level due to the paucity of flowering and fruiting specimens. The most common families recorded were Myrtaceae (27 taxa), Asteraceae (23 taxa), Poaceae (19 taxa), Mimosaceae (17 taxa), Chenopodiaceae (15 taxa) and Proteaceae (14 taxa), a floral composition typical of the intermediate zone between the Southwestern and Eremaean Botanical Provinces.

No plant taxa located in the surveys are gazetted as Declared Rare Flora pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950). No plant taxa listed as Threatened pursuant to Schedule 1 of the Environmental Protection Biodiversity Conservation Act (1999) were located in the surveyed area. *Eucalyptus beardiana* which is listed as a Declared Rare Flora pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as Endangered pursuant to Schedule 1 of the Environmental Protection Biodiversity Conservation Act (1999) has been recorded previously within the survey area. Therefore it is critical that additional ground searching for *Eucalyptus beardiana* (R) is undertaken in the survey area prior to any clearing activities.

Three Priority 2 species (*Acacia subrigida*, *Eremophila occidens* (ms) and *Scholtzia* sp. Folly Hill), five Priority 3 species (*Acacia drepanophylla*, *Grevillea rogersoniana*, *Grevillea stenostachya*, *Macarthuria intricata* and *Physopsis chrysophylla*) and one Priority 4 species (*Jacksonia dendrospinosa*) were recorded in the following plant communities in the survey area:

- *Acacia subrigida* (P2) – in plant Communities S1, S2, S3 and S5.
- *Eremophila occidens* (ms) (P2) – in plant Communities S1, S2 and S3.
- *Scholtzia* sp. Folly Hill (P2) – in plant Community S2.
- *Acacia drepanophylla* (P3) – in plant Communities E3, S7, S8 and S9.
- *Grevillea rogersoniana* (P3) – in plant Communities S1, S2 and S3.
- *Grevillea stenostachya* (P3) – in plant Communities E6 and S7.
- *Macarthuria intricata* (P3) – in plant Communities S2 and S10.
- *Physopsis chrysophylla* (P3) – in plant Communities S1, S2, S3 and S10.
- *Jacksonia dendrospinosa* (P4) – in plant Community S2.

As there a range of Priority species that have been recorded either within the survey area or nearby it is critical that targeted searching for all of these species is undertaken in future field studies.

Based on information available through the West Australian Herbarium (Department of Conservation and Land Management, 2005) several species recorded in the survey area represent extensions to their known range. These are *Acacia rigens*, *Austrostipa macalpinei*, *Daviesia divaricata* subsp. ?*lanulosa* (ms), *Dicrastylis soliparma*, *Grevillea acacioides*, *Grevillea stenostachya* (P3) and *Trachymene coerulea* subsp. *leucopetala*, as well as the introduced species *Avellinia michelii*.

Some of the species present in the Coburn survey area are endemic to the fringes of Shark Bay. These include *Acacia drepanophylla* (P3), *Acacia galeata*, *Adenanthos acanthophyllus*, *Baekkea* sp. Nanga (A.S. George 11346) (pn), *Calothamnus formosus* subsp. *formosus*, *Conostylis candicans* subsp. *flavifolia*, *Eucalyptus roycei*, *Eucalyptus selachiana*, *Grevillea rogersoniana* (P3), *Lamarchea hakeifolia* var. *hakeifolia*, *Macarthuria intricata* (P3), *Malleostemon pedunculatus* and *Melaleuca eulobata*.

Other species occur at the fringes of their occurrence, either on the western edges of the Carnarvon Botanical District or as northern extensions from the Irwin Botanical District. The overlapping ranges of these species illustrate the significance of this area as a boundary between two botanical provinces. This unique feature of the Shark Bay Flora has also been highlighted in the surveys by Trudgen and Keighery (1995) and Gibson *et al.* (2000).

Eighteen plant communities were defined and mapped during the surveys, comprising seven *Eucalyptus* Woodlands, ten Shrublands and one Mosaic Community. None of these plant communities are considered Threatened Ecological Communities pursuant to Schedule 2 of the Environmental Protection Biodiversity Conservation Act (1999) or according to English and Blyth (1997).

Fourteen of the eighteen plant communities (E1, E2, E3, E4, E6, E7, S1, S2, S3, S4, S5, S6, S10 and M1) described and mapped may be considered regionally significant, as they are endemic to the southern fringes of Shark Bay. Community S5 is particularly significant, as it is restricted to deep valleys, which are an unusual landform both locally and within the region.

Several plant communities within the survey area are considered locally significant where Priority species have been recorded, including Communities E3, E6, S1, S2, S3, S5, S7, S8, S9 and S10. Several of the priority species dominate the communities S5, S8, S9 and S10. Based on current information the distribution of S10 appears to be restricted within the survey area. The Communities E4 and S4 are also locally significant as they support populations of *Grevillea acacioides* that occur as a range extension from previously recorded locations (based on the CALM FloraBase, 2005). The plant Communities S7, S8 and S9 are relatively restricted to calcareous soils in the eastern part of the survey area and are unlikely to be markedly influenced by the proposed development.

Three extensions of the existing survey area were mapped during April and November 2004. Three plant communities (S1, S2 and S3) were recorded in the extension areas and were identical in structure and species composition to those communities in the central part of the Coburn survey area.

In the additional survey of the potential southern haul road conducted in November 2004, the plant communities S1, S2, S7, S9, E2, E3, E4, E6 and E7 were recorded. These were floristically equivalent to the communities recorded in previous surveys of the northern haul road and the main survey area.

In general, the composition and pattern of the flora in the survey area is consistent with other surveys of the Shark Bay region by Trudgen and Keighery (1995) and Gibson *et al.* (2000). The major floristic boundary between the Southwestern and Eremaean Botanical Provinces that dissects the survey area is a defining feature of the flora. The boundary is imposed by a sharp climatic and soil gradient and is reflected by the diverse range and high endemism of the species and plant communities recorded in the present study.

2. INTRODUCTION

Mattiske Consulting Pty Ltd was commissioned by URS Australia Pty Ltd on behalf of Gunson Resources Ltd to undertake a Flora and Vegetation study of a proposed mineral sand mining area and associated proposed access roads on Coburn and Hamelin Stations. In August 2003, an extensive survey of the survey area was conducted to define the plant communities and to search for Rare or Priority Flora. In April 2004, 56 permanent plots were then established across the different plant communities to begin a potential long-term study of the Flora and Vegetation of the proposed mineral sand mine. In addition to the establishment of permanent plots, a survey of a southern extension of the initial survey area was also undertaken in April 2004. Further surveys were also conducted during September 2004, to collect annual and short-lived ephemeral species following winter rainfall and in November 2004, to survey two more extensions of the initial survey area and an additional access road.

2.1 Location

The survey area traverses Coburn Station in the south and Hamelin Station in the north, extending directly south of Hamelin Pool, near Shark Bay. The proposed southern access road also crosses Meadow Station. The western edge of the survey area is adjacent to the Shark Bay World Heritage Property. The survey area is approximately 38km long (from north to south) and ranges between 3 and 6km wide (from east to west). The two potential road corridors are 500m wide and extended for 40km to the North West Coastal Highway in the east.

2.2 Climate

The survey area occurs within the Irwin Botanical District, characterised by a Semi-Desert Mediterranean climate with an annual rainfall of 200-250mm and wet, mild winters and dry, hot summers (Beard, 1979).

2.3 Declared Rare, Priority and Threatened Species

Species of flora and fauna are defined as Declared Rare or Priority conservation status where their populations are restricted geographically or threatened by local processes. The Department of Conservation and Land Management recognises these threats of extinction and consequently applies regulations towards population and species protection.

Rare Flora species are gazetted under Subsection 2 of Section 23F of the Wildlife Conservation Act (1950) and therefore it is an offence to “take” or damage rare flora without Ministerial approval. Section 23F of the Wildlife Conservation Act (1950-1980) defines “to take” as “... to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora or to cause or permit the same to be done by any means.

Priority Flora are under consideration for declaration as ‘rare flora’, but are in need of further survey (Priority One to Three) or require monitoring every 5-10 years (Priority Four). Table 1 presents the definitions of Declared Rare and the four Priority ratings under the Wildlife Conservation Act (1950) as extracted the West Australian Herbarium (2005a, 2005b).

Table 1: Definition of Rare and Priority Flora Species (Department of Conservation and Land Management, 2005)

Conservation Code	Category
R	<p>Declared Rare Flora – Extant Taxa</p> <p>“Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection and have been gazetted as such.”</p>
P1	<p>Priority One – Poorly Known Taxa</p> <p>“Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat. Such taxa are under consideration for declaration as ‘rare flora’, but are in urgent need of further survey.”</p>
P2	<p>Priority Two – Poorly Known Taxa</p> <p>“Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (not currently endangered). Such taxa are under consideration for declaration as ‘rare flora’, but urgently need further survey.”</p>
P3	<p>Priority Three – Poorly Known Taxa</p> <p>“Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (ie. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as ‘rare flora’ but need further survey.”</p>
P4	<p>Priority Four – Rare Taxa</p> <p>“Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years.”</p>

Threats of extinction of species are also recognised at a Federal Government level and are categorised according to the Environmental Protection and Biodiversity Conservation Act (EPBC Act), 1999. Categories of threatened species are summarised in Table 2.

Table 2: Categories of Threatened Flora Species (Environmental Protection and Biodiversity Conservation Act, 1999)

Category Code	Category
Ex	<p>Extinct</p> <p>Taxa which at a particular time if, at that time, there is no reasonable doubt that the last member of the species has died.</p>
ExW	<p>Extinct in the Wild</p> <p>Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.</p>
CE	<p>Critically Endangered</p> <p>Taxa which at a particular time if, at that time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.</p>
E	<p>Endangered</p> <p>Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the immediate or near future, as determined in accordance with the prescribed criteria.</p>
V	<p>Vulnerable</p> <p>Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.</p>
CD	<p>Conservation Dependent</p> <p>Taxa which at a particular time if, at that time, the species is the focus of a specific conservation program, the cessation of which would result in the species becoming vulnerable, endangered or critically endangered within a period of 5 years.</p>

2.4 Vegetation

The survey area is located in the Irwin and Carnarvon Botanical Districts, which are sections of the South-Western and Eremaean Botanical Provinces, respectively. The dominant vegetation system of the survey area is referred to as the Tamala System. The typical vegetation of the Tamala System is a unique formation termed “tree heath” or heath with scattered trees. Nothing resembling this formation has been found elsewhere in the State (Beard 1976).

The proposed development occurs on the boundary of the Southwestern and Eremaean Botanical Provinces as defined by Beard (1976). This major floristic boundary was first mapped by Diels (1906) and later by Gardner (1944) and Gardner and Bennetts (1956). This boundary has been acknowledged by Beard (1976) and Gibson *et al.* (2000) as representing the boundary between the complex and species rich heathlands and woodlands of southwestern Australia and the less diverse Acacia shrublands of the Carnarvon Basin (Beard 1976, Gibson *et al.* 2000).

In other work by Thackway and Cresswell (1995), the boundaries near Peron Peninsula, Edel Land and Dirk Hartog Island were modified for the national mapping survey.

The detailed floristic studies undertaken in the Irwin and Carnarvon areas (Trudgen and Keighery 1995, Gibson *et al.* 2000 and Keighery *et al.* 2000) enabled a comparison of data collected with species representation in the local and regional context.

2.5 Local and Regional Significance

Plant communities are referred to as locally significant where the presence of Priority Flora species has been recorded, where they provide a range extension of a particular taxon from previously recorded locations, or where they are very restricted to one or two locations or occur as small isolated communities. In addition, communities that exhibit unusually high structural and species diversity are also of local significance (E.M. Mattiske, pers. comm.).

Plant communities are referred to as regionally significant where they are limited to specific landform types, are uncommon or restricted plant community types within the regional context, or support populations of Declared Rare Flora (E.M. Mattiske, pers. comm.).

2.6 Threatened Ecological Communities

Communities are described as ‘Threatened Ecological Communities’ (TECs) if they have been defined by the Western Australian Threatened Ecological Communities Scientific Advisory Committee and found to be Presumed Totally Destroyed (PD), Critically Endangered (CR), Endangered (EN) or Vulnerable (VU). For definitions of TEC categories and criteria refer to English and Blyth (1997). Selected plant communities have also been listed as “Threatened Ecological Communities” under the EPBC Act (1999). The TECs at the national level are defined on the Environment Australia website (www.ea.gov.au).

3. OBJECTIVES

The specific objectives of the vegetation study were to:

- Collect and identify the vascular plant species present in the area;
- Review the biogeographical pattern and conservation status of the vascular plant species recorded by reference to current literature and current listings (The West Australian Herbarium (2005a, 2005b) and the Environmental Protection Biodiversity Conservation Act (EPBC Act, 1999) and with plant collections held at the State Herbarium;
- Define and prepare a vegetation map of the plant communities present in the Amy Zone;
- Review the local and regional significance of the plant communities recorded in the Coburn survey area;
- Establish permanent vegetation plots, within a range of the previously defined plant communities within the survey area, recording all vascular plant species and their percentage foliage cover, within each permanent vegetation plot; and
- Submit a report that summarises the findings.

4. METHODS

4.1 Flora and Vegetation

An initial search for the Declared Rare and Priority flora species known to occur in the region was made using the West Australian Herbarium database compiled by the West Australian Herbarium (2005a, 2005b).

Mattiske Consulting Pty Ltd conducted the following vegetation surveys for Gunson Resources over a 15 month period:

- August 2003 - A spring survey that covered the northern portion of the Amy Zone and the northern access route;
- April 2004 - An autumn survey in which 56 permanent vegetation monitoring plots were established and a 5km southern extension of the Amy Zone was mapped;
- September 2004 - A spring survey to collect annual species that covered the entire Amy Zone; and
- November 2004 - A survey of the southern access road and the construction camp and two additional extensions of the survey area (Area 3 and 4).

During each survey the flora was described and collected systematically at a series of sites that were chosen on the basis of differences in floristic composition and structure. Further collecting was undertaken at additional sites in equivalent plant communities. At each site the following floristic and environmental notes were made: topography, percentage litter cover, soil ratio, percentage of bare ground, outcropping rocks and their type, pebble type and size, and time since fire. For each species recorded, the average height and percent foliage cover of species both alive and dead was noted.

In the April 2004 survey, 56 permanent vegetation monitoring plots were established within the survey area. The location of each plot was selected to maximise the coverage of the 18 plant communities that were defined in the area. At least one vegetation monitoring plot was placed in the vicinity of the vertebrate fauna monitoring sites. Each 10m x 10m vegetation monitoring plot was pegged using 107cm aluminium fence droppers to mark each of the four corners. The plots were established in a north-south orientation, with a tag labelling the plot number on the northwest corner peg. A photograph of each plot was taken from the northwest corner. In each plot, floristic and environmental notes were made as described above.

All plant specimens collected during the field surveys were dried and fumigated in accordance with the requirements of the West Australian Herbarium. The plant species were identified and then compared with pressed specimens housed at the West Australian Herbarium. Where appropriate, plant taxonomists with specialist skills were consulted. Nomenclature of the species recorded follows the West Australian Herbarium (2005a, 2005b).

4.2 Survey Limitations

The main study limitations on the survey work undertaken were the lack of seasonal rainfall events and the difficulty of access into some of the survey areas. Every attempt was made to address the coverage of seasonal conditions through targeted surveys in August 2003, April 2004, September 2004 and November 2004. Additional surveys are planned in coming months, and in view of recent rainfall events in the Shark Bay area there will be the opportunity to undertake additional collecting of flora in the survey area.

The difficulty of access into some sections of the survey area placed additional restrictions on the coverage of the survey area. This was in part addressed by extensive foot traverses, however in some denser vegetation access by foot was influenced by the density of the vegetation. Nevertheless the area was covered by selecting representative areas for sampling from the aerial photographs.

The base data for Figure 16 was reliant on information from GeoScience and it was apparent from field studies that the location of the higher dunes on Figure 16 are not accurate and therefore the location of these dunes should not be relied upon in any deliberation of extent of species on landforms from Figure 16.

5. RESULTS

5.1 Flora

A total of 231 taxa (including subspecies and varieties) from 132 genera and 51 families were recorded within the survey area (Appendix A). Some species were not identified to the species or variety level due to the paucity of flowering and fruiting specimens. The most common families recorded were Myrtaceae (27 taxa), Asteraceae (23 taxa), Poaceae (19 taxa), Mimosaceae (17 taxa), Chenopodiaceae (15 taxa) and Proteaceae (14 taxa), a floral composition typical of the intermediate zone between the Southwestern and Eremaean Botanical Provinces.

Based on information available through the West Australian Herbarium (Department of Conservation and Land Management, 2005) several species recorded in recent surveys represent extensions to their known range. These were *Acacia rigens*, *Austrostipa macalpinei*, *Daviesia divaricata* subsp. *?lanulosa* (ms), *Dicrastylis soliparma*, *Grevillea acacioides*, *Grevillea stenostachya* (P3) and *Trachymene coerulea* subsp. *leucopetala*, as well as the introduced species *Avellinia michelii*.

A range of species present in the survey area is endemic to the Shark Bay region. These include *Acacia drepanophylla* (P3), *Acacia galeata*, *Adenanthos acanthophyllus*, *Baeckea* sp. Nanga (A.S. George 11346) (pn), *Calothamnus formosus* subsp. *formosus*, *Conostylis candicans* subsp. *flavifolia*, *Eucalyptus roycei*, *Eucalyptus selachiana*, *Grevillea rogersoniana* (P3), *Lamarchea hakeifolia* var. *hakeifolia*, *Macarthuria intricata* (P3), *Malleostemon pedunculatus* and *Melaleuca eulobata*.

Many of the species that occur in the survey area are at the periphery of their current known geographic range (based on CALM FloraBase 2005 records). Some species are at the northern limit of their distribution in the Irwin Botanical Region, while other species are at the western and southern limit of their distribution in the Carnarvon Botanical District. Species at their southern and western limit are *Acacia grasbyi*, *Acacia tetragonophylla*, *Acacia xiphophylla*, *Alectryon oleifolius* subsp. *oleifolius*, *Alyogyne pinoniana* var. *pinoniana*, *Atriplex vesicaria* subsp. *variabilis*, *Brachychiton gregorii*, *Eucalyptus fruticosa*, *Marsdenia australis*, *Pembertonia latisquamea*, *Pityrodia cuneata*, *Senna artemisioides* subsp. *filifolia*, *Tetragonia cristata* and *Triodia plurinervata*. Similarly, species at the northern limit of their distribution include *Actinobole condensatum*, *Amyema miraculosa* subsp. *miraculosa*, *Anthotroche walcottii*, *Beaufortia aestiva*, *Beaufortia sprengelioides*, *Calothamnus blepharospermus*, *Calytrix brevifolia*, *Conospermum mircoflorum*, *Dampiera incana* var. *fuscescens*, *Eremaea dendroidea*, *Eremophila oldfieldii* subsp. *oldfieldii*, *Eucalyptus obtusiflora* subsp. *obtusiflora*, *Keraudrenia hermanniifolia*, *Lechenaultia linarioides*, *Melaleuca campanae*, *Melaleuca leiopyxis*, *Mirbelia* sp. Denham (pn), *Olearia revoluta*, *Persoonia acicularis*, *Physopsis chrysophylla* (P3), *Pileanthus vernicosus*, *Pityrodia atriplicina*, *Scholtzia* sp. Folly Hill (P2), *Solanum hesperium*, *Thryptomene strongylophylla*, *Trachymene coerulea* subsp. *leucopetala* and *Triodia danthonioides*. The overlapping ranges of these species illustrate the significance of this area as a boundary between two botanical provinces. This unique feature of the Shark Bay flora has also been highlighted in the surveys by Trudgen and Keighery (1995) and Gibson *et al.* (2000) (Appendix A).

The flowering times are summarised in Appendix C for the species recorded in the recent surveys on the survey area. This list should assist in future planning of seed for rehabilitation areas.

In the initial surveys only three introduced species were recorded, namely *Lamarckia aurea* (Goldentop), *Brassica tournefortii* (Mediterranean Turnip) and *Asphodelus fistulosus* (Onion Weed). One other species, *Senecio* sp., identified only to genus level, may or may not be an introduced species, as some *Senecio* species are introduced. In the September 2004 survey an additional 12 introduced species were collected that had germinated after winter rainfall. These were *Aira caryophyllea* (Silvery Hairgrass), *Avellinia michelii*, *Bromus japonicus* var. *vestitus*, *Rostraria pumila*, *Schismus barbatus* (Kelch Grass), *Calandrinia ciliata*, *Pentaschistis airoides* (False Hairgrass), *Sisymbrium erysimoides* (Smooth Mustard), *Cuscuta epithimum* (Lesser Dodder), *Hypochaeris glabra* (Smooth Catsear), *Sonchus oleraceus* (Common Sowthistle) and *Urospermum picroides* (False Hawkbit). None of the introduced species recorded are listed as Declared Plants, as defined by the Department of Agriculture (2005).

5.2 Rare and Priority Flora

No plant taxa recorded in the survey plots are gazetted as Declared Rare Flora pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950). No plant taxa listed as Threatened pursuant to Schedule 1 of the Environmental Protection Biodiversity Conservation Act (EPBC Act, 1999) were recorded in the survey plots.

Eucalyptus beardiana which is listed as a Declared Rare Flora pursuant to subsection (2) of section 23F of the Wildlife Conservation Act (1950) and as Endangered pursuant to Schedule 1 of the Environmental Protection Biodiversity Conservation Act (1999) has been recorded previously within the survey area.

Nine Priority Flora species were recorded from the Coburn survey area. The distribution and habitat of these species within the survey area and the broader geographic region is discussed below. The precise locations of these species in the survey area are listed in Table 3 and shown on Vegetation Maps 2 to 15. Additional locations for some of these species were also extracted from the Department of Conservation and Land Management databases and these are presented in Figure 16. The following summaries reflect records collected during the recent surveys by Matiske Consulting Pty Ltd.

- *Acacia subrigida* (P2)
This erect shrub is classified as Priority 2 as it has only been recorded from several locations and is often found as a scattered or uncommon shrub. In the Coburn survey area it was recorded at four locations in Communities S1, S2, S3 and S5. It occurred as a dominant element of Community S5. The populations of *Acacia subrigida* occurring in the survey area may have particular conservation significance as they may have affinities with a wide phyllode variant that has been previously recorded nearby (6km west of Overlander-Denham road towards Tamala Station (Maslin 2001)). This northern population of *Acacia subrigida* may represent a distinct taxon. However, further taxonomic investigation is required.
- *Eremophila occidentalis* (ms) (P2)
This shrub to 1.5m is classified as Priority 2 as it has only been recorded from two isolated areas at Shark Bay and North West Cape (total of four collections). In the Coburn survey area, it is a relatively common shrub found at seven locations across three widespread communities (S1, S2 and S3). As the known distribution of this species is highly restricted, the number of individuals within the survey area represents a significant proportion of the total species.
- *Scholtzia* sp. Folly Hill (P2)
This species is classified as Priority 2 as it has only been recorded from six locations within the northern section of the Geraldton Sand Plains and Shark Bay. In the Coburn survey area it was found only once in a mature and open shrubland (Community S2), which suggests it is a late successional species.
- *Acacia drepanophylla* (P3)
This species typically occurs as a small tree and is classified as a Priority 3 species as it has a restricted distribution between Hamelin Pool and to an area just south of the Billabong Roadhouse on the North West Coastal Highway (total of 28 collections). Within the Coburn survey area it was recorded from eight locations across four plant communities. It was most abundant in Communities S8 and S9, where it was a co-dominant with *Acacia xiphophylla*, and *Acacia ramulosa* var. *ramulosa* occurring on loam soils over limestone. It was also occasionally recorded as a shrub in Communities S7 and E3. The two potential haul roads will have the greatest impact on this species where they dissect Communities S8 and S9 at their eastern end.
- *Grevillea rogersoniana* (P3)
This conspicuous shrub or small tree is classified, as Priority 3 as it is endemic to Shark Bay and Peron Peninsula (total of 30 collections). In the Coburn survey area it was recorded at five locations across Communities S1, S2 and S3, but was most commonly found when shrublands were tall and open.
- *Grevillea stenostachya* (P3)
This dense, pungent shrub is classified as Priority 3 as it has a narrow distribution from 25 locations. The presence of this species in the survey area is particularly significant as it represents a 70km extension to the west of its known range near Murchison. It was locally abundant in the three locations in which it was recorded, in the Communities E6 and S7.
- *Macarthuria intricata* (P3)
This small intricately branched shrub is classified as Priority 3 as it has only been recorded at nine locations and is endemic to the Shark Bay area. In the Coburn survey area it was uncommon and found only in Communities S2 and S10.
- *Physopsis chrysophylla* (P3)
This erect shrub is classified as Priority 3 as it has only been recorded from 20 locations in the northern section of the Geraldton Sand Plains. In the Coburn survey area it was relatively common in Communities S1, S2, and S3 and was a dominant species in Community S10.
- *Jacksonia dendrospinosa* (P4)
This small tree is classified as Priority 4 as it has only been recorded from nine locations in the northern section of the Geraldton Sand Plains. In the Coburn survey area it was uncommon and restricted to mature, open shrublands (Community S2), suggesting it is a late successional species.

Other Rare and Priority Flora that were recorded in the Shark Bay region by Trudgen and Keighery (1995) and Gibson *et al.* (2000), and which were not recorded in the survey area, are shown in Table 4.

Table 3: Distribution of Priority Flora within the Coburn Survey area
(GPS Datum AMG84 50J)

Taxon	EASTING	NORTHING
<i>Acacia subrigida</i> (P2)	214588	7039989
	212443	7052349
	213205	7039722
	212451	7052467
<i>Eremophila occidentis</i> (P2) ms	213412	7066137
	213624	7049925
	214382	7042245
	214588	7039989
	226011	7050401
	250292	7050852
	254761	7050945
<i>Scholtzia</i> sp. Folly Hill (P2)	215401	7035506
<i>Acacia drepanophylla</i> (P3)	227868	7050251
	255478	7050812
	214089	7066191
	214057	7066250
	214129	7066227
	253319	7050776
	239865	7050543
	250437	7050718
<i>Grevillea rogersoniana</i> (P3)	212708	7047315
	213205	7039722
	213285	7040822
	214588	7039989
	214986	7045003
<i>Grevillea stenostachya</i> (P3)	249722	7034631
	249518	7034636
	254761	7050945
<i>Macarthuria intricata</i> (P3)	215400	7034350
	213193	7039388
<i>Physopsis chrysophylla</i> (P3)	212402	7040896
	212681	7039534
	213205	7039722
	213767	7049921
	214371	7043502
	214588	7039989
	215075	7046796
<i>Jacksonia dendrospinosa</i> (P4)	229965	7034796

Table 4: Rare and Priority Flora recorded in other surveys of the Irwin and Carnarvon Botanical Districts that were not found in the present survey

^ - Data extracted from Trudgen and Keighery (1995) includes community groups 1,5 and 6 only

	Trudgen and Keighery 1995 ^	Gibson <i>al.</i> 2000	<i>et</i>
<i>Abutilon</i> sp. Hamelin (A.M. Ashby 2196) (P2) (pn)	*		
<i>Acacia isoneura</i> subsp. <i>nimia</i> (P3)	*		
<i>Acacia leptospermoides</i> subsp. <i>obovata</i> (P2)	*		
<i>Acacia plautella</i> (P3)	*		
<i>Acanthocarpus parviflorus</i> (P3)	*		
<i>Anthocercis intricata</i> (P3)	*		
<i>Anthrotroche myoporoides</i> (P2)	*		
<i>Arnocrinum drummondii</i> (P3)	*		
<i>Chamelaucium conostigmum</i> (P3) (ms)	*		
<i>Chamelaucium oenanthum</i> (P1) (ms)	*		
<i>Chthonocephalus muellerianus</i> (P2)		*	
<i>Chthonocephalus spathulatus</i> (P1)		*	
<i>Chthonocephalus tomentellus</i> (P2)	*	*	
<i>Dicrastylis linearifolia</i> (P3)	*		
<i>Dicrastylis micrantha</i> (P3)	*		
<i>Eremophila physocalyx</i> (P3) (ms)	*	*	
<i>Eucalyptus beardiana</i> (R)	*		
<i>Goodenia sericostachya</i> (P3)	*		
<i>Grevillea annulifera</i> (P3)	*		
<i>Grevillea stenomera</i> (P2)	*		
<i>Jacksonia velutina</i> (P4)	*		
<i>Lasiopetalum oppositifolium</i> (P3)	*		
<i>Lepidium biplicatum</i> (P2)	*		
<i>Lepidobolus densus</i> (P3) (ms)	*		
<i>Malleostemon</i> sp. Cooloomia (S.F. Hopper 133)(P2)(pn)	*		
<i>Malleostemon</i> sp. Nerren Nerren (A. Payne 360)(P1)(pn)	*		
<i>Melaleuca huegelii</i> subsp. <i>pristicensis</i> (P2)	*		
<i>Millotia depauperata</i> (P1)	*		
<i>Ptilotus stirlingii</i> var. <i>pumius</i> (P1)	*		
<i>Rhodanthe oppositifolia</i> subsp. <i>ornata</i> (P2)	*		
<i>Rhodanthe</i> sp. Overlander (P.S. Short 2096) (P1) (pn)	*		
<i>Scaevola chrysopogon</i> (P2)	*		
<i>Sclerolaena stylosa</i> (P1).	*		
<i>Sondottia glabrata</i> (P2)	*		
<i>Tetragonia coronata</i> (P1)	*		
<i>Thryptomene</i> sp. Carrarang (M.E. Trudgen 7420)(P1)(pn)	*		
<i>Triodia bromoides</i> (P4)	*		
<i>Verticordia cooloomia</i> (P3)	*		
<i>Verticordia dichroma</i> var. <i>dichroma</i> (P3)	*		
<i>Verticordia dichroma</i> var. <i>syntoma</i> (P3)	*		
<i>Vittadinia cervicalis</i> var. <i>oldfieldii</i> (P1).	*		

5.3 Vegetation

Eighteen plant communities were defined and mapped during the surveys in 2003 and 2004. These community types consist of seven *Eucalyptus* Woodlands, ten Shrublands and one mosaic community. The complete species list of each plant community is listed in Appendix B. A description of each plant community is given below.

Eucalyptus Woodlands

Community E1:

Low Open Woodland of *Eucalyptus selachiana* and *Eucalyptus roycei* with occasional emergent *Banksia ashbyi* over *Calothamnus formosus* subsp. *formosus* and *Acacia ramulosa* var. *ramulosa* over *Lamarchea hakeifolia* var. *brevifolia*, *Malleostemon pedunculatus* and *Melaleuca eulobata* over *Triodia danthonioides*.

Community E2:

Low Open Woodland of *Eucalyptus selachiana* and *Eucalyptus fruticosa* with occasional emergent *Eucalyptus mannensis* subsp. *vespertina* and *Eucalyptus roycei* over *Acacia ramulosa* var. *ramulosa*, *Acacia ligulata* and *Eremophila maitlandii* over mixed annual species.

Community E3:

Low Open Woodland of *Eucalyptus fruticosa* and *Eucalyptus obtusiflora* subsp. *obtusiflora* over *Acacia xiphophylla*, *Acacia ramulosa* var. *ramulosa* and *Acacia ligulata* over mixed Chenopod species.

Community E4:

Low Open Woodland of *Eucalyptus selachiana* and *Eucalyptus ?eudesmioides* over *Acacia ramulosa* var. *ramulosa*, *Acacia roycei*, *Acacia ligulata* and *Grevillea gordoniana* over *Baeckea* sp. Nanga (pn) over *Triodia danthonioides*.

Community E5:

Low Open Woodland of *Eucalyptus obtusiflora* subsp. *obtusiflora* over *Acacia ramulosa* var. *ramulosa* and *Acacia galeata* over *Ptilotus obovatus* var. *obovatus* and *Triodia plurinervata*.

Community E6:

Low Open Woodland of *Eucalyptus mannensis* subsp. *vespertina* over *Acacia ramulosa* var. *ramulosa* over *Rhagodia latifolia* subsp. *latifolia* over mixed annual species.

Community E7:

Low Open Woodland of *Eucalyptus selachiana* over *Calothamnus formosus* subsp. *formosus* and *Acacia ligulata* over *Lamarchea hakeifolia* var. *brevifolia* over *Triodia danthonioides*.

Shrublands

Community S1:

Tall Shrubland of *Calothamnus formosus* subsp. *formosus* and *Hakea stenophylla* subsp. *notialis* with occasional emergent *Eucalyptus selachiana*, *Eucalyptus roycei* and *Eucalyptus mannensis* subsp. *vespertina* with *Banksia ashbyi* over *Acacia ligulata* and *Lamarchea hakeifolia* var. *brevifolia* over *Triodia danthonioides*.

Community S2:

Tall Open Shrubland of *Calothamnus formosus* subsp. *formosus*, *Hakea stenophylla* subsp. *notialis* and *Acacia ligulata* with occasional emergent *Eucalyptus selachiana*, *Eucalyptus roycei* and *Eucalyptus mannensis* subsp. *vespertina* with *Banksia ashbyi* over *Lamarchea hakeifolia* var. *brevifolia* and *Baeckea* sp. Nanga (pn) over *Triodia danthonioides*.

Community S3:

Low Open Shrubland of *Acacia ligulata* and *Hakea stenophylla* subsp. *notialis* with occasional emergent *Eucalyptus selachiana* and *Eucalyptus roycei* over *Baeckea* sp. Nanga (pn) and *Stenanthemum complicatum* over *Triodia danthonioides*.

Community S4:

Tall Open Shrubland of *Grevillea gordoniana* and *Acacia ligulata* with occasional emergent *Eucalyptus selachiana* over *Melaleuca eulobata*, *Baeckea* sp. Nanga (pn) and *Adenanthos acanthophyllus* over *Triodia danthonioides*.

Community S5:

Low Open Shrubland of *Acacia subrigida* (P2) with occasional emergent *Eucalyptus ?eudesmioides* and *Eucalyptus roycei* with *Banksia ashbyi* over *Malleostemon pedunculatus* over *Triodia danthonioides*.

Community S6:

Low Open Shrubland of *Acacia longispinea* with occasional emergent *Eucalyptus mannensis* subsp. *vespertina* over *Melaleuca leiopyxis* and *Melaleuca eulobata* over *Malleostemon pedunculatus* over *Triodia danthonioides*.

Community S7:

Tall Open Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia ramulosa* var. *ramulosa* over *Eremophila maitlandii* over *Ptilotus obovatus* var. *obovatus*.

Community S8:

Tall Open Shrubland of *Acacia xiphophylla*, *Acacia drepanophylla* (P3) and *Acacia ramulosa* var. *ramulosa* over *Chenopodium gaudichaudianum* and *Scaevola spinescens*.

Community S9:

Tall Open Shrubland of *Acacia xiphophylla* and *Acacia drepanophylla* (P3) over *Acacia grasbyi*, *Acacia tetragonophylla* and *Senna glutinosa* subsp. *chatelainiana* over *Ptilotus obovatus* var. *obovatus*.

Community S10:

Tall Open Shrubland of *Physopsis chrysophylla* (P3) and *Acacia rostellifera* over *Calothamnus formosus* subsp. *formosus* and *Mirbelia* sp. Denham (pn) over *Triodia danthonioides*.

The pattern of plant communities differs significantly in the northern third of survey area compared to the southern end as the shrublands and patches of Eucalypts in the north form a mosaic of locally changing communities (often over 50 metres, which cannot be mapped at the scale as attached). This mosaic of local communities has been combined into the M1 community.

Mosaic Community

Community M1

Mosaic of patches of a Tall Open Shrubland of *Acacia ramulosa* var. *ramulosa*, *Acacia ligulata* and *Acacia roycei* with occasional emergent *Eucalyptus selachiana*, *Eucalyptus roycei*, *Eucalyptus mannensis* subsp. *vespertina* and *Eucalyptus obtusiflora* subsp. *obtusiflora* over *Eremophila maitlandii* and *Lamarchea hakeifolia* subsp. *brevifolia* over mixed annual species, with patches of a Tall Open Shrubland of *Acacia ramulosa* var. *ramulosa* and *Acacia roycei* over *Melaleuca leiopyxis* and *Malleostemon pedunculatus* over mixed annuals in sands.

5.4 Vegetation Condition

The intact vegetation structure and low density of introduced species suggests the vegetation within the Amy Zone to be in “Excellent” condition, when applied to the condition scaling used in Bush Forever publications (Department of Environmental Protection, 2000), as adapted from Keighery (1994). Despite the presence of *Brassica tounefortii* in some disturbed areas, the scale considers vegetation to be in “Excellent” condition when the total cover of introduced species is less than 20%. Soil structure and understorey density are degraded due to grazing in Communities S7, S8 and S9 on the potential access road corridors, which would result in a poorer condition scale of “Very Good” (Mattiske Consulting Pty Ltd, 2003).

5.5 Significance of Plant Communities

None of the plant communities within the survey area are considered Threatened Ecological Communities pursuant to Schedule 2 of the Environmental Protection Biodiversity Conservation Act (1999) or according to English and Blyth (1997).

Fourteen of the eighteen plant communities (E1, E2, E3, E4, E6, E7, S1, S2, S3, S4, S5, S6, S10 and M1) described and mapped may be considered regionally significant, as they are endemic to the area south of Shark Bay (Beard, 1990). Community S5 is particularly significant, as it is restricted to deep valleys, which are an unusual landform both locally and within the region.

Several plant communities within the survey area are considered locally significant where Priority species have been recorded, namely Communities E3, E6, S1, S2, S3, S5, S7, S8, S9 and S10. Communities S5, S8, S9 and S10 are locally significant, as Priority species constitute a dominant element within the communities. Based on current information the distribution of S10 appears to be restricted within the survey area. The Communities E4 and S4 are also locally significant as they support populations of *Grevillea acacioides* which occurs as a range extension from previously recorded locations (based on the CALM FloraBase, 2005). The plant Communities S7, S8 and S9 are also locally significant as they are restricted to calcareous soils in the eastern part of the survey area, but they are unlikely to be markedly influenced by the proposed development.

Three extensions of the original survey area were mapped during April and November 2004. The plant Communities S1, S2 and S3 were recorded in these areas, which were identical in structure and species composition from those communities in the central part of the Coburn survey area. In the additional survey of the proposed southern haul road conducted in November 2004, the plant Communities S1, S2, S7, S9, E2, E3, E4, E6 and E7 were recorded. These were floristically equivalent to the communities recorded in previous surveys of the initial haul road to the north and the main survey area. Eastern sections of the proposed haul road were difficult to access and therefore a thorough search for *Eucalyptus beardiana* (R) and *Verticordia dichroma* var. *syntoma* (P3) was not conducted.

Fire appears to have played a role in defining the boundaries between some of the floristically similar shrubland communities. There is evidence of recent fire(s) in Community S1 from burnt stumps, a shallow layer of ash below the soil surface and the low and closed structure of the community. In comparison, Communities S2 and S3 appear to have no evidence of recent fire(s) and typically have a mature and open structure. The similar species composition but contrasting structure of these communities, suggests that Community S1 may represent a younger successional stage of either Community S2 or S3. In the absence of fire, local edaphic factors or other site differences will then presumably determine if an S1 community will succeed into either S2 or S3. The latter patterns may also assist in proposed rehabilitation programs as the passage of fire may assist in the re-establishment of some species from litter and seed stock.

5. DISCUSSION

The proposed Coburn mineral sand mine is located south of Shark Bay. The survey area overlaps with a part of the Southern Carnarvon Basin, which is a region that until recently was poorly known botanically (Keighery *et al.* 2000). The region was first mapped by Beard (1976) and more recently, surveys have been conducted in the Shark Bay World Heritage Property by Trudgen and Keighery (1995) and the Southern Carnarvon Basin by Keighery *et al.* (2000) and Gibson *et al.* (2000). The broad composition and pattern of the flora reflects the major floristic boundary that runs through the region, defining the Southwestern and Eremaean Botanical Provinces (Beard 1976). This boundary represents the transition from the diverse Kwongan and woodlands of southwestern Australia and the less diverse *Acacia* shrublands of the Carnarvon Basin, which is imposed by major climatic and soil gradients across the area. This major floristic boundary is a defining feature of the flora in the survey area and is reflected by the diverse range and high endemism of the species and plant communities recorded in the present study.

The extensive shrubland and Eucalypt communities in the Amy Zone are a distinctive element of the Shark Bay flora and were first recognised by Beard (1976) who broadly described the vegetation as “Tree Heath” or heath with occasional trees. Importantly, Beard (1976) reported that this vegetation type is endemic to the Shark Bay area. The distinctive feature of this vegetation is it contains *Acacias* that are typical of the arid Eremaean region but also contains elements of the diverse Kwongan and woodlands of southwestern Australia, including members of the Proteaceae and the Myrtaceae. Beard (1976) first determined this vegetation to have affinities with the Southwestern Botanical Province, but floristic, climatic and edaphic evidence from Gibson *et al.* (2000) currently suggests a closer affinity to the Eremaean Botanical Province. This regionally significant vegetation structure encompasses the Communities E1, E2, E3, E4, E6, E7, S1, S2, S3, S4, S5, S6, S10 and M1 that were mapped in the present study. Of these communities, on the basis of aerial photograph interpretations, the dominant communities of S1, S2 and S3 appear to be extensive and occur well beyond the boundaries of the survey area into the World Heritage area. Many of the Eucalypt (E prefix in community codes) communities extend beyond the survey area. The actual extent of the different shrub and Eucalypt communities beyond the survey boundaries should be clearer after the additional work proposed for the coming months.

A number of communities with significant local conservation values were defined in the current study. Those communities in which Priority species were recorded are classified as locally significant. Communities S5, S8, S9 and S10 are of particular local significance, as priority species constitute a dominant element of the species composition. The Communities S2 and S3 are also significant as they have a mature, open structure, which is important for the establishment of the late successional Priority species (*Jacksonia dendrospinosa* (P4) and *Scholtzia* sp. Folly Hill (P2)), and may also be important for maintaining high reptile diversity (as found in S3, Ninnox Wildlife Consulting 2004)). There is also a high diversity of vertebrate fauna in the northern section of the survey area, which may be associated with the diverse mosaic (M1) communities (Ninnox Wildlife Consulting 2004).

The floristic boundary between the Southwestern and Eremaean Botanical Provinces that overlies the survey area was reflected in the biogeographical pattern of the species in the present study. Many species recorded are commonly found in the Southwestern Botanical District and are at the northern limit of their distribution, while other species common in the Eremaean Botanical District are at the southern or eastern limit of their distribution. There are also 13 taxa that are restricted to the intermediate zone between the two districts and are endemic to Shark Bay.

The significance of the nine Priority Flora species recorded in the survey area was reviewed in relation to the potential impact by the proposed mining operations and their broader distribution. The proposed mining operations pose the greatest threat to *Eremophila occidentis* (ms) (P2) as it is locally common in the survey area but its distribution beyond the area is highly restricted (only four collections from two isolated areas). Secondly, *Acacia subrigida* (P2) may need further taxonomic revision as some of the populations recorded previously from Shark Bay have different leaf morphology. *Acacia drepanophylla* (P3), *Grevillea rogersoniana* (P3) and *Macarthuria intricata* (P3) are significant, as they are endemic to Shark Bay. Finally, the presence of *Grevillea stenostachya* (P3) in the survey area represents a significant range extension from other known populations. It is important to note that the distribution of the Priority flora in the survey area is likely to be more extensive than current maps indicate, which are based on a limited number of site recordings. Additionally, the area surrounding Shark Bay is a centre of *Acacia* species diversity and hybridisation, and there are many species complexes in the area that may include taxa that are currently undescribed (B. Maslin, pers. comm.). Therefore, other species that may have specific conservation significance could also occur in the area.

A total of 231 taxa (including subspecies and varieties) from 131 genera and 51 families were recorded in the present study. In comparison, Gibson *et al.* (2000) recorded 245 taxa over a similar area adjacent to the Coburn survey area (Appendix A). A similar composition of species was collected in the present study with the exception of the priority species listed in Table 4. Trudgen and Keighery (1995) recorded 528 taxa over a larger area, which included Nanga Station, Western Hamelin station, Tamala Station, Coburn Station, Zuytdorp National Park, Cooloomia Nature Reserve and associated crown land (Appendix A). The authors also recorded a range of Rare and Priority Flora that were not recorded in the survey area (Table 4). The distribution of the majority of these species lie outside the survey area, while others may not have been detected in the present study due to low rainfall or they occur at extremely low population densities.

A paucity of annual and short lived species were recorded in the August 2003 and April 2004 surveys due to very dry seasonal conditions that occurred in prior seasons. As a result, an additional survey was conducted in September 2004 after reports of good rainfall in the preceding winter. Despite a number of new collections in the additional survey, a number of annual Priority species known to occur in the area was not found. The known distribution of *Chthonocephalus muellerianus* (P2), *Chthonocephalus tomentellus* (P2), *Millotia depauperata* (P1) and *Rhodanthe oppositifolia* subsp. *ornata* (P2) includes the survey area but presumably conditions prior to the surveys were not suitable for their germination. The local managers of Hamelin Bay and Coburn stations indicated that while the region received good rainfall the local area received below average rainfall. The low rainfall may have contributed to the absence of these species.

Fifteen introduced species were recorded in the survey area, of which most are currently restricted to small, often disturbed sites. The high level of soil disturbance associated with the proposed mining activity poses a risk of increased weed invasion. In a direct return test pit (Rehabilitation Benchmarking Exercise) *Brassica tournefortii*, *Rostaria pumila* and *Sonchus oleraceus* were recorded. The latter two species were found only in the trial pit, while *Brassica tournefortii* is widespread across the survey area where it has invaded relatively undisturbed environments and has become highly abundant in disturbed areas. The latter is particularly apparent on the pastoral leases. This species has become a problem in *Acacia* shrublands of the Zuytdorp National Park where it replaces the native species *Parietaria debilis*, particularly when also under grazing pressure (Keighery *et al.* 2000). Similar but more localised problems also occur in the Shark Bay World Heritage Property. The increased number of introduced species after disturbance, as shown in the direct return test pit, poses an issue for revegetation and could increase weed invasion into the adjacent World Heritage Property.

7. RECOMMENDATIONS

The findings of the flora and vegetation study illustrate the botanical values of the survey area. The significance of the flora and vegetation of the area is evident from the range of priority species and the variation in communities from those on the sandy soils in the west to the calcrete and sandy-loam soils in the east.

The following recommendations are made to minimise the impacts of the proposed development on the botanical values in the event that mining practices commence in the area:

- Clearing is limited to that which is necessary for operations, particularly adjacent to World Heritage Property.
- Communities S5, S8, S9 and S10 should be retained due to a high density of Priority Flora and Communities S2, S3 and M1 should be retained where possible to preserve mature plants that support a range of fauna species.
- Additional searches for *Eucalyptus beardiana* (R) and other Rare and Priority species on the southern haul road should be conducted prior to the finalisation of the access route and the location of the accommodation facility options.
- Searches for Rare and Priority Flora should be continued during the development phase.
- Additional permanent vegetation plots should be established and monitored before during and after mining activities.
- The likely success for revegetation should be further investigated, addressing the issues of water relations, weed invasion, changes in topography and soil structure.
- Topsoil should be respread over disturbed areas as soon as possible after clearing and stockpiling should only be undertaken for short periods if direct return of topsoil is not feasible.
- Dunal topographic systems should be protected where possible, or reworked through mining process.
- Local hydrological soil conditions are managed to minimise direct and indirect impacts on the native vegetation areas and the rehabilitation areas.
- Further collections of flora should be undertaken after higher seasonal rainfall events to extend the range of annual flora species in the survey area.

8. LIST OF PARTICIPANTS

The following personnel of Mattiske Consulting Pty Ltd have been involved with this project:

Principal Ecologist:	Dr E. M. Mattiske
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APPENDIX A: COMPARISON OF VASCULAR PLANT SPECIES RECORDED IN THE COBURN SURVEY AREA AND IN OTHER SIMILAR AREAS IN THE CARVARVON BASIN

NB: * denotes introduced (weed) taxa

^ Includes community groups 1, 5 and 6 only.

Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
OPHIOGLOSSACEAE	<i>Ophioglossum lusitanicum</i>				+
MARSILEACEAE	<i>Marsilea hirsuta</i>				+
CUPRESSACEAE	<i>Actinostrobus arenarius</i> <i>Callitris glaucophylla</i>			+	+
TYPHACEAE	<i>Typha domingensis</i>				+
POTAMOGETONACEAE	<i>Potamogeton pectinatus</i>				+
ZANNICHELLIACEAE	<i>Lepilaena preissii</i>				+
JUNCAGINACEAE	<i>Triglochin calcitrapa</i> <i>Triglochin centrocarpa</i> <i>Triglochin mucronata</i> <i>Triglochin nana</i>		+	+	+
POACEAE	* <i>Aira caryophyllea</i> <i>Amphipogon caricinus</i> <i>Amphipogon turbinatus</i> <i>Amphipogon strictus</i> <i>Aristida contorta</i> <i>Aristida holathera</i> <i>Austrodanthonia</i> sp. <i>Austrostipa compressa</i> <i>Austrostipa crinita</i> <i>Austrostipa elegantissima</i> <i>Austrostipa macalpinei</i> <i>Austrostipa nitida</i> <i>Austrostipa trichophylla</i> <i>Austrostipa tuckeri</i> * <i>Avellinia michelii</i> * <i>Avena barbata</i> <i>Bromus arenarius</i> * <i>Bromus diandrus</i> * <i>Bromus hordeaceus</i> * <i>Bromus japonicus</i> var. <i>vestitus</i> * <i>Cenchrus ciliaris</i> * <i>Cynodon dactylon</i> * <i>Ehrharta calycina</i> * <i>Ehrharta longiflora</i> <i>Eragrostis dielsii</i> <i>Eragrostis eriopoda</i> <i>Eulalia aurea</i> * <i>Hordeum leporinum</i> * <i>Lamarckia aurea</i> <i>Monachather paradoxus</i> <i>Paractaenum novae-hollandiae</i>	+	+	+	+

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Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
POACEAE (Continued)	<i>Paractaenum novae-hollandiae</i> <i>subsp. novae-hollandiae</i>		+		
	* <i>Pentaschistis airoides</i>		+	+	
	<i>Poa drummondiana</i>				+
	Poaceae sp.		+		
	* <i>Rostraria pumila</i>		+	+	+
	* <i>Schismus barbatus</i>		+		
	<i>Setaria dielsii</i>				+
	<i>Triodia bromoides</i> (P4)				+
	<i>Triodia danthonioides</i>	+	+		+
	<i>Triodia longipalea</i>			+	+
	<i>Triodia plurinervata</i>	+	+		+
	<i>Triodia pungens</i>		+		
CYPERACEAE	<i>Bulbostylis barbata</i>			+	
	<i>Cyperus bifax</i>				+
	<i>Mesomelaena pseudostygia</i>				+
	<i>Schoenus asperocarpus</i>				+
	<i>Schoenus nanus</i>			+	
CENTROLEPIDACEAE	<i>Centrolepis drummondiana</i>			+	
	<i>Centrolepis humillima</i>				+
RESTIONACEAE	<i>Desmocladus asper</i>				+
	<i>Lepidobolus densus</i> ms (P3)				+
ECDEIOCOLEACEAE	<i>Ecdeiocola monostachya</i>			+	+
JUNCACEAE	<i>Juncus kraussii</i>				+
DASYPOGONACEAE	<i>Acanthocarpus humilis</i>	+			
	<i>Acanthocarpus parviflorus</i> (P3)				+
	<i>Acanthocarpus preissii</i>	+	+	+	+
	<i>Acanthocarpus robustus</i>				+
	<i>Acanthocarpus verticillatus</i>				+
	<i>Acanthocarpus sp. aff. robustus</i> (Hopper 1367)			+	+
ANTHERICACEAE	<i>Arnocrinum drummondii</i> (P3)				+
	<i>Corynotheca micrantha</i> var. <i>micrantha</i>				+
	<i>Corynotheca micrantha</i> var. <i>acanthoclada</i>				+
	<i>Laxmannia sessiliflora</i> subsp. <i>sessiliflora</i>				+
	<i>Murchisonia volubilis</i>				+
	? <i>Murchisonia</i> sp. nov.	+	+		
	<i>Thysanotus manglesianus</i>	+	+	+	+
	<i>Thysanotus patersonii</i>			+	
	<i>Thysanotus speckii</i>				+
	<i>Tricoryne</i> aff. <i>corynothecoides</i> (GJK and NG 1274)			+	

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Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
ASPHODELACEAE	* <i>Asphodelus fistulosus</i>	+	+		+
	<i>Bulbine semibarbata</i>		+		+
COLCHICACEAE	<i>Wurmbea densiflora</i>			+	
	<i>Wurmbea inframediana</i>		+		+
	<i>Wurmbea monantha</i>				+
	<i>Wurmbea odorata</i>				+
	<i>Wurmbea tenella</i>			+	+
PHORMIACEAE	<i>Dianella revoluta</i>			+	+
	<i>Dianella revoluta</i> var. <i>divaricata</i>	+	+		
HAEMODORACEAE	<i>Anigozanthos manglesii</i> subsp. <i>quadrans</i>				+
	<i>Conostylis aculeata</i> subsp. <i>septentrionora</i>				+
	<i>Conostylis candicans</i> subsp. <i>flavifolia</i>		+		+
	<i>Conostylis stylidioides</i>				+
DIOSCOREACEAE	<i>Dioscorea hastifolia</i>				+
ORCHIDACEAE	<i>Eriochilus dilatatus</i> subsp. <i>dilatatus</i> ms				+
	<i>Pyrorchis nigricans</i>				+
CASUARINACEAE	<i>Allocasuarina acutivalvis</i>			+	+
	<i>Allocasuarina helmsii</i>				+
URTICACEAE	<i>Parietaria cardiostegia</i>	+			
	<i>Parietaria debilis</i>			+	+
	* <i>Urtica urens</i>				+
PROTEACEAE	<i>Adenanthos acanthophyllus</i>	+			+
	<i>Banksia attenuata</i>				+
	<i>Banksia ashbyi</i>	+	+	+	+
	<i>Banksia lindleyana</i>				+
	<i>Banksia prionotes</i>				+
	<i>Banksia sceptrum</i>			+	+
	<i>Conospermum microflorum</i>	+	+		+
	<i>Conospermum stoechadis</i> subsp. <i>stoechadis</i>				+
	<i>Dryandra</i> aff. <i>fraseri</i>				+
	<i>Grevillea acacioides</i>	+			
	<i>Grevillea annulifera</i> (P3)				+
	<i>Grevillea argyrophylla</i>				+
	<i>Grevillea brachystachya</i>			+	+
	<i>Grevillea candelabroides</i>			+	+
	<i>Grevillea commutata</i>				+
	<i>Grevillea didymobotrya</i> subsp. <i>didymobotrya</i>				+
	<i>Grevillea dielsiana</i>			+	
	<i>Grevillea eriostachya</i>	+	+		+
	<i>Grevillea gordoniana</i>	+			+
	<i>Grevillea leucopteris</i>				+
<i>Grevillea rogersoniana</i> (P3)	+			+	

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Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
PROTEACEAE (continued)	<i>Grevillea stenobotrya</i>	+		+	+
	<i>Grevillea stenomera</i> (P2)				+
	<i>Grevillea stenostachya</i> (P3)		+	+	+
	<i>Grevillea pinaster</i>				+
	<i>Hakea bucculleana</i>				+
	<i>Hakea candolleana</i>				+
	<i>Hakea circumalata</i>			+	+
	<i>Hakea stenophylla</i>			+	+
	<i>Hakea stenophylla</i> subsp. <i>notialis</i>	+	+		
	<i>Hakea trifurcata</i>				+
	<i>Persoonia acicularis</i>	+		+	+
	<i>Persoonia angustiflora</i>			+	
	<i>Persoonia bowgada</i>	+	+	+	
	<i>Persoonia saundersiana</i>	+			+
	<i>Petrophile brevifolia</i>				+
	<i>Petrophile semifurcata</i>		+		+
<i>Xylomelum angustifolium</i>				+	
SANTALACEAE	<i>Anthobolus foveolatus</i>	+	+		+
	<i>Exocarpos aphyllus</i>	+	+	+	
	<i>Exocarpos sparteus</i>	+			+
	<i>Leptomeria pauciflora</i>				+
	<i>Leptomeria preissiana</i>				+
	<i>Santalum acuminatum</i>	+	+		+
	<i>Santalum lanceolatum</i>	+			+
	<i>Santalum spicatum</i>	+	+	+	
<i>Santalum spicatum</i> subsp. <i>nov.</i>				+	
OLACACEAE	<i>Olax aurantia</i>				+
LORANTHACEAE	<i>Amyema benthamii</i>				+
	<i>Amyema miquelii</i>				+
	<i>Amyema miraculosa</i> subsp. <i>miraculosa</i>		+		+
	<i>Amyema preissii</i>			+	+
	<i>Lysiana casuarinae</i>			+	
	<i>Nuytsia floribunda</i>				+
POLYGONACEAE	* <i>Acetosa vesicaria</i>				+
	* <i>Emex australis</i>				+
	<i>Muehlenbeckia adpressa</i>				+
CHENOPODIACEAE	<i>Atriplex amnicola</i>				+
	<i>Atriplex bunburyana</i>				+
	<i>Atriplex codonocarpa</i>				+
	<i>Atriplex holocarpa</i>				+
	<i>Atriplex paludosa</i> subsp. <i>moquiniana</i>		+		+
	<i>Atriplex semilunaris</i>				+
	<i>Atriplex vesicaria</i>	+	+		
<i>Atriplex vesicaria</i> subsp. <i>incompta</i>				+	

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Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
CHENOPODIACEAE (continued)	<i>Atriplex vesicaria</i> subsp. <i>variabilis</i>	+			+
	<i>Chenopodium gaudichaudianum</i>	+	+	+	+
	<i>Chenopodium melanocarpum</i>				+
	<i>Chenopodium melanocarpum</i> forma <i>leucocarpum</i>	+			
	* <i>Chenopodium murale</i>				+
	<i>Didymanthus roei</i>				+
	<i>Dissocarpus paradoxus</i>				+
	<i>Dysphania sphaerosperma</i>				+
	<i>Enchylaena tomentosa</i>			+	
	<i>Enchylaena tomentosa</i> var. <i>tomentosa</i>	+	+		+
	<i>Eremophea aggregata</i>				+
	<i>Halosarcia doleiformis</i>				+
	<i>Halosarcia halocnemoides</i> subsp. <i>tenuis</i>				+
	<i>Halosarcia indica</i> subsp. <i>leiostachya</i>				+
	<i>Halosarcia peltata</i>				+
	<i>Halosarcia pergranulata</i> subsp. <i>pergranulata</i>				+
	<i>Halosarcia pruinosa</i>				+
	<i>Halosarcia pterygosperma</i> subsp. <i>pterygosperma</i>				+
	<i>Maireana appressa</i>				+
	<i>Maireana atkinsiana</i>				+
	<i>Maireana carnosa</i>	+			+
	<i>Maireana georgei</i>				+
	<i>Maireana lanosa</i>				+
	<i>Maireana planifolia</i>				+
	<i>Maireana polypterygia</i>				+
	<i>Maireana stipitata</i>				+
	<i>Maireana tomentosa</i>				+
	<i>Maireana trichoptera</i>	+		+	+
	<i>Rhagodia latifolia</i>			+	
	<i>Rhagodia latifolia</i> subsp. <i>latifolia</i>	+	+		+
	<i>Rhagodia preissii</i>			+	
	<i>Rhagodia preissii</i> subsp. <i>obovata</i>	+			+
	<i>Salsola tragus</i>			+	
	<i>Salsola tragus</i> subsp. <i>tragus</i>			+	
	<i>Sarcocornia quinqueflora</i>				+
	<i>Sclerolaena costata</i>				+
	<i>Sclerolaena diacantha</i>				+
	<i>Sclerolaena fusiformis</i>			+	
	<i>Sclerolaena recurvicauspis</i>				+
	<i>Sclerolaena stylosa</i> (P1)				+
	<i>Sclerostegia disarticulata</i>				+
<i>Sclerolaena</i> sp. (LM58)	+				
<i>Threlkeldia diffusa</i>	+	+	+	+	
Chenopodiaceae sp. (CG64)	+				

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AMARANTHACEAE	<i>Ptilotus aervoides</i>				+
	<i>Ptilotus divaricatus</i>			+	
	<i>Ptilotus divaricatus</i> var. <i>divaricatus</i>	+	+		+
	<i>Ptilotus divaricatus</i> var. <i>rubescens</i>				+
	<i>Ptilotus drummondii</i>			+	
	<i>Ptilotus drummondii</i> var. <i>drummondii</i>				+
	<i>Ptilotus drummondii</i> var. <i>minor</i>				+
	<i>Ptilotus exaltatus</i> var. <i>exaltatus</i>		+		+
	<i>Ptilotus gaudichaudii</i>			+	
	<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>		+		+
	<i>Ptilotus grandiflorus</i>			+	
	<i>Ptilotus grandiflorus</i> var. <i>grandiflorus</i>	+	+		+
	<i>Ptilotus helipteroides</i>			+	+
	<i>Ptilotus macrocephalus</i>				+
	<i>Ptilotus obovatus</i>			+	
	<i>Ptilotus obovatus</i> var. <i>obovatus</i>	+	+		+
	<i>Ptilotus polystachyus</i>			+	
	<i>Ptilotus polystachyus</i> var. <i>polystachyus</i>	+	+		+
<i>Ptilotus schwartzii</i> var. <i>schwartzii</i>				+	
<i>Ptilotus stirlingii</i> var. <i>pumilus</i> (P1)				+	
<i>Ptilotus villosiflorus</i>				+	
<i>Ptilotus</i> sp.	+				
NYCTAGINACEAE	<i>Boerhavia burbridgeana</i>				+
	<i>Boerhavia coccinea</i>				+
	<i>Commicarpus australis</i>			+	+
GYROSTEMONACEAE	<i>Codonocarpus cotinifolius</i>	+	+		+
	<i>Gyrostemon ramulosus</i>	+	+		+
	<i>Gyrostemon racemiger</i>				+
AIZOACEAE	<i>Carpobrotus virescens</i>				+
	<i>Carpobrotus</i> sp. aff. <i>rossii</i>				+
	<i>Gunnioopsis septifraga</i>				+
	* <i>Mesembryanthemum crystallinum</i>				+
	<i>Tetragonia cristata</i>		+		+
	<i>Tetragonia diptera</i>		+	+	
	<i>Tetragonia tetragonoides</i>				+
<i>Tetragonia coronata</i> (P1)				+	
<i>Trianthema turgidifolia</i>				+	
MOLLUGINACEAE	<i>Macarthuria intricata</i> (P3)		+		+
PORTULACACEAE	<i>Calandrinia calyprata</i>			+	
	* <i>Calandrinia ciliata</i>		+		
	<i>Calandrinia corrigioloides</i>			+	
	<i>Calandrinia disperma</i>			+	
	<i>Calandrinia lehmannii</i>			+	
	<i>Calandrinia ?liniflora</i>	+			
<i>Calandrinia liniflora</i>			+		

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PORTULACACEAE (continued)	<i>Calandrinia papillata</i>				+
	<i>Calandrinia polyandra</i>		+	+	+
	<i>Calandrinia remota</i>	+			
	<i>Calandrinia</i> sp.		+		
CARYOPHYLLACEAE	* <i>Silene gallica</i> var. <i>gallica</i>				+
RANUNCULACEAE	<i>Clematis linearifolia</i>				+
LAURACEAE	<i>Cassytha aurea</i>				+
	<i>Cassytha aurea</i> var. <i>aurea</i>	+	+		
	<i>Cassytha glabella</i>			+	
	<i>Cassytha pomiformis</i>				+
	<i>Cassytha racemosa</i> forma <i>racemosa</i>				+
CAPPARACEAE	<i>Capparis spinosa</i> var. <i>nummularia</i>				+
EMBLINGIACEAE	<i>Emblingia calceoliflora</i>				+
BRASSICACEAE	* <i>Brassica tournefortii</i>		+	+	+
	* <i>Hornungia procumbens</i>				+
	<i>Lepidium biplicatum</i> (P2)				+
	<i>Lepidium linifolium</i>				+
	<i>Lepidium lyratogynum</i>				+
	<i>Lepidium oxytrichum</i>				+
	<i>Menkea villosula</i>				+
	* <i>Sisymbrium erysimoides</i>		+	+	+
	* <i>Sisymbrium irio</i>				+
	* <i>Sisymbrium orientale</i>				+
	<i>Stenopetalum filifolium</i>			+	+
	<i>Stenopetalum pedicellare</i>	+	+	+	+
	<i>Stenopetalum robustum</i>			+	
	<i>Stenopetalum sphaerocarpum</i>				
DROSERACEAE	<i>Drosera stolonifera</i> subsp. <i>humilis</i>				+
CRASSULACEAE	<i>Crassula colorata</i>			+	
	<i>Crassula colorata</i> var. <i>acuminata</i>		+		+
PITTIOSPORACEAE	<i>Bursaria occidentalis</i>	+	+	+	+
	<i>Cheiranthra preissiana</i> var. <i>preissiana</i>				+
	<i>Marianthus bicolor</i>				+
	<i>Pittosporum phylliraeoides</i>	+			+
CUNONIACEAE	<i>Aphanopetalum clematideum</i>				+
SURIANACEAE	<i>Stylobasium australe</i>				+
	<i>Stylobasium spathulatum</i>	+	+	+	+

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MIMOSACEAE	<i>Acacia amblyophylla</i>				+
	<i>Acacia ?andrewsii</i>				+
	<i>Acacia bivenosa</i>			+	
	<i>Acacia cavealis</i> ms			+	
	<i>Acacia chartacea</i>	+	+	+	+
	<i>Acacia cochlearis</i>	+		+	
	<i>Acacia coolgardiensis</i> subsp. <i>effusa</i>			+	
	<i>Acacia didyma</i>				+
	<i>Acacia drepanophylla</i> (P3)	+	+		+
	<i>Acacia farnesiana</i>				+
	<i>Acacia galeata</i>	+	+		+
	<i>Acacia grasbyi</i>	+			+
	<i>Acacia idiomorpha</i>				+
	<i>Acacia isoneura</i> ms			+	
	<i>Acacia isoneura</i> subsp. <i>nimia</i> (P3)				+
	<i>Acacia latipes</i>				+
	<i>Acacia leptospermoides</i> subsp. <i>leptospermoides</i>				+
	<i>Acacia leptospermoides</i> subsp. <i>obovata</i> (P2)				+
	<i>Acacia ligulata</i>	+	+	+	+
	<i>Acacia longispinea</i>	+		+	+
	<i>Acacia microcalyx</i>				+
	<i>Acacia murrayana</i>				+
	<i>Acacia neurophylla</i>			+	
	<i>Acacia plautella</i> (P3)				+
	<i>Acacia ramulosa</i>			+	
	<i>Acacia ramulosa</i> var. <i>linophylla</i>			+	
	<i>Acacia ramulosa</i> var. <i>ramulosa</i>	+	+		+
	<i>Acacia rigens</i>	+			
	<i>Acacia rostelifera</i>			+	+
	<i>Acacia roycei</i>	+	+	+	+
	<i>Acacia sclerosperma</i>			+	
	<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>	+	+		+
	<i>Acacia spathulifolia</i>	+	+	+	+
	<i>Acacia stereophylla</i>			+	
<i>Acacia subrigida</i> (P2)	+			+	
<i>Acacia synchronicia</i>				+	
<i>Acacia tetragonophylla</i>	+	+	+	+	
<i>Acacia ?victoriae</i> (W.V. Fitzgerald syn.)				+	
<i>Acacia wiseana</i>	+	+			
<i>Acacia xanthina</i>				+	
<i>Acacia xiphophylla</i>	+	+		+	

APPENDIX A: COMPARISON OF VASCULAR PLANT SPECIES RECORDED IN THE COBURN SURVEY AREA AND IN OTHER SIMILAR AREAS IN THE CARVARVON BASIN

NB: * denotes introduced (weed) taxa

^ Includes community groups 1, 5 and 6 only.

Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
CAESALPINIACEAE	<i>Labichea cassioides</i>	+		+	+
	<i>Labichea teretifolia</i> subsp. <i>teretifolia</i>			+	+
	<i>Senna artemisioides</i> subsp. <i>filifolia</i>	+			+
	<i>Senna artemisioides</i> subsp. <i>petiolaris</i>	+	+		
	<i>Senna artemisioides</i> subsp. x <i>coriacea</i>			+	
	<i>Senna artemisioides</i> subsp. aff. <i>helmsii</i> (Demarz 5504)				+
	<i>Senna charlesiana</i>			+	
	<i>Senna glutinosa</i>			+	
	<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>	+	+		+
	<i>Senna pleurocarpa</i> var. <i>pleurocarpa</i>				+
	<i>Senna</i> sp. "Austin" (A. Strid 20210) pn				+
	<i>Senna</i> sp. "Billabong" (J.D. Alonzo 721) pn				+
	<i>Senna</i> sp. "Meekatharra" (E.T. Bailey 1-26) pn				+
	<i>Senna</i> sp. "Tamala" (ME Trudgen 7334A) pn				+
PAPILIONACEAE	<i>Aotus ?phylicoides</i>				+
	<i>Chorizema racemosum</i>				+
	<i>Crotalaria cunninghamii</i>				+
	<i>Daviesia divaricata</i> subsp. ? <i>lanulosa</i> ms	+			
	<i>Gompholobium tomentosum</i>				+
	<i>Jacksonia</i> aff. <i>spinosa</i> (R.J. Cranfield 2576)				+
	<i>Jacksonia dendrospinosa</i> (P4)		+		
	<i>Jacksonia velutina</i> (P4)				+
	<i>Leptosema aphyllum</i>				+
	<i>Leptosema macrocarpum</i>				+
	<i>Mirbelia</i> aff. <i>viminalis</i>			+	
	<i>Mirbelia ramulosa</i>		+	+	+
	<i>Mirbelia spinosa</i>			+	
	<i>Mirbelia</i> sp. Denham (W.E.Blackall 556)	+	+		+
	<i>Swainsona canescens</i>				+
	<i>Swainsona cornuta</i>				+
	<i>Swainsona kingii</i>				+
	<i>Swainsona cornuta</i>	+			
	<i>Swainsona longicarinata</i>				+
	<i>Swainsona pterostylis</i>				+
<i>Swainsonia</i> sp.		+			
Papilionaceae sp. (CG57/KH104)	+				
GERANIACEAE	* <i>Erodium aureum</i>				+
	* <i>Erodium cicutarium</i>				+
	<i>Erodium cygnorum</i>	+	+	+	+
ZYGOPHYLLACEAE	<i>Tribulus forrestii</i>			+	+
	<i>Tribulus macrocarpus</i>				+
	<i>Tribulus platypterus</i>				+
	<i>Zygophyllum apiculatum</i>			+	+
	<i>Zygophyllum aurantiacum</i>	+	+		+
	<i>Zygophyllum compressum</i>				+
	<i>Zygophyllum fruticosum</i>		+	+	+

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Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
ZYGOPHYLLACEAE (continued)	<i>Zygophyllum iodocarpum</i>		+	+	
	<i>Zygophyllum retivalve</i>				+
RUTACEAE	<i>Boronia cymosa</i>				+
	<i>Boronia purdieana</i>				+
	<i>Diplolaena grandiflora</i>				+
	<i>Diplolaena mollis</i>				+
	<i>Geleznovia verrucosa</i>			+	+
POLYGALACEAE	<i>Comesperma integerrimum</i>		+	+	+
	<i>Comesperma scoparium</i>				+
EUPHORBIACEAE	<i>Adriana urticoides</i>				+
	<i>Beyeria cinerea</i>				+
	<i>Euphorbia australis</i>				+
	<i>Euphorbia boophthona</i>		+	+	
	<i>Euphorbia drummondii</i>			+	+
	<i>Euphorbia drummondii</i> subsp. <i>drummondii</i>		+		
	<i>Euphorbia tannensis</i>			+	
	<i>Euphorbia tannensis</i> subsp. <i>eremophila</i>	+			+
	<i>Monotaxis bracteata</i>			+	+
	<i>Phyllanthus calycinus</i>				+
	<i>Phyllanthus maderaspatensis</i>			+	
	<i>Poranthera drummondii</i>		+		
	<i>Poranthera microphylla</i>			+	
	* <i>Ricinus communis</i>				+
	<i>Sauropus crassifolius</i>				+
	<i>Stachystemon intricatus</i> ms			+	
STACKHOUSIACEAE	<i>Stackhousia muricata</i>	+			+
SAPINDACEAE	<i>Alectryon oleifolius</i>			+	
	<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>	+	+		+
	<i>Diplopeltis huegelii</i> var. <i>subintegra</i>				+
	<i>Diplopeltis intermedia</i> var. <i>intermedia</i>				+
	<i>Diplopeltis petiolaris</i>				+
	<i>Dodonaea inaequifolia</i>	+	+	+	
	<i>Dodonaea viscosa</i> subsp. <i>angustissima</i>	+			+
RHAMNACEAE	<i>Stenanthemum complicatum</i>	+	+	+	+
TILLACEAE	<i>Corchorus walcotti</i>				+
MALVACEAE	<i>Abutilon geranioides</i>				+
	<i>Abutilon oxycarpum</i>				+
	<i>Abutilon</i> sp. Hamelin (A.M. Ashby 2196) (P2) pn				+
	<i>Alyogyne cuneiformis</i>				+
	<i>Alyogyne pinoniana</i> var. <i>leptochlamys</i> ms				+
	<i>Alyogyne pinoniana</i> var. <i>pinoniana</i>		+		+
	<i>Lasiopetalum oppositifolium</i> (P3)				+

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Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
MALVACEAE	<i>Lawrenzia densiflora</i>				+
(continued)	* <i>Malva linnaei</i>				+
	* <i>Malva parviflora</i>				+
	<i>Sida calyxhymenia</i>	+	+	+	
	<i>Sida kingii</i>				
	Malvaceae sp. (CG125)	+			
DILLENIACEAE	<i>Hibbertia acerosa</i>				+
	<i>Hibbertia conspicua</i>		+	+	
	<i>Hibbertia racemosa</i>				+
	<i>Hibbertia spicata</i> subsp. <i>spicata</i>				+
FRANKENIACEAE	<i>Frankenia pauciflora</i>				+
	<i>Frankenia setosa</i>				+
THELYMELAEACEAE	<i>Pimelea gilgiana</i>				+
	<i>Pimelea leucantha</i>				+
	<i>Pimelea microcephala</i>			+	
	<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	+	+		+
	<i>Pimelea sessilis</i>				+
VITACEAE	<i>Clematicissus angustissima</i>				+
STERCULIACEAE	<i>Brachychiton gregorii</i>	+	+	+	+
	<i>Commersonia gaudichaudii</i>				+
	<i>Guichenotia ledifolia</i>				+
	<i>Guichenotia</i> aff. <i>micrantha</i> (Wittwer 1809)				+
	<i>Hannafordia quadrivalvis</i> subsp. <i>quadrivalvis</i>	+			+
	<i>Keraudrenia hermannifolia</i>	+		+	+
	<i>Keraudrenia integrifolia</i>				+
	<i>Rulingia densiflora</i>				
MYRTACEAE	<i>Baeckea pentagonantha</i>				+
	<i>Baeckea</i> sp. (M.E. Trudgen 12009) pn				+
	<i>Baeckea</i> sp. Nanga (A.S. George 11346) p	+	+	+	+
	<i>Beaufortia aestiva</i>		+		
	<i>Beaufortia sprengelioides</i>		+		+
	<i>Calothamnus blepharospermus</i>	+		+	+
	<i>Calothamnus borealis</i>			+	
	<i>Calothamnus formosus</i> subsp. <i>formosus</i>	+	+		+
	<i>Calothamnus glaber</i> ms				+
	<i>Calothamnus kalbarriensis</i>			+	+
	<i>Calothamnus quadrifidus</i>	+			+
	<i>Calytrix brevifolia</i>	+		+	+
	<i>Calytrix strigosa</i>				+
	<i>Chamelaucium conostigmum</i> (P3) ms				+
	<i>Chamelaucium oenanthum</i> (P1) ms				+
	<i>Eremaea dendroidea</i>	+	+	+	+

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Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
MYRTACEAE	<i>Eremaea ebracteata</i>			+	
(continued)	<i>Eucalyptus</i> aff. <i>prominens</i> (S. Hopper 1333)				+
	<i>Eucalyptus beardiana</i> (R)				+
	<i>Eucalyptus erythrocorys</i>				+
	<i>Eucalyptus eudesmioides</i>	+	+	+	+
	<i>Eucalyptus ?eudesmioides</i>	+			
	<i>Eucalyptus fruticosa</i>	+	+		+
	<i>Eucalyptus gittinsii</i>				+
	<i>Eucalyptus jucunda</i>			+	+
	<i>Eucalyptus jucunda</i> x <i>Eucalyptus roycei</i> (hybrid)				+
	<i>Eucalyptus kochii</i>			+	
	<i>Eucalyptus mannensis</i>			+	+
	<i>Eucalyptus mannensis</i> subsp. <i>vespertina</i>	+	+		
	<i>Eucalyptus obtusiflora</i>				+
	<i>Eucalyptus obtusiflora</i> subsp. <i>obtusiflora</i>	+	+		
	<i>Eucalyptus oldfieldii</i>			+	+
	<i>Eucalyptus oraria</i>				+
	<i>Eucalyptus roycei</i>	+	+	+	+
	<i>Eucalyptus selachiana</i>	+	+		
	<i>Lamarchea hakeifolia</i> var. <i>brevifolia</i>	+	+	+	+
	<i>Leptospermum</i> sp. (KH32)	+			
	<i>Malleostemon hursthousei</i>				+
	<i>Malleostemon minilyaensis</i>			+	+
	<i>Malleostemon pedunculatus</i>	+	+	+	+
	<i>Malleostemon peltiger</i>				+
	<i>Malleostemon</i> sp. <i>Cooloomia</i>				
	(S.D. Hopper 1353) (P2) pn				+
	<i>Malleostemon</i> sp. Nerren Nerren				
	(A. Payne 360) (P1) pn				+
	<i>Melaleuca campanae</i>		+		
	<i>Melaleuca cardiophylla</i>			+	+
	<i>Melaleuca eleuterostachya</i>	+			
	<i>Melaleuca eulobata</i>	+			
	<i>Melaleuca huegelii</i> subsp. <i>pristicensis</i> (P2)				+
	<i>Melaleuca</i> aff. <i>leiopyxis</i> (GJK and NG 1708)			+	
	<i>Melaleuca leiopyxis</i>	+	+		+
	<i>Melaleuca sapientes</i>		+		
	<i>Melaleuca scabra</i>			+	
	<i>Melaleuca uncinata</i>				+
	<i>Melaleuca</i> sp.			+	
	<i>Pileanthus bellus</i>				+
	<i>Pileanthus</i> aff. <i>peduncularis</i> (Hopper 1385)				+
	<i>Pileanthus limacis</i>				+
	<i>Pileanthus peduncularis</i>				+
	<i>Pileanthus vernicosus</i>		+		+
	<i>Scholtzia leptantha</i>				+
	<i>Scholtzia</i> sp.	+	+		
	<i>Scholtzia</i> sp. Folly Hill (P2)		+		
	<i>Scholtzia</i> sp. Shark Bay (Trudgen 7429) pn				+

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Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
MYRTACEAE	<i>Thryptomene baeckeacea</i>				+
(Continued)	<i>Thryptomene decussata</i>			+	+
	<i>Thryptomene mucronulata</i>				+
	<i>Thryptomene racemulosa</i>				+
	<i>Thryptomene</i> sp. <i>Carrarang</i> (M.E. Trudgen 7420) (P1) pn				+
	<i>Thryptomene strongylophylla</i>		+		+
	<i>Verticordia cooloomia</i> (P3)				+
	<i>Verticordia dichroma</i> var. <i>dichroma</i> (P3)				+
	<i>Verticordia dichroma</i> var. <i>syntoma</i> (P3)				+
	<i>Verticordia etheliana</i> var. <i>etheliana</i>				+
	<i>Verticordia spicata</i> subsp. <i>spicata</i>				+
HALORAGACEAE	<i>Glischrocaryon aureum</i> var. <i>aureum</i>				+
	<i>Glischrocaryon flavescens</i>				+
	<i>Haloragis gossei</i>	+			
	<i>Haloragis trigonocarpa</i>				+
APIACEAE	<i>Daucus glochidiatus</i>			+	+
	<i>Trachymene coerulea</i> subsp. <i>leucopetala</i>		+		
	<i>Trachymene ceratocarpa</i>			+	+
	<i>Trachymene cyanopetala</i>			+	
	<i>Trachymene elachocarpa</i>				+
	<i>Trachymene ornata</i>			+	+
	<i>Trachymene pilosa</i>			+	+
EPACRIDACEAE	<i>Leucopogon cordifolius</i>				+
PRIMULACEAE	* <i>Anagallis arvensis</i> var. <i>caerulea</i>				+
	<i>Samolus repens</i> var. <i>paucifolius</i>				+
	<i>Samolus</i> sp. "Shark Bay" (ME Trudgen 7410) pn				+
OLEACEAE	<i>Jasminum calcarium</i>				+
LOGANIACEAE	<i>Logania biloba</i>				+
GENTIANACEAE	* <i>Centaurium spicatum</i>				+
APOCYNACEAE	<i>Alyxia buxifolia</i>	+	+	+	+
ASCLEPIADACEAE	<i>Marsdenia australis</i>		+	+	+
	<i>Marsdenia graniticola</i>			+	
	<i>Rhyncharrhena linearis</i>			+	+
	<i>Sarcostemma viminale</i> subsp. <i>australe</i>				+
CONVOLVULACEAE	<i>Bonamia rosea</i>				+
	<i>Convolvulus angustissimus</i>			+	
	<i>Porana sericea</i>	+	+	+	

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CUSCUTACEAE	* <i>Cuscuta epithymum</i>		+	+	
BORAGINACEAE	<i>Cynoglossum australe</i>		+		
	<i>Halgania ?bebrana</i>				+
	<i>Halgania integerrima</i>	+		+	+
	<i>Heliotropum curassavicum</i>				+
	<i>Heliotropium undulatum</i>			+	
	<i>Omphalolappula concava</i>			+	
	<i>Trichodesma zeylanicum</i> var. <i>zeylanicum</i>				+
LAMIACEAE	<i>Dicrastylis linearifolia</i> (P3)			+	+
	<i>Dicrastylis micrantha</i> (P3)				+
	<i>Dicrastylis soliparma</i>		+		
	<i>Hemiandra</i> sp. 1. (Beard 7059)	+	+		
	<i>Physopsis chrysophylla</i> (P3)	+	+		+
	<i>Pityrodia atriplicina</i>	+	+	+	+
	<i>Pityrodia cuneata</i>	+	+		+
	<i>Pityrodia glutinosa</i>			+	+
	<i>Pityrodia loxocarpa</i>	+		+	+
	<i>Pityrodia oldfieldii</i>				+
	<i>Pityrodia paniculata</i>			+	+
	<i>Pityrodia</i> sp.	+			
	<i>Spartothamnella teucriflora</i>			+	
	* <i>Salvia verbenaca</i>				+
	Lamiaceae sp. (KH35)	+			
SOLANACEAE	<i>Anthocercis intricata</i> (P3)				+
	<i>Anthocercis littorea</i>		+		
	<i>Anthocercis</i> sp. "Shark Bay" (T.E.H. Aplin 3335) pn				+
	<i>Anthotroche myoporoides</i> (P2)				+
	<i>Anthotroche walcottii</i>		+		+
	<i>Duboisia hopwoodii</i>	+			+
	* <i>Lycium ferocissimum</i>				+
	<i>Lycium australe</i>	+			
	<i>Nicotiana occidentalis</i>			+	
	<i>Nicotiana occidentalis</i> subsp. <i>hesperis</i>		+		
	<i>Nicotiana occidentalis</i> subsp. <i>obliqua</i>				+
	* <i>Solanum americanum</i>				+
	<i>Solanum esuriale</i>	+			
	<i>Solanum hesperium</i>	+	+	+	+
	<i>Solanum lasiophyllum</i>	+	+	+	+
	* <i>Solanum nigrum</i>				+
	<i>Solanum oldfieldii</i>			+	
	<i>Solanum orbiculatum</i>			+	
	<i>Solanum orbiculatum</i> subsp. <i>orbiculatum</i>	+	+		+
	<i>Solanum symonii</i>				+
SCROPHULARIACEAE	<i>Stemodia viscosa</i>				+

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MYOPORACEAE	<i>Eremophila clarkei</i>	+	+	+	+
	<i>Eremophila deserti</i>	+			
	<i>Eremophila forrestii</i> subsp. <i>forrestii</i> ms	+			
	<i>Eremophila gibsonii</i>				+
	<i>Eremophila glabra</i>			+	
	<i>Eremophila granitica</i>			+	
	<i>Eremophila latrobei</i>			+	
	<i>Eremophila latrobei</i> subsp. <i>latrobei</i> ms	+	+		+
	<i>Eremophila maculata</i> subsp. <i>brevifolia</i> ms				+
	<i>Eremophila maitlandii</i>	+	+	+	+
	<i>Eremophila occidens</i> (P2) ms	+	+		
	<i>Eremophila oldfieldii</i>			+	
	<i>Eremophila oldfieldii</i> subsp. <i>oldfieldii</i>	+	+		+
	<i>Eremophila pantonii</i>				+
	<i>Eremophila physocalyx</i> (P3) ms			+	+
	<i>Eremophila platycalyx</i>			+	+
	<i>Eremophila pterocarpa</i>				+
	<i>Eremophila serrulata</i>		+		+
<i>Eremophila strongylophylla</i>				+	
<i>Eremophila youngii</i>			+		
<i>Eremophila youngii</i> subsp. <i>youngii</i> ms				+	
<i>Eremophila</i> sp. (CG63)	+				
PLANTAGINACEAE	<i>Plantago</i> aff. <i>hispidula</i> (NG and ML 1732)			+	
RUBIACEAE	<i>Opercularia</i> aff. <i>spermacoea</i> (AHB 4502)			+	
	<i>Opercularia spermacoea</i>				+
	<i>Opercularia vaginata</i>				+
	<i>Synaptantha tillaeacea</i>			+	
CAMPANULACEAE	<i>Wahlenbergia preissii</i>			+	
	<i>Wahlenbergia tumidifruca</i>			+	
LOBELIACEAE	<i>Lobelia gibbosa</i>			+	
	<i>Lobelia heterophylla</i>		+	+	+
GOODENIACEAE	<i>Brunonia australis</i>			+	
	<i>Dampiera altissima</i>				+
	<i>Dampiera haemototricha</i>			+	
	<i>Dampiera incana</i> var. <i>fuscescens</i>		+		+
	<i>Dampiera lindleyi</i>				+
	<i>Dampiera spicigera</i>				+
	<i>Goodenia berardiana</i>	+	+	+	+
	<i>Goodenia havilandii</i>			+	
	<i>Goodenia occidentalis</i>			+	
	<i>Goodenia sericostachya</i> (P3)				+
	<i>Lechenaultia hirsuta</i>				+
<i>Lechenaultia linarioides</i>	+	+	+	+	
<i>Lechenaultia macrantha</i>				+	

APPENDIX A: COMPARISON OF VASCULAR PLANT SPECIES RECORDED IN THE COBURN SURVEY AREA AND IN OTHER SIMILAR AREAS IN THE CARVARVON BASIN

NB: * denotes introduced (weed) taxa

^ Includes community groups 1, 5 and 6 only.

Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
GOODENIACEAE (continued)	<i>Pentaptilon careyi</i>				+
	<i>Scaevola anchlussifolia</i>				+
	<i>Scaevola chrysopogon</i> (P2)				+
	<i>Scaevola crassifolia</i>				+
	<i>Scaevola cunninghamii</i>				+
	<i>Scaevola restiacea</i>			+	
	<i>Scaevola sericophylla</i>	+			
	<i>Scaevola spinescens</i>	+	+	+	
	<i>Scaevola tomentosa</i>	+	+	+	
	<i>Velleia cynopotamica</i>			+	
<i>Velleia glabrata</i>			+		
ASTERACEAE	<i>Actinobole condensatum</i>	+	+		
	<i>Actinobole uliginosum</i>			+	
	<i>Angianthus pusillus</i>			+	
	<i>Angianthus tomentosus</i>			+	
	<i>Bellida graminea</i>			+	
	<i>Blennospora drummondii</i>			+	
	<i>Brachyscome cheilocarpa</i>			+	
	<i>Brachyscome ciliaris</i>	+	+	+	
	<i>Brachyscome iberidifolia</i>			+	
	<i>Calocephalus francisii</i>	+	+	+	
	<i>Calocephalus multiflorus</i>		+	+	
	<i>Calotis hispidula</i>			+	
	<i>Calotis multicaulis</i>	+		+	
	<i>Cephalopterum drummondii</i>	+	+	+	
	<i>Ceratogyne obionoides</i>			+	
	<i>Chthonocephalus muellerianus</i> (P2)			+	
	<i>Chthonocephalus pseudevax</i>			+	
	<i>Chthonocephalus spathulatus</i> (P1)			+	
	<i>Chthonocephalus tomentellus</i> (P2)			+	+
	<i>Erymophyllum ramosum</i> subsp. <i>involutratum</i>				+
	<i>Gilberta tenuifolia</i>			+	+
	<i>Gilruthia osbornei</i>				+
	<i>Gnephosis arachnoidea</i>				+
	<i>Gnephosis brevifolia</i>				+
	<i>Gnephosis eriocephala</i>			+	
	<i>Gnephosis gynotricha</i>				+
	<i>Gnephosis tenuissima</i>		+	+	+
	<i>Gnephosis sp. Billabong</i>				
	(B.Nordenstam & A.Anderberg 203) (P1) pn				+
	<i>Gnephosis sp. Pt. Quobba</i>		+		
	<i>Haptotrichion colwillii</i>				+
	<i>Helipterum craspedioides</i>				+
	<i>Hyalosperma demissum</i>			+	
	<i>Hyalosperma glutinosum</i> subsp. <i>glutinosum</i>			+	
	<i>Hyalosperma glutinosum</i> subsp. <i>venustum</i>				+
	* <i>Hypochaeris glabra</i>		+	+	
	<i>Lawrencella davenportii</i>	+	+	+	+

APPENDIX A: COMPARISON OF VASCULAR PLANT SPECIES RECORDED IN THE COBURN SURVEY AREA AND IN OTHER SIMILAR AREAS IN THE CARVARVON BASIN

NB: * denotes introduced (weed) taxa

^ Includes community groups 1, 5 and 6 only.

Family	Species	Mattiske Aug 2003 & Apr 2004	Mattiske Sep & Nov 2004	Gibson <i>et al.</i> 2000^	Trudgen & Keighery 1995
ASTERACEAE	<i>Lawrencella rosea</i>			+	+
(Continued)	<i>Leucochrysum fitzgibbonii</i>			+	
	<i>Millotia depauperata</i> (P1)				+
	<i>Millotia myosotidifolia</i>			+	
	<i>Minuria integerrima</i>				+
	<i>Minuria leptophylla</i>				+
	<i>Myriocephalus guerinae</i>			+	+
	<i>Olearia axillaris</i>			+	
	<i>Olearia dampieri</i> subsp. <i>dampieri</i> (MS)				+
	<i>Olearia revoluta</i>	+	+		
	<i>Olearia rudis</i>			+	
	<i>Pembertonia latisquamea</i> ms	+		+	
	<i>Pluchea rubelliflora</i>				+
	<i>Podolepis canescens</i>		+	+	+
	<i>Podolepis capillaris</i>			+	
	<i>Podolepis microcephala</i>				+
	<i>Podotheca angustifolia</i>			+	+
	<i>Podotheca gnaphalioides</i>	+	+	+	+
	<i>Rhodanthe charsleyae</i>			+	
	<i>Rhodanthe chlorocephala</i> subsp. <i>splendida</i>				+
	<i>Rhodanthe citrina</i>		+	+	+
	<i>Rhodanthe condensata</i>				+
	<i>Rhodanthe cremea</i>				+
	<i>Rhodanthe humboldtiana</i>		+	+	+
	<i>Rhodanthe laevis</i>			+	
	<i>Rhodanthe manglesii</i>			+	
	<i>Rhodanthe maryonii</i>	+	+	+	+
	<i>Rhodanthe oppositifolia</i> subsp. <i>oppositifolia</i>				+
	<i>Rhodanthe oppositifolia</i> subsp. <i>ornata</i> (P2)				+
	<i>Rhodanthe polycephala</i>				+
	<i>Rhodanthe stricta</i>			+	+
	<i>Rhodanthe</i> sp. Overlander (PS Short 2096) (P1) pn				+
	<i>Schoenia ayersii</i>	+	+		+
	<i>Schoenia cassiniana</i>	+	+	+	+
	<i>Senecio glossanthus</i>			+	+
	<i>Senecio</i> sp.	+			
	* <i>Sonchus oleraceus</i>		+	+	
	<i>Sondottia glabrata</i> (P2)				+
	<i>Trichanthodium scarlettianum</i>				+
	<i>Trichanthodium skirrophorum</i>				+
	* <i>Urospermum picroides</i>		+		+
	<i>Vittadinia cervicularis</i> var. <i>oldfieldii</i> (P1)				+
	<i>Waitzia acuminata</i> var. <i>albicans</i>				+
	<i>Waitzia nitida</i>			+	+
	<i>Waitzia corymbosa</i>		+		+
	<i>Waitzia podolepis</i>				+
	<i>Waitzia suaveolens</i>			+	

**APPENDIX B: SUMMARY OF VASCULAR PLANT SPECIES RECORDED WITHIN EACH PLANT
COMMUNITY IN THE COBURN SURVEY AREA**

NB: * denotes introduced (weed) species

Species	E1	E2	E3	E4	E5	E6	E7	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	M1	PIT
<i>Acacia chartacea</i>								+	+	+	+								+
<i>Acacia cochlearis</i>									+	+	+								+
<i>Acacia drepanophylla</i> (P3)				+											+	+	+		
<i>Acacia galeata</i>		+			+				+						+			+	
<i>Acacia grasbyi</i>									+										+
<i>Acacia ligulata</i>		+	+	+			+	+	+	+	+		+		+				+
<i>Acacia longispinea</i>								+	+	+	+	+	+						
<i>Acacia ramulosa</i> var. <i>ramulosa</i>	+	+	+	+	+	+			+	+		+		+	+	+			+
<i>Acacia rigens</i>																+			
<i>Acacia rostellifera</i>									+										+
<i>Acacia roycei</i>	+	+		+		+		+	+	+	+	+	+	+	+				+
<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>		+				+			+						+	+	+		+
<i>Acacia spathulifolia</i>								+	+	+									
<i>Acacia subrigida</i> (P2)								+	+	+		+							
<i>Acacia tetragonophylla</i>	+	+	+	+	+	+	+	+	+	+				+	+	+	+		+
<i>Acacia wiseana</i>		+				+									+	+			
<i>Acacia xiphophylla</i>				+												+	+		
<i>Acanthocarpus humilis</i>										+									
<i>Acanthocarpus preissii</i>				+					+							+		+	
<i>Actinobole condensatum</i>		+		+				+		+	+				+				
<i>Adenanthos acanthophyllus</i>								+	+	+	+			+					
* <i>Aira caryophyllea</i>				+	+	+	+								+				
<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>		+	+	+		+			+		+				+		+		
<i>Alyogyne pinoniana</i> var. <i>pinoniana</i>									+						+				+
<i>Alyxia buxifolia</i>	+			+			+		+		+	+	+						
<i>Amyema miraculosa</i> subsp. <i>miraculosa</i>															+				
<i>Anthobolus foveolatus</i>								+	+										
<i>Anthocercis littorea</i>									+										
<i>Anthotroche walcottii</i>								+											
<i>Aristida contorta</i>							+												
* <i>Asphodelus fistulosus</i>		+	+						+										+
<i>Atriplex paludosa</i> subsp. <i>moquiniana</i>																			+
<i>Atriplex vesicaria</i> subsp. <i>variabilis</i>				+											+	+			
<i>Austrodanthonia</i> sp.																+			
<i>Austrostipa elegantissima</i>	+	+	+		+	+	+		+										+
<i>Austrostipa macalpinei</i>				+	+														+
<i>Austrostipa nitida</i>															+	+			+
* <i>Avellinia michelii</i>				+															
<i>Baeckea</i> sp. Nanga (A.S. George 11346) pn	+	+		+			+	+	+	+	+	+	+	+					+
<i>Banksia ashbyi</i>	+							+	+	+	+	+	+						+
<i>Beaufortia aestiva</i>									+										
<i>Beaufortia sprengelioides</i>								+											
<i>Brachychiton gregorii</i>	+	+		+	+	+	+	+	+	+	+		+	+					+
<i>Brachyscome ciliaris</i>		+				+			+		+	+			+	+			+
* <i>Brassica tournefortii</i>		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
* <i>Bromus japonicus</i> var. <i>vestitus</i>																			+
<i>Bulbine semibarbata</i>																			+
<i>Bursaria occidentalis</i>	+	+	+	+	+			+	+	+			+	+	+				
<i>Calandrinia ?liniflora</i>		+																	
* <i>Calandrinia ciliata</i>				+		+		+	+					+					
<i>Calandrinia polyandra</i>		+	+				+	+		+	+	+						+	+

**APPENDIX B: SUMMARY OF VASCULAR PLANT SPECIES RECORDED WITHIN EACH PLANT
COMMUNITY IN THE COBURN SURVEY AREA**

NB: * denotes introduced (weed) species

Species	E1	E2	E3	E4	E5	E6	E7	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	M1	PIT
<i>Petrophile semifurcata</i>								+	+										
<i>Physopsis chrysophylla</i> (P3)								+	+	+									+
<i>Pileanthus vernicosus</i>							+												
<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	+	+	+		+		+		+	+	+								+
<i>Pittosporum phylliraeoides</i>								+	+	+	+								
<i>Pityrodia atriplicina</i>		+						+	+	+									+
<i>Pityrodia cuneata</i>										+				+					
<i>Pityrodia loxocarpa</i>								+	+	+									
? <i>Pityrodia</i> sp.					+			+		+									
Poaceae sp.		+	+			+													+
<i>Podolepis canescens</i>		+		+			+	+	+		+								+
<i>Podotheca gnaphalioides</i>		+		+		+		+	+	+	+	+							+
<i>Porana sericea</i>	+	+		+	+		+		+		+				+				+
<i>Poranthera drummondii</i>								+	+										+
Proteaceae sp. (seedling)																			+
<i>Ptilotus divaricatus</i> var. <i>divaricatus</i>	+	+	+		+		+		+	+				+				+	+
<i>Ptilotus exaltatus</i> var. <i>exaltatus</i>			+				+		+										
<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>		+				+			+	+	+	+							+
<i>Ptilotus grandiflorus</i> var. <i>grandiflorus</i>		+		+					+		+								+
<i>Ptilotus obovatus</i> var. <i>obovatus</i>	+	+	+	+	+	+			+		+			+	+	+			+
<i>Ptilotus polystachyus</i> var. <i>polystachyus</i>	+	+		+		+	+	+	+	+	+	+	+	+	+			+	+
<i>Ptilotus</i> sp.									+						+				
<i>Rhagodia latifolia</i> subsp. <i>latifolia</i>	+	+	+	+		+	+		+		+		+	+					+
<i>Rhagodia preissii</i> subsp. <i>obovata</i>		+							+				+		+				
<i>Rhodanthe citrina</i>				+						+									+
<i>Rhodanthe humboldtiana</i>			+																
<i>Rhodanthe maryonii</i>		+				+			+										+
* <i>Rostraria pumila</i>		+	+								+								+
<i>Salsola tragus</i> subsp. <i>tragus</i>			+													+			
<i>Santalum acuminatum</i>	+	+	+	+	+		+	+	+	+			+	+	+			+	
<i>Santalum lanceolatum</i>																			+
<i>Santalum spicatum</i>	+	+	+	+		+			+										+
<i>Scaevola sericophylla</i>										+									
<i>Scaevola spinescens</i>	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+			+
<i>Scaevola tomentosa</i>		+							+					+					
* <i>Schismus barbatus</i>																			+
<i>Schoenia ayersii</i>			+																+
<i>Schoenia cassiniana</i>	+	+	+			+	+	+	+	+			+						+
<i>Scholtzia</i> sp.						+		+											+
<i>Scholtzia</i> sp. Folly Hill (P2)								+											
<i>Sclerolaena fusiformis</i>			+																
<i>Sclerolaena</i> sp. (LM58)																			+
<i>Senecio</i> sp.						+		+											
<i>Senna artemisioides</i> subsp. <i>filifolia</i>									+	+									
<i>Senna artemisioides</i> subsp. <i>petiolaris</i>	+	+				+		+	+	+	+		+						
<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>			+		+			+	+	+				+				+	
<i>Sida calyxhymenia</i>		+			+			+						+				+	
* <i>Sisymbrium erysimoides</i>			+																
<i>Solanum esuriale</i>				+															
<i>Solanum hesperium</i>		+		+			+		+	+									
<i>Solanum lasiophyllum</i>			+				+		+					+				+	
<i>Solanum orbiculatum</i> subsp. <i>orbiculatum</i>	+	+	+	+	+		+		+	+	+		+	+					+

**APPENDIX B: SUMMARY OF VASCULAR PLANT SPECIES RECORDED WITHIN EACH PLANT
COMMUNITY IN THE COBURN SURVEY AREA**

NB: * denotes introduced (weed) species

Species	E1	E2	E3	E4	E5	E6	E7	S1	S2	S3	S4	S5	S6	S7	S8	S9	S10	M1	PIT
* <i>Sonchus oleraceus</i>																			+
<i>Stackhousia muricata</i>									+										
<i>Stenanthemum complicatum</i>	+	+					+	+	+	+	+	+			+		+	+	
<i>Stenopetalum pedicellare</i>		+						+	+										
<i>Stylobasium spathulatum</i>				+		+		+	+	+				+				+	
<i>Swainsona cornuta</i>									+										
<i>Swainsona</i> sp.																			+
<i>Tetragonia cristata</i>									+		+			+	+	+			
<i>Tetragonia diptera</i>		+	+			+	+	+		+	+								+
<i>Threlkeldia diffusa</i>											+				+				+
<i>Thryptomene strongylophylla</i>											+		+						
<i>Thysanotus manglesianus</i>						+		+	+	+	+			+					+
<i>Trachymene coerulea</i> subsp. <i>leucopetala</i>								+											
<i>Triglochin nana</i>																		+	
<i>Triodia danthonioides</i>	+	+		+			+	+	+	+	+	+	+						+
<i>Triodia plurinervata</i>			+		+			+											
<i>Triodia pungens</i>									+										
* <i>Urospermum picroides</i>			+																
<i>Waitzia corymbosa</i>		+		+		+	+		+	+	+	+							+
<i>Wurmbea inframediana</i>																		+	
<i>Zygophyllum aurantiacum</i>		+	+		+				+						+				
<i>Zygophyllum fruticosum</i>			+																+
<i>Zygophyllum iodocarpum</i>															+	+			

**APPENDIX C: SUMMARY OF FLOWERING PERIODS FOR VASCULAR PLANT SPECIES
RECORDED IN THE COBURN SURVEY AREA**

NB: * denotes introduced (weed) species;

N/A - denotes not available as no information or species not defined to level where data can be accessed off FloraBase

1 - denotes month that species been recorded as flowering from field studies or FloraBase records (CALM)

Species	J	F	M	A	M	J	J	A	S	O	N	D	N/A
<i>Acacia chartacea</i>	1	0	0	0	0	0	0	1	1	1	1	1	0
<i>Acacia cochlearis</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Acacia drepanophylla</i> (P3)	0	0	1	1	1	1	1	0	0	0	0	0	0
<i>Acacia galeata</i>	0	0	0	1	1	1	0	0	0	0	0	0	0
<i>Acacia grasbyi</i>	0	0	0	0	1	1	1	1	1	1	0	0	0
<i>Acacia ligulata</i>	0	0	0	0	1	1	1	1	1	1	0	0	0
<i>Acacia longispinea</i>	0	0	0	0	0	0	0	0	1	1	0	0	0
<i>Acacia ramulosa</i> var. <i>ramulosa</i>	0	0	1	1	1	1	1	1	1	1	0	0	0
<i>Acacia rigens</i>	0	0	0	0	0	0	1	1	1	1	1	1	0
<i>Acacia rostellifera</i>	0	0	0	0	0	0	1	1	1	1	1	1	0
<i>Acacia roycei</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Acacia sclerosperma</i> subsp. <i>sclerosperma</i>	0	0	0	1	1	1	1	1	1	1	0	0	0
<i>Acacia spathulifolia</i>	0	0	0	0	0	1	1	1	1	1	0	0	0
<i>Acacia subrigida</i> (P2)	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Acacia tetragonophylla</i>	0	0	0	0	1	1	1	1	1	1	0	0	0
<i>Acacia wiseana</i>	0	0	0	0	0	0	1	1	1	0	0	0	0
<i>Acacia xiphophylla</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Acanthocarpus humilis</i>	0	0	0	0	0	1	1	1	0	0	0	0	0
<i>Acanthocarpus preissii</i>	0	0	0	1	1	0	0	0	0	0	0	0	0
<i>Actinobole condensatum</i>	0	1	0	0	0	0	0	1	1	1	0	0	0
<i>Adenanthos acanthophyllus</i>	0	0	0	1	1	1	1	0	0	0	0	1	0
* <i>Aira caryophyllea</i>	0	0	0	0	0	0	0	0	0	1	1	0	0
<i>Alectryon oleifolius</i> subsp. <i>oleifolius</i>	0	0	0	0	0	0	0	1	1	1	1	0	0
<i>Alyogyne pinoniana</i> var. <i>pinoniana</i>	0	0	1	1	1	1	1	1	1	1	1	1	0
<i>Alyxia buxifolia</i>	1	1	1	1	1	1	1	1	1	1	1	1	0
<i>Amyema miraculosa</i> subsp. <i>miraculosa</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Anthobolus foveolatus</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Anthocercis littorea</i>	1	1	1	1	1	1	1	1	1	1	1	1	0
<i>Anthroche walcottii</i>	1	0	0	0	0	0	0	0	1	1	1	1	0
<i>Aristida contorta</i>	0	1	1	1	1	1	0	0	0	0	0	0	0
* <i>Asphodelus fistulosus</i>	0	0	0	0	0	1	1	1	1	1	0	0	0
<i>Atriplex paludosa</i> subsp. <i>moquiniana</i>	0	0	0	0	1	1	1	1	1	0	0	0	0
<i>Atriplex vesicaria</i> subsp. <i>variabilis</i>	0	0	0	0	1	1	1	1	1	0	0	0	0
<i>Austrodanthonia</i> sp.	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Austrostipa elegantissima</i>	1	0	0	0	0	0	0	1	1	1	1	1	0
<i>Austrostipa macalpinei</i>	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Austrostipa nitida</i>	0	0	0	0	0	0	1	1	1	1	1	1	0
* <i>Avellinia michelii</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Baeckea</i> sp. Nanga (A.S. George 11346) pn	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Banksia ashbyi</i>	0	1	1	1	1	1	1	1	1	0	0	1	0
<i>Beaufortia aestiva</i>	1	1	1	0	0	1	1	1	1	1	1	1	0
<i>Beaufortia sprengelioides</i>	0	0	0	0	0	0	1	1	1	1	1	0	0
<i>Brachychiton gregorii</i>	1	0	0	0	0	0	0	0	0	0	1	1	0
<i>Brachyscome ciliaris</i>	1	1	1	1	1	1	1	1	1	1	1	1	0
* <i>Brassica tournefortii</i>	1	1	1	1	1	1	1	1	1	1	1	0	0
* <i>Bromus japonicus</i> var. <i>vestitus</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Bulbine semibarbata</i>	0	0	0	0	0	0	1	1	1	1	1	1	0
<i>Bursaria occidentalis</i>	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Calandrinia ?liniflora</i>	1	0	0	0	0	0	0	0	1	1	1	1	0
<i>Calandrinia ciliata</i>	0	0	0	0	0	0	0	0	1	1	1	0	0
<i>Calandrinia polyandra</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Calandrinia remota</i>	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Calandrinia</i> sp. (DR31)	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Calocephalus francisii</i>	0	0	0	0	0	0	0	1	1	1	1	0	0
<i>Calocephalus multiflorus</i>	0	0	0	0	0	0	0	1	1	1	1	0	0
<i>Calothamnus blepharospermus</i>	1	1	0	0	0	0	1	0	0	0	0	0	0
<i>Calothamnus formosus</i> subsp. <i>formosus</i>	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Calothamnus quadrifidus</i>	0	0	0	0	0	1	1	1	1	1	1	1	0
<i>Calotis multicaulis</i>	0	0	0	0	0	0	1	1	1	1	1	0	0

**APPENDIX C: SUMMARY OF FLOWERING PERIODS FOR VASCULAR PLANT SPECIES
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1 - denotes month that species been recorded as flowering from field studies or FloraBase records (CALM)

Species	J	F	M	A	M	J	J	A	S	O	N	D	N/A
<i>Jacksonia dendrospinosa</i> (P4)	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Keraudrenia hermanniifolia</i>	0	0	1	0	0	0	1	1	1	1	0	0	0
<i>Labichea cassioides</i>	1	1	0	0	0	0	1	1	1	1	1	1	0
<i>Lamarchea hakeifolia</i> subsp. <i>brevifolia</i>	1	0	0	0	0	0	0	0	0	0	1	1	0
* <i>Lamarckia aurea</i>	0	0	0	0	0	0	0	1	1	1	1	0	0
? Lamiaceae sp. (KH35)	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Lawrencella davenportii</i>	0	0	0	0	0	1	1	1	1	1	1	0	0
<i>Lechenaultia linarioides</i>	0	0	1	0	0	1	1	1	1	1	1	1	0
? <i>Leptospermum</i> sp. (KH32)	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Lobelia heterophylla</i>	1	1	0	0	0	0	0	1	1	1	1	1	0
<i>Lycium australe</i>	0	1	1	1	1	1	1	1	1	1	0	0	0
<i>Macarthuria intricata</i> (P3)	0	0	0	0	0	0	0	0	1	1	1	1	0
<i>Maireana carnosia</i>	0	0	0	0	0	1	1	1	1	0	0	0	0
<i>Maireana trichoptera</i>	0	0	0	0	0	0	0	0	1	0	0	0	0
<i>Malleostemon pedunculatus</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
Malvaceae sp. (CG125)	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Marsdenia australis</i>	1	1	1	1	0	0	0	0	1	1	1	0	0
<i>Melaleuca campanae</i>	0	0	0	0	0	0	0	0	0	0	1	0	0
<i>Melaleuca eleuterostachya</i>	1	0	0	0	0	0	1	1	1	1	1	1	0
<i>Melaleuca eulobata</i>	0	0	0	0	0	0	0	0	0	1	0	0	0
<i>Melaleuca leiopyxis</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Melaleuca sapientes</i>	1	1	0	0	0	0	0	0	0	0	0	1	0
<i>Mirbelia ramulosa</i>	0	0	0	0	0	1	1	1	1	1	1	0	0
<i>Mirbelia</i> sp. Denham (W.E. Blackall 556) (pn)	0	0	0	0	0	0	1	1	1	0	0	0	0
<i>Monachather paradoxus</i>	0	0	0	0	0	0	0	0	1	1	1	0	0
? <i>Murchisonia</i> sp. nov.	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Nicotiana occidentalis</i> subsp. <i>hesperis</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Olearia revoluta</i>	0	0	0	0	1	1	1	1	1	1	1	0	0
? Papilionaceae sp. (CG57/KH104)	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Paractaenum novae-hollandiae</i> subsp. <i>novae-hollandiae</i>	0	0	0	0	0	0	1	1	1	0	0	0	0
<i>Parietaria cardiostegia</i>	0	0	0	0	0	1	1	1	1	1	1	0	0
<i>Pembertonia latisquamea</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
* <i>Pentaschistis airoides</i>	0	0	0	0	0	0	0	0	1	1	1	1	0
<i>Persoonia acicularis</i>	1	0	0	0	0	0	0	0	1	1	1	1	0
<i>Persoonia bowgada</i>	0	0	0	0	0	0	0	0	0	1	1	0	0
<i>Persoonia saundersiana</i>	0	0	0	0	0	0	0	1	1	1	1	0	0
<i>Petrophile semifurcata</i>	0	0	0	0	0	0	0	0	1	1	1	0	0
<i>Physopsis chrysophylla</i> (P3)	1	0	0	0	0	0	0	0	1	1	1	1	0
<i>Pileanthus vernicosus</i>	0	0	0	0	0	0	0	0	1	1	1	0	0
<i>Pimelea microcephala</i> subsp. <i>microcephala</i>	0	0	0	1	1	1	1	1	1	1	1	1	0
<i>Pittosporum phylliraeoides</i>	0	0	0	0	0	1	1	1	1	1	0	0	0
<i>Pityrodia atriplicina</i>	0	0	0	0	1	1	1	1	1	1	0	0	0
<i>Pityrodia cuneata</i>	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Pityrodia loxocarpa</i>	1	0	0	0	0	0	1	1	1	1	1	1	0
? <i>Pityrodia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	1
Poaceae sp.	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Podolepis canescens</i>	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Podotheca gnaphalioides</i>	0	0	0	0	0	0	0	1	1	1	1	0	0
<i>Porana sericea</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Poranthera huegelii</i>	0	0	0	0	0	0	0	0	1	1	1	1	0
Proteaceae sp. (seedling)	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Ptilotus divaricatus</i> var. <i>divaricatus</i>	0	0	0	0	0	0	0	0	0	1	1	1	0
<i>Ptilotus exaltatus</i> var. <i>exaltatus</i>	0	0	0	1	1	1	1	1	1	1	0	0	0
<i>Ptilotus gaudichaudii</i> var. <i>parviflorus</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Ptilotus grandiflorus</i> var. <i>grandiflorus</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Ptilotus obovatus</i> var. <i>obovatus</i>	0	0	0	0	0	1	1	1	1	1	1	1	0
<i>Ptilotus polystachyus</i> var. <i>polystachyus</i>	1	0	0	0	1	1	1	1	1	1	1	1	0
<i>Ptilotus</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	1
* <i>Raphanus raphanistrum</i>	0	0	0	1	1	1	1	1	1	1	1	0	0
<i>Rhagodia latifolia</i> subsp. <i>latifolia</i>	0	0	1	1	1	1	1	1	0	0	0	0	0

**APPENDIX C: SUMMARY OF FLOWERING PERIODS FOR VASCULAR PLANT SPECIES
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1 - denotes month that species been recorded as flowering from field studies or FloraBase records (CALM)

Species	J	F	M	A	M	J	J	A	S	O	N	D	N/A
<i>Rhagodia preissii</i> subsp. <i>obovata</i>	0	0	0	0	1	1	1	1	0	0	0	0	0
<i>Rhodanthe citrina</i>	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Rhodanthe humboldtiana</i>	0	0	0	0	0	0	1	1	1	1	1	0	0
<i>Rhodanthe maryonii</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
* <i>Rostraria pumila</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Salsola tragus</i> subsp. <i>tragus</i>	0	0	0	1	0	0	1	1	1	1	0	0	0
<i>Santalum acuminatum</i>	1	1	1	1	0	0	1	1	1	1	1	1	0
<i>Santalum lanceolatum</i>	1	1	1	1	1	1	1	1	1	1	0	0	0
<i>Santalum spicatum</i>	0	1	1	1	1	1	0	0	0	0	0	0	0
<i>Scaevola sericophylla</i>	1	1	1	1	1	1	1	1	1	1	1	1	0
<i>Scaevola spinescens</i>	1	1	1	1	1	1	1	1	1	1	1	1	0
<i>Scaevola tomentosa</i>	0	0	0	0	1	1	1	1	1	1	0	0	0
* <i>Schismus barbatus</i>	0	0	0	0	0	0	0	1	1	1	1	0	0
<i>Schoenia ayersii</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Schoenia cassiniana</i>	0	0	0	0	0	1	1	1	1	1	1	0	0
<i>Scholtzia</i> sp. Folly Hill (M.E.Trudgen 12097) (P2)	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Scholtzia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Sclerolaena fusiformis</i>	0	0	1	1	1	1	1	1	1	1	1	0	0
<i>Sclerolaena</i> sp. (LM58)	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Senecio</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Senna artemisioides</i> subsp. <i>filifolia</i>	0	0	0	1	1	1	1	1	1	1	0	0	0
<i>Senna artemisioides</i> subsp. <i>petiolaris</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Senna glutinosa</i> subsp. <i>chatelainiana</i>	0	0	0	1	1	1	1	1	1	0	0	0	0
<i>Sida calyxhymenia</i>	0	0	0	1	1	1	1	1	1	1	0	0	0
* <i>Sisymbrium erysimoides</i>	0	0	0	1	1	1	1	1	1	1	0	0	0
<i>Solanum esuriale</i>	0	0	1	1	1	1	1	0	0	0	0	0	0
<i>Solanum hesperium</i>	0	0	0	0	0	0	1	1	1	0	0	0	0
<i>Solanum lasiophyllum</i>	0	0	0	1	1	1	1	1	1	1	0	0	0
<i>Solanum orbiculatum</i> subsp. <i>orbiculatum</i>	0	0	0	0	0	1	1	1	1	1	0	0	0
* <i>Sonchus oleraceus</i>	1	1	1	1	1	1	1	1	1	1	1	1	0
<i>Stackhousia muricata</i>	0	0	0	0	0	0	1	1	1	1	1	0	0
<i>Stenanthemum complicatum</i>	0	0	1	1	1	1	1	1	1	1	0	0	0
<i>Stenopetalum pedicellare</i>	0	0	0	0	1	1	1	1	1	1	0	0	0
<i>Stylobasium spathulatum</i>	0	0	0	0	1	1	1	1	1	1	1	0	0
<i>Swainsona cornuta</i>	0	0	0	0	0	0	0	1	0	0	0	0	0
<i>Swainsonia</i> sp.	0	0	0	0	0	0	0	0	0	0	0	0	1
<i>Tetragonia cristata</i>	0	0	0	0	0	0	1	1	1	0	0	0	0
<i>Tetragonia diptera</i>	0	0	0	0	0	0	1	1	0	0	0	0	0
<i>Threlkeldia diffusa</i>	0	0	0	0	0	0	0	0	0	1	1	0	0
<i>Thryptomene strongylophylla</i>	0	0	0	0	1	1	1	1	1	1	1	0	0
<i>Thysanotus manglesianus</i>	0	0	0	0	0	0	0	1	1	1	1	0	0
<i>Trachymene coerulea</i> subsp. <i>leucopetala</i>	1	1	0	0	0	0	0	0	0	1	1	1	0
<i>Triglochin nana</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Triodia danthonioides</i>	0	0	0	0	0	0	1	1	1	1	1	0	0
<i>Triodia longipalea</i>	1	1	0	0	0	0	1	1	1	1	1	1	1
<i>Triodia pluinervata</i>	0	0	0	0	1	1	1	1	1	1	0	0	0
<i>Triodia pungens</i>	1	1	1	1	1	1	1	1	1	1	1	1	0
* <i>Urospermum picroides</i>	0	0	0	0	0	0	0	1	1	1	1	1	0
<i>Waitzia corymbosa</i>	0	0	0	0	0	0	0	1	1	1	0	0	0
<i>Wurmbea inframediana</i>	0	0	0	0	0	1	1	1	0	0	0	0	0
<i>Zygophyllum aurantiacum</i>	0	0	0	0	0	0	1	1	1	1	0	0	0
<i>Zygophyllum fruticosum</i>	0	0	0	0	1	1	1	1	1	1	0	0	0
<i>Zygophyllum iodocarpum</i>	0	0	0	1	1	1	1	1	1	1	0	0	0

LEGEND

Eucalyptus Woodlands



Community E1:

Low Open Woodland of *Eucalyptus selachiana* and *Eucalyptus roycei* with occasional emergent *Banksia ashbyi* over *Calothamnus formosus* subsp. *formosus* and *Acacia ramulosa* var. *ramulosa* over *Lamarchea hakeifolia* var. *brevifolia*, *Malleostemon pedunculatus* and *Melaleuca eulobata* over *Triodia danthonioides*.



Community E2:

Low Open Woodland of *Eucalyptus selachiana* and *Eucalyptus fruticosa* with occasional emergent *Eucalyptus mannensis* subsp. *vespertina* and *Eucalyptus roycei* over *Acacia ramulosa* var. *ramulosa*, *Acacia ligulata* and *Eremophila maitlandii* over mixed annual species.



Community E3:

Low Open Woodland of *Eucalyptus fruticosa* and *Eucalyptus obtusiflora* subsp. *obtusiflora* over *Acacia xiphophylla*, *Acacia ramulosa* var. *ramulosa* and *Acacia ligulata* over mixed Chenopod species.



Community E4:

Low Open Woodland of *Eucalyptus selachiana* and *Eucalyptus ?eudesmioides* over *Acacia ramulosa* var. *ramulosa*, *Acacia roycei*, *Acacia ligulata* and *Grevillea gordoniana* over *Baeckea* sp. Nanga (pn) over *Triodia danthonioides*.



Community E5:

Low Open Woodland of *Eucalyptus obtusiflora* subsp. *obtusiflora* over *Acacia ramulosa* var. *ramulosa* and *Acacia galeata* over *Ptilotus obovatus* var. *obovatus* and *Triodia plurinervata*.



Community E6:

Low Open Woodland of *Eucalyptus mannensis* subsp. *vespertina* over *Acacia ramulosa* var. *ramulosa* over *Rhagodia latifolia* subsp. *latifolia* over mixed annual species.



Community E7:

Low Open Woodland of *Eucalyptus selachiana* over *Calothamnus formosus* subsp. *formosus* and *Acacia ligulata* over *Lamarchea hakeifolia* var. *brevifolia* over *Triodia danthonioides*.

Shrublands



Community S1:

Tall Shrubland of *Calothamnus formosus* subsp. *formosus* and *Hakea stenophylla* subsp. *notialis* with occasional emergent *Eucalyptus selachiana*, *Eucalyptus roycei* and *Eucalyptus mannensis* subsp. *vespertina* with *Banksia ashbyi* over *Acacia ligulata* and *Lamarchea hakeifolia* over *Triodia danthonioides* in sands.



Community S2:

Tall Open Shrubland of *Calothamnus formosus* subsp. *formosus*, *Hakea stenophylla* subsp. *notialis* and *Acacia ligulata* with occasional emergent *Eucalyptus selachiana*, *Eucalyptus roycei* and *Eucalyptus mannensis* subsp. *vespertina* with *Banksia ashbyi* over *Lamarchea hakeifolia* var. *brevifolia* and *Baeckea* sp. Nanga (pn) over *Triodia danthonioides*.



Community S3:

Low Open Shrubland of *Acacia ligulata* and *Hakea stenophylla* subsp. *notialis* with occasional emergent *Eucalyptus selachiana* and *Eucalyptus roycei* over *Baeckea* sp. Nanga (pn) and *Stenanthemum complicatum* over *Triodia danthonioides*.



Community S4:

Tall Open Shrubland of *Grevillea gordoniana* and *Acacia ligulata* with occasional emergent *Eucalyptus selachiana* over *Melaleuca eulobata*, *Baeckea* sp. Nanga (pn) and *Adenanthos acanthophyllus* over *Triodia danthonioides*.



Community S5:

Low Open Shrubland of *Acacia subrigida* (P2) with occasional emergent *Eucalyptus ?eudesmioides* and *Eucalyptus roycei* with *Banksia ashbyi* over *Malleostemon pedunculatus* over *Triodia danthonioides*.



Community S6:

Low Open Shrubland of *Acacia longispinea* with occasional emergent *Eucalyptus mannensis* subsp. *vespertina* over *Melaleuca leiopyxis* and *Melaleuca eulobata* over *Malleostemon pedunculatus* over *Triodia danthonioides*.



Community S7:

Tall Open Shrubland of *Acacia sclerosperma* subsp. *sclerosperma* and *Acacia ramulosa* var. *ramulosa* over *Eremophila maitlandii* over *Ptilotus obovatus* var. *obovatus*.



Community S8:

Tall Open Shrubland of *Acacia xiphophylla*, *Acacia drepanophylla* (P3) and *Acacia ramulosa* var. *ramulosa* over *Chenopodium gaudichaudianum* and *Scaevola spinescens*.



Community S9:

Tall Open Shrubland of *Acacia xiphophylla* and *Acacia drepanophylla* (P3) over *Acacia grasbyi*, *Acacia tetragonophylla* and *Senna glutinosa* subsp. *chatelainiana* over *Ptilotus obovatus* var. *obovatus*.



Community S10:

Tall Open Shrubland of *Physopsis chrysophylla* (P3) and *Acacia rostellifera* over *Calothamnus formosus* subsp. *formosus* and *Mirbelia* sp. Denham (pn) over *Triodia danthonioides*.

Mosaic Community



Community M1

Mosaic of patches of a Tall Open Shrubland of *Acacia ramulosa* var. *ramulosa*, *Acacia ligulata* and *Acacia roycei* with occasional emergent *Eucalyptus selachiana*, *Eucalyptus roycei*, *Eucalyptus mannensis* subsp. *vespertina* and *Eucalyptus obtusiflora* subsp. *obtusiflora* over *Eremophila maitlandii* and *Lamarchea hakeifolia* subsp. *brevifolia* over mixed annual species, with patches of a Tall Open Shrubland of *Acacia ramulosa* var. *ramulosa* and *Acacia roycei* over *Melaleuca leiopyxis* and *Malleostemon pedunculatus* over mixed annuals in sands.

NOTES

Horizontal Datum: AMG84 (Zone 50)

This map is to be read in conjunction with Mattiske Consulting Pty Ltd report numbered URS0404/75/04

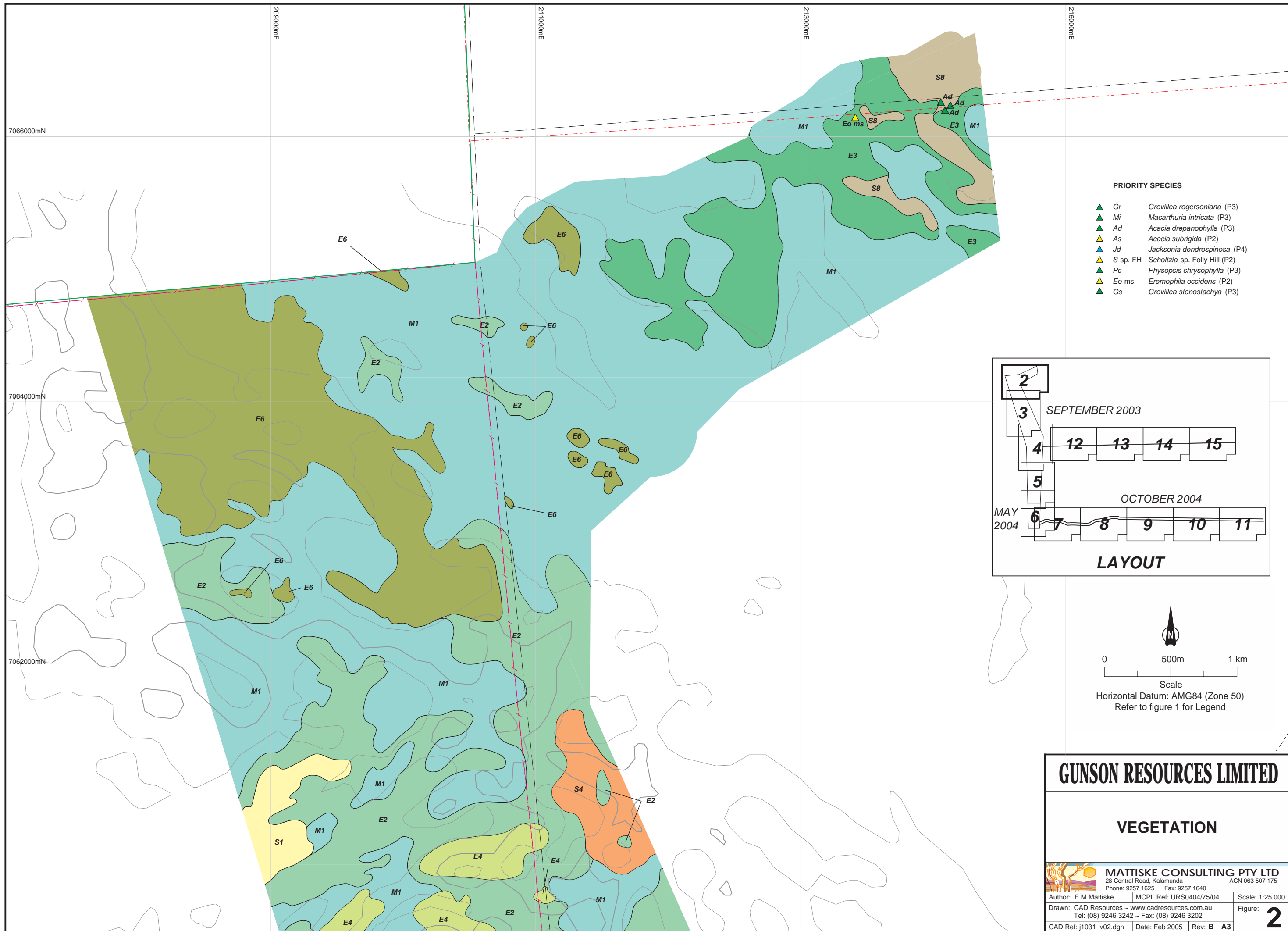
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VEGETATION LEGEND

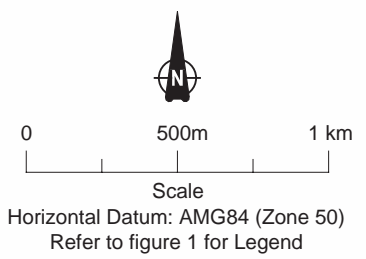
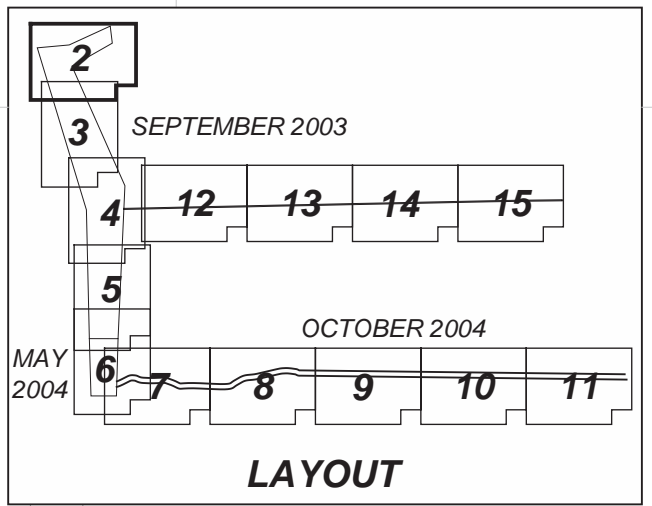


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Drawn: CAD Resources ~ www.cadresources.com.au	Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202	Figure: 1
CAD Ref: j1031_v01.dgn	Date: Feb 2005	Rev: A A4



- PRIORITY SPECIES**
- ▲ Gr *Grevillea rogersoniana* (P3)
 - ▲ Mi *Macarthuria intricata* (P3)
 - ▲ Ad *Acacia drepanophylla* (P3)
 - ▲ As *Acacia subrigida* (P2)
 - ▲ Jd *Jacksonia dendrospinosa* (P4)
 - ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
 - ▲ Pc *Physopsis chrysophylla* (P3)
 - ▲ Eo ms *Eremophila occidens* (P2)
 - ▲ Gs *Grevillea stenostachya* (P3)

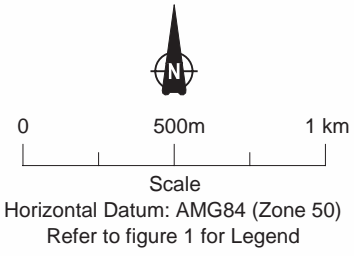
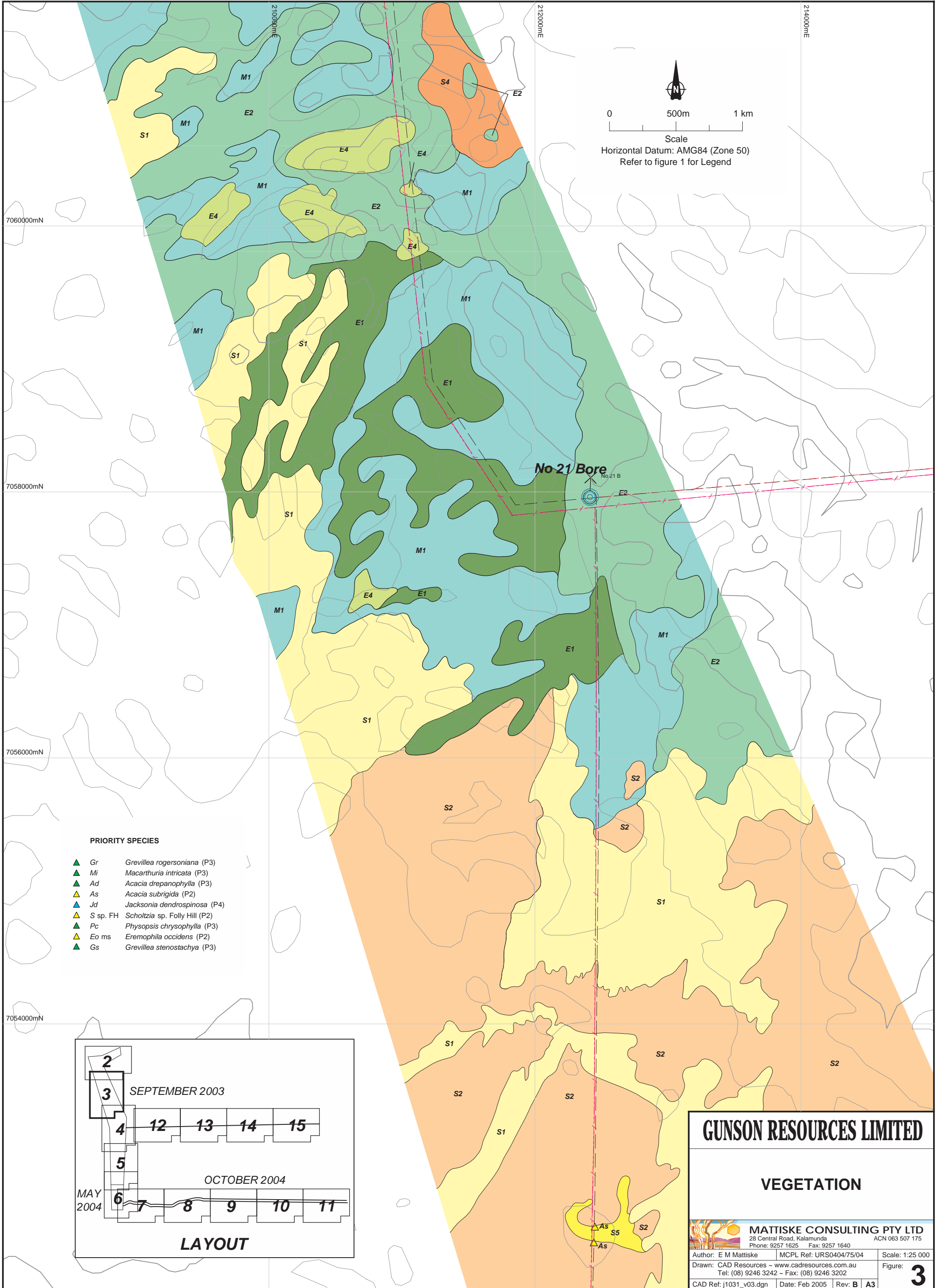


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VEGETATION

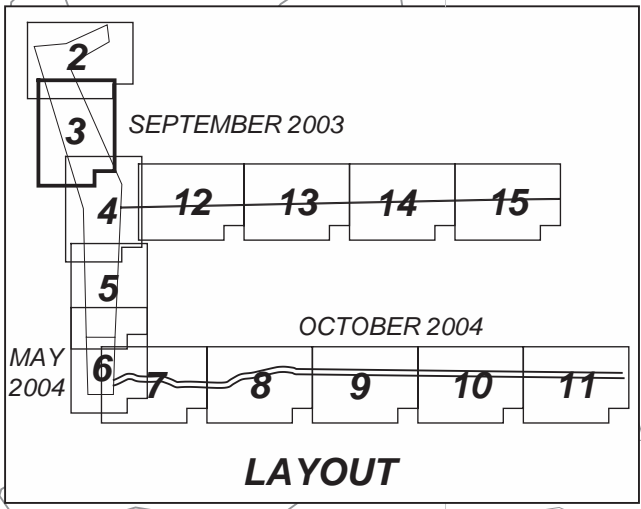
MATTISKE CONSULTING PTY LTD
 28 Central Road, Kalamunda ACN 063 507 175
 Phone: 9257 1625 Fax: 9257 1640

Author: E M Mattiske MCPL Ref: URS0404/75/04 Scale: 1:25 000
 Drawn: CAD Resources - www.cadresources.com.au Figure: **2**
 Tel: (08) 9246 3242 - Fax: (08) 9246 3202
 CAD Ref: j1031_v02.dgn Date: Feb 2005 Rev: B A3



PRIORITY SPECIES

- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospina* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidentis* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

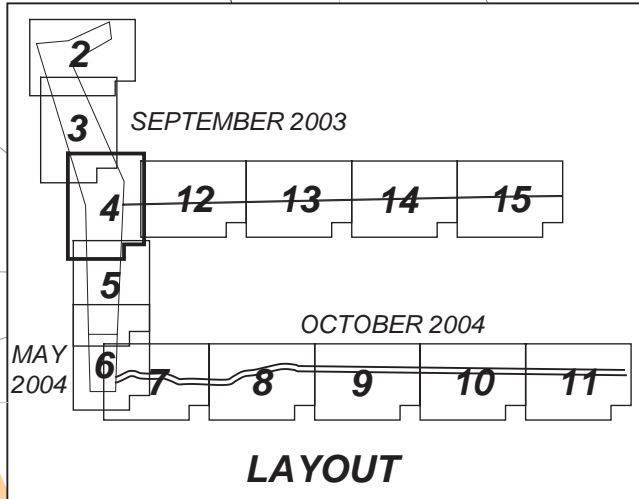
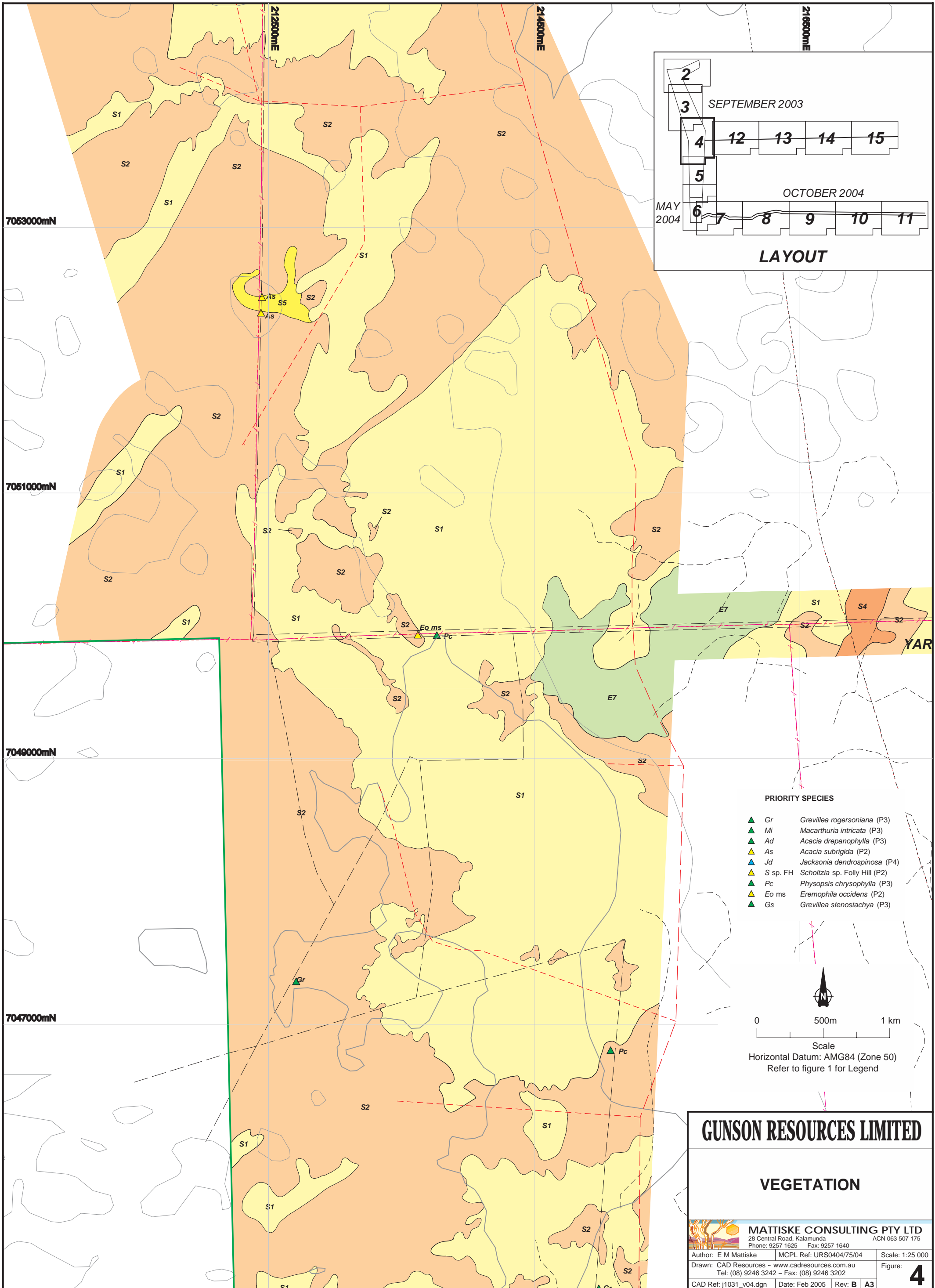


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VEGETATION

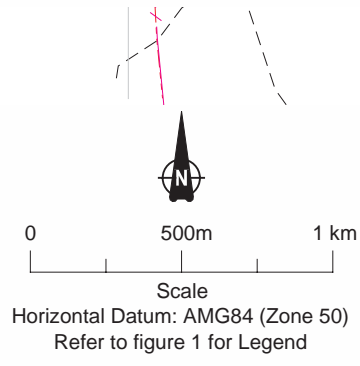
MATTISKE CONSULTING PTY LTD
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 Phone: 9257 1625 Fax: 9257 1640

Author: E M Mattiske	MCPL Ref: URS0404/75/04	Scale: 1:25 000
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CAD Ref: j1031_v03.dgn	Date: Feb 2005	Rev: B A3



PRIORITY SPECIES

- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinosa* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

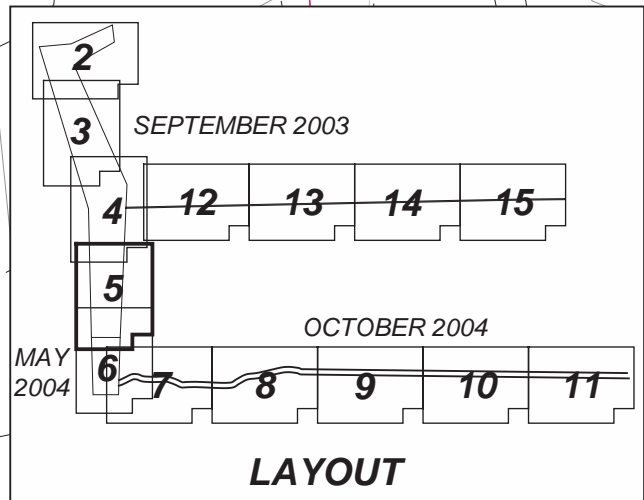
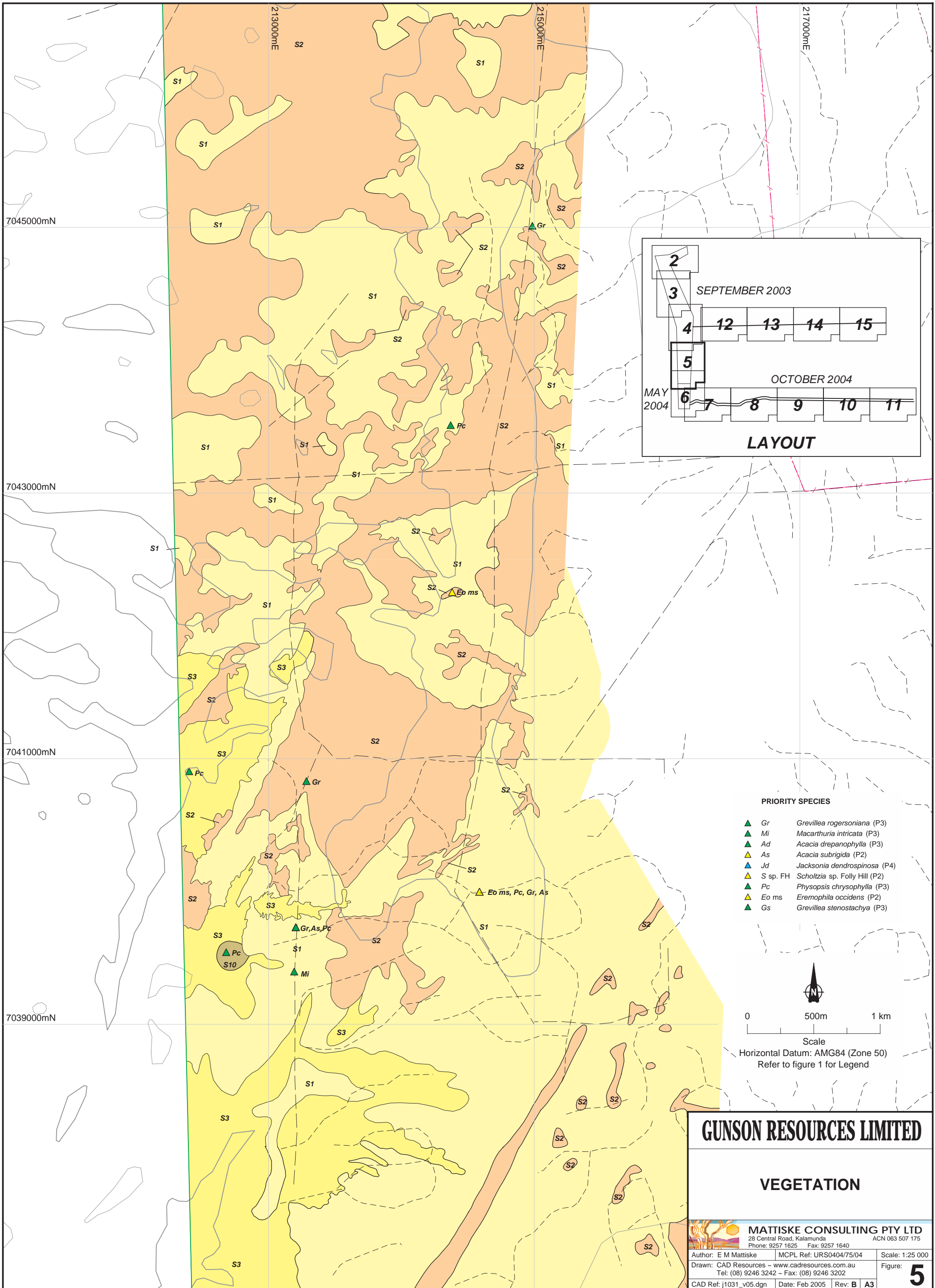


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VEGETATION

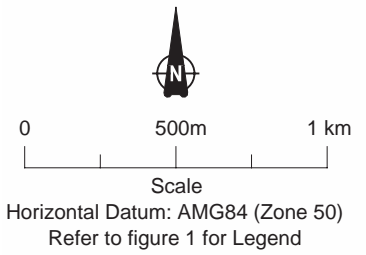
MATTISKE CONSULTING PTY LTD
 28 Central Road, Kalamunda ACN 063 507 175
 Phone: 9257 1625 Fax: 9257 1640

Author: E M Mattiske	MCPL Ref: URS0404/75/04	Scale: 1:25 000
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CAD Ref: j1031_v04.dgn	Date: Feb 2005	Rev: B A3



PRIORITY SPECIES

- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinoso* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

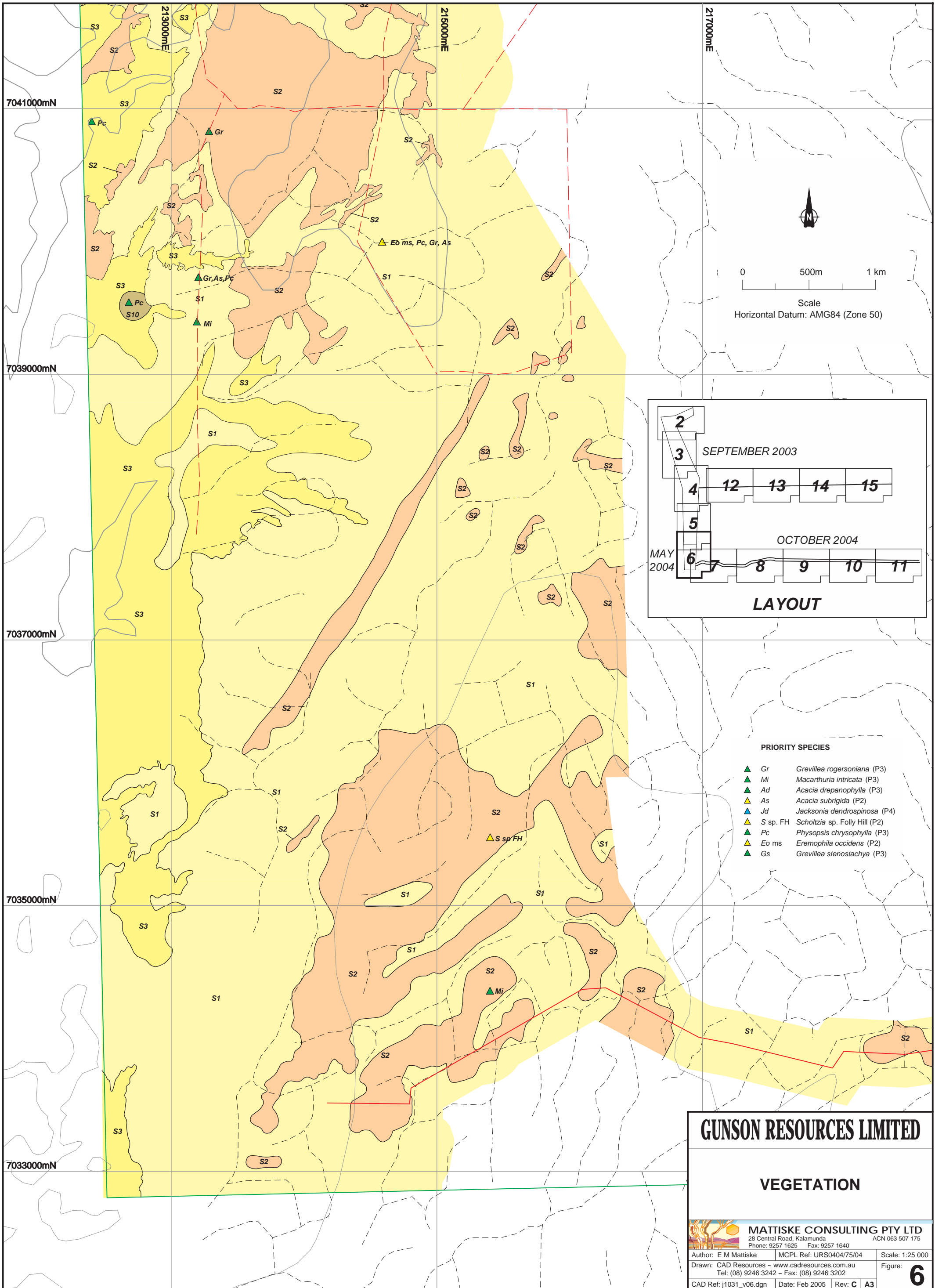


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VEGETATION

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Author: E M Matiske	MCPL Ref: URS0404/75/04	Scale: 1:25 000
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CAD Ref: j1031_v05.dgn	Date: Feb 2005	Rev: B A3



PRIORITY SPECIES

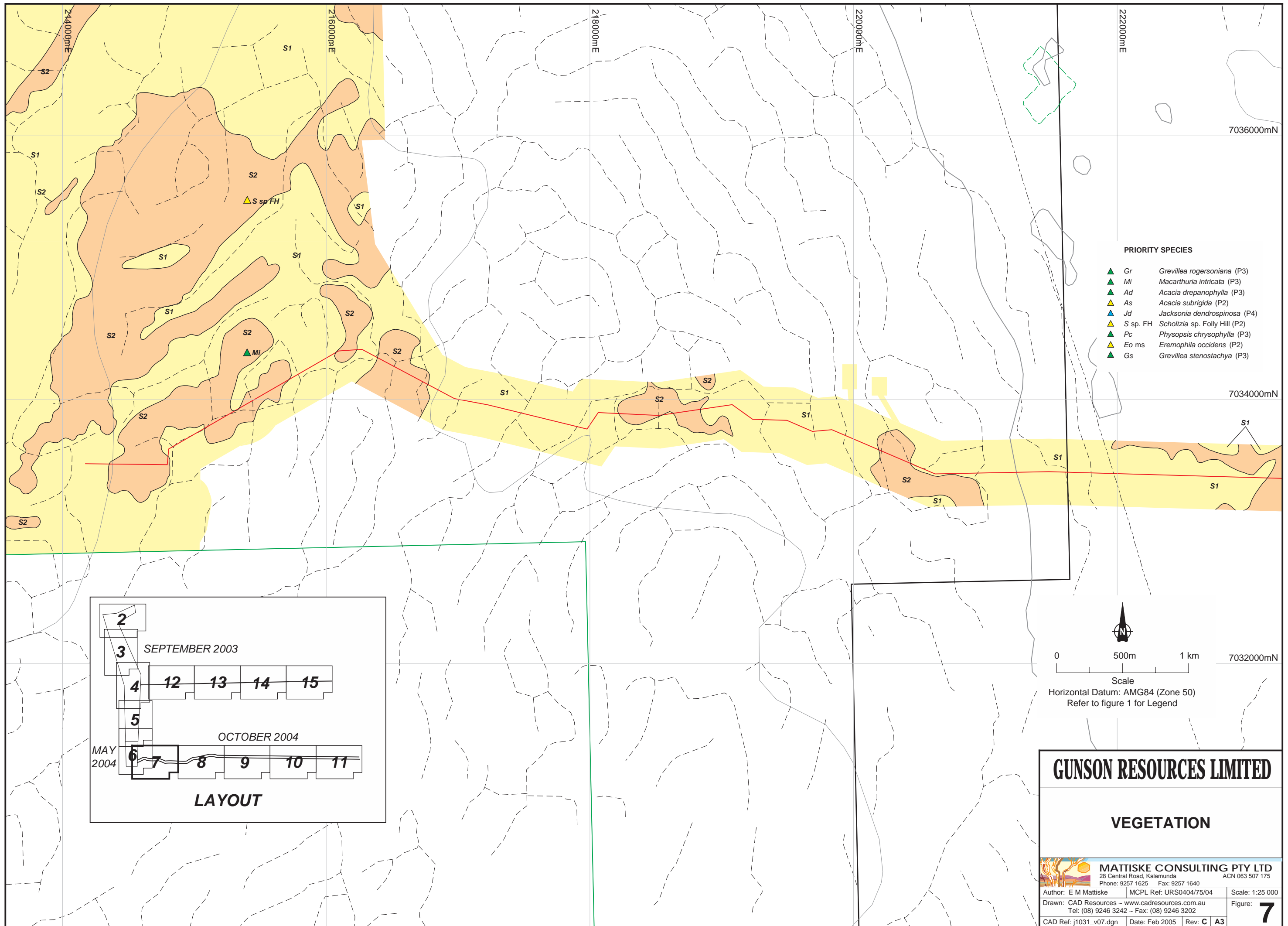
- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinoso* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

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VEGETATION

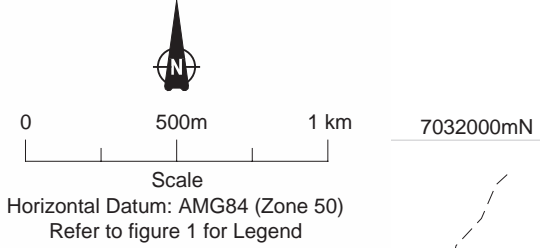
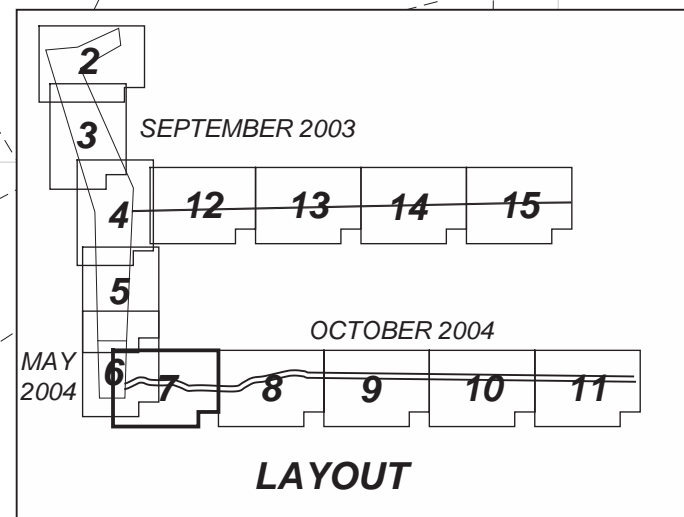
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Author: E M Mattiske MCPL Ref: URS0404/75/04 Scale: 1:25 000
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 CAD Ref: j1031_v06.dgn Date: Feb 2005 Rev: C A3



PRIORITY SPECIES

- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinosa* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

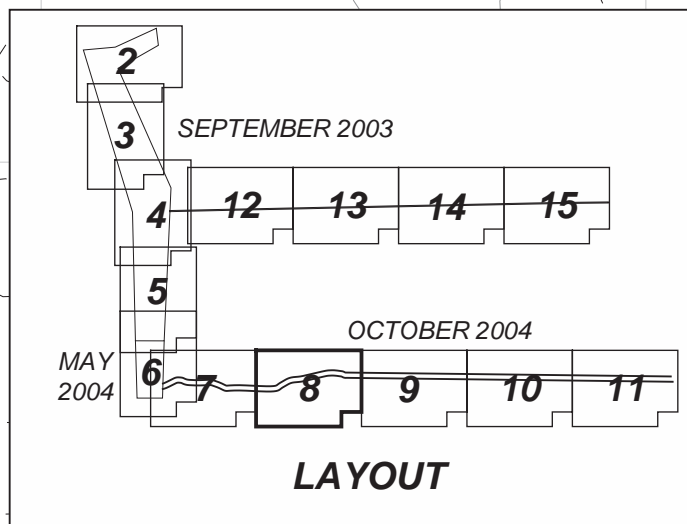
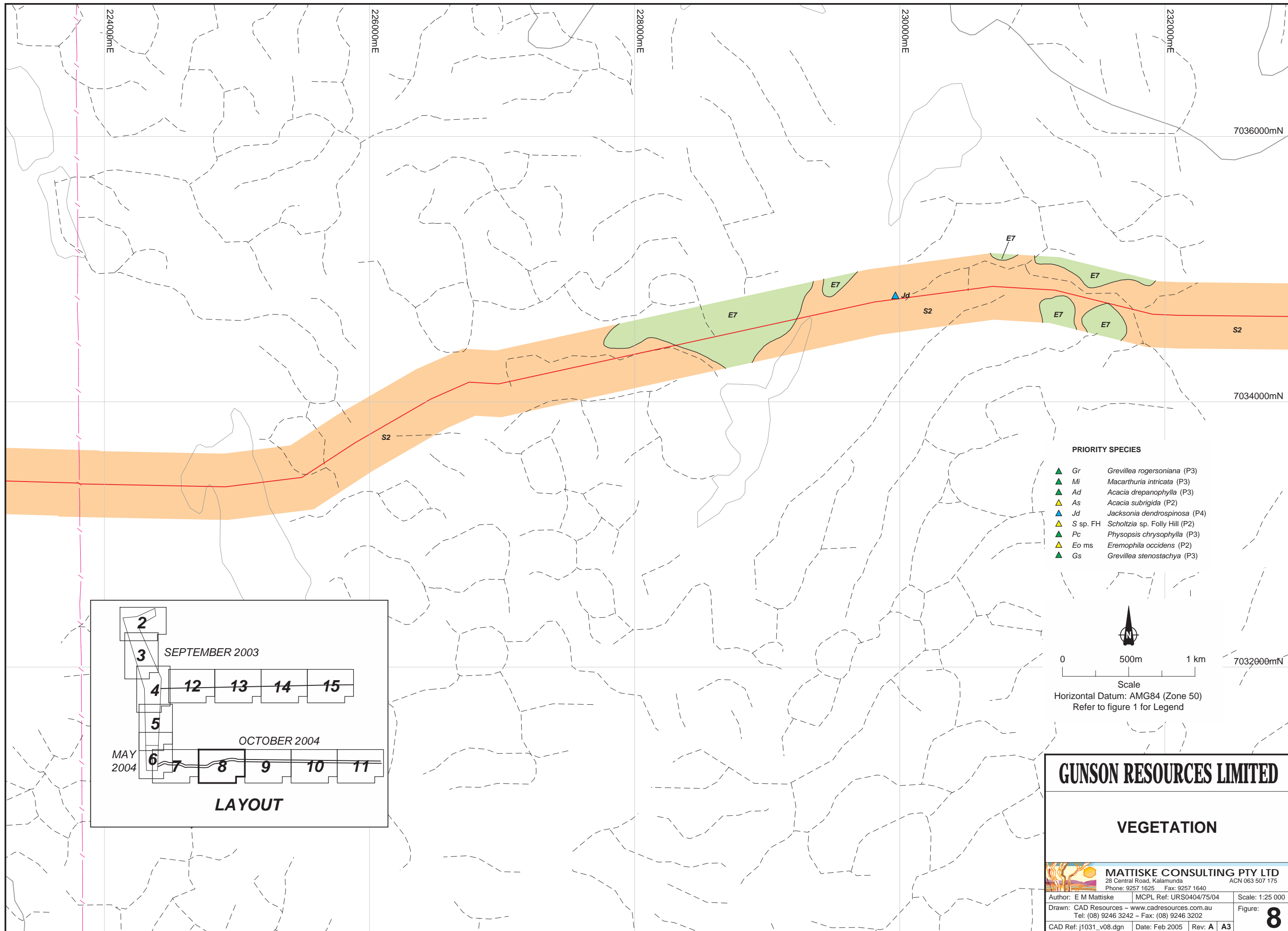


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VEGETATION

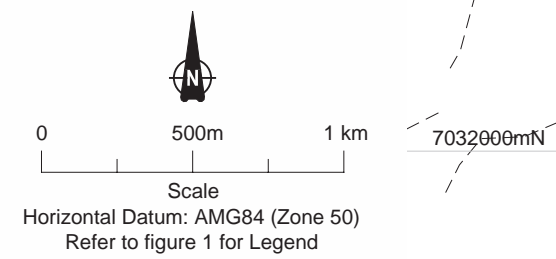
MATTISKE CONSULTING PTY LTD
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Author: E M Mattiske	MCPL Ref: URS0404/75/04	Scale: 1:25 000
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CAD Ref: j1031_v07.dgn	Date: Feb 2005	Rev: C A3



PRIORITY SPECIES

- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinosa* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidentis* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

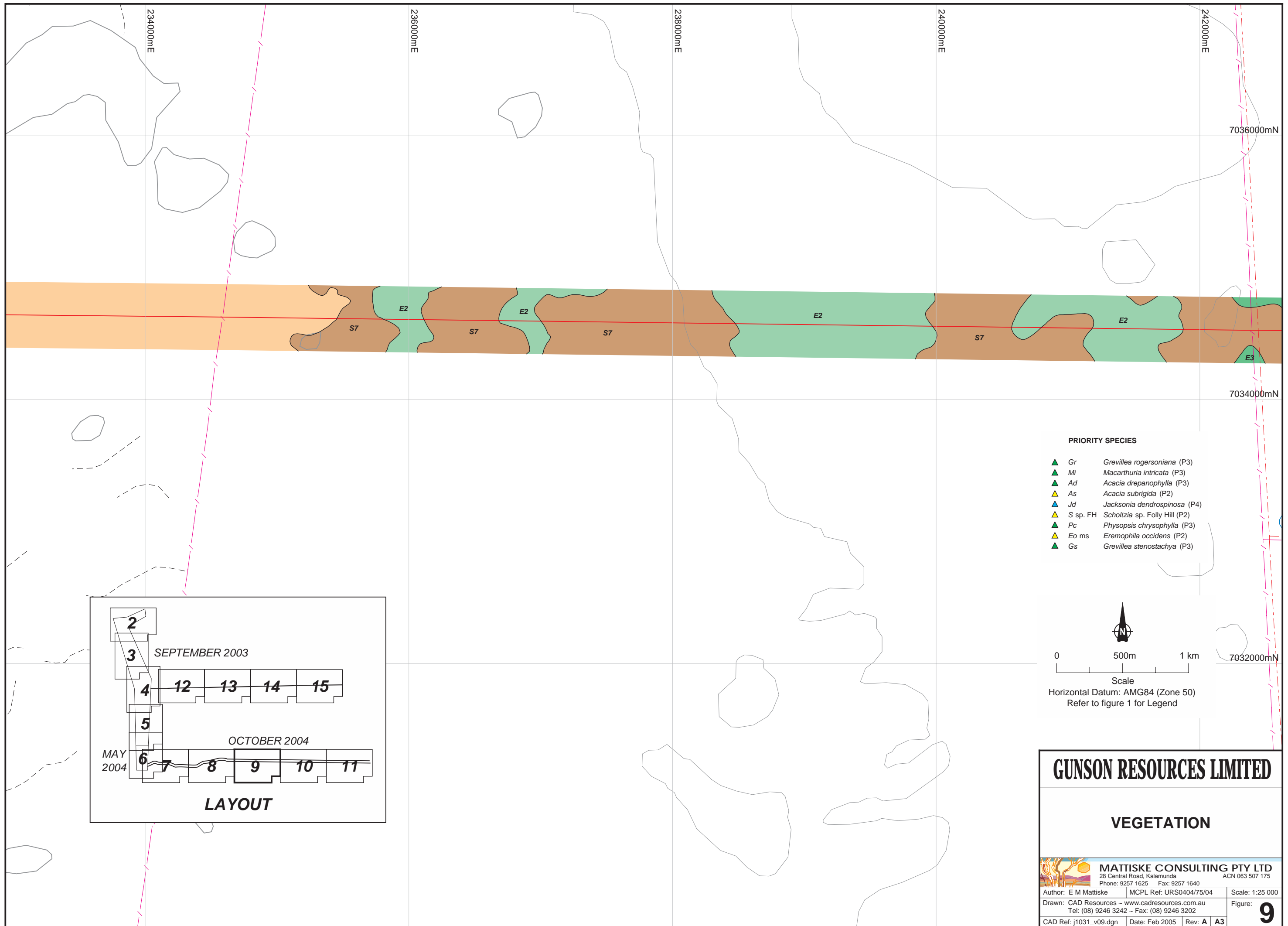


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VEGETATION

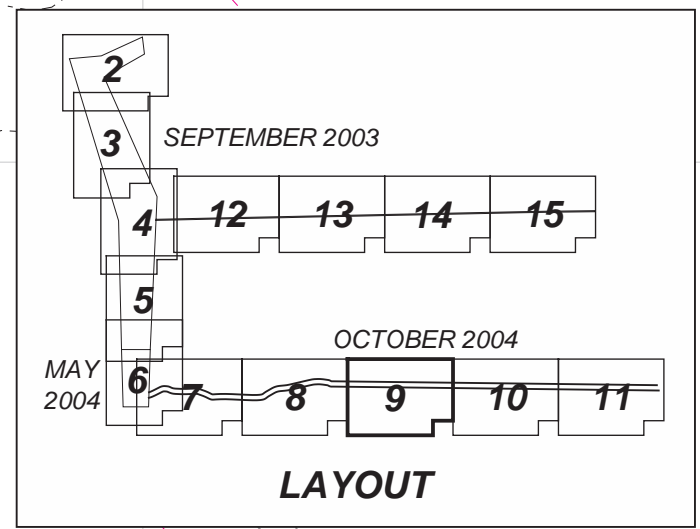
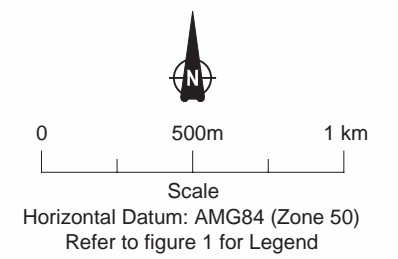
MATTISKE CONSULTING PTY LTD
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Author: E M Mattiske MCPL Ref: URS0404/75/04 Scale: 1:25 000
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 CAD Ref: j1031_v08.dgn Date: Feb 2005 Rev: A A3



PRIORITY SPECIES

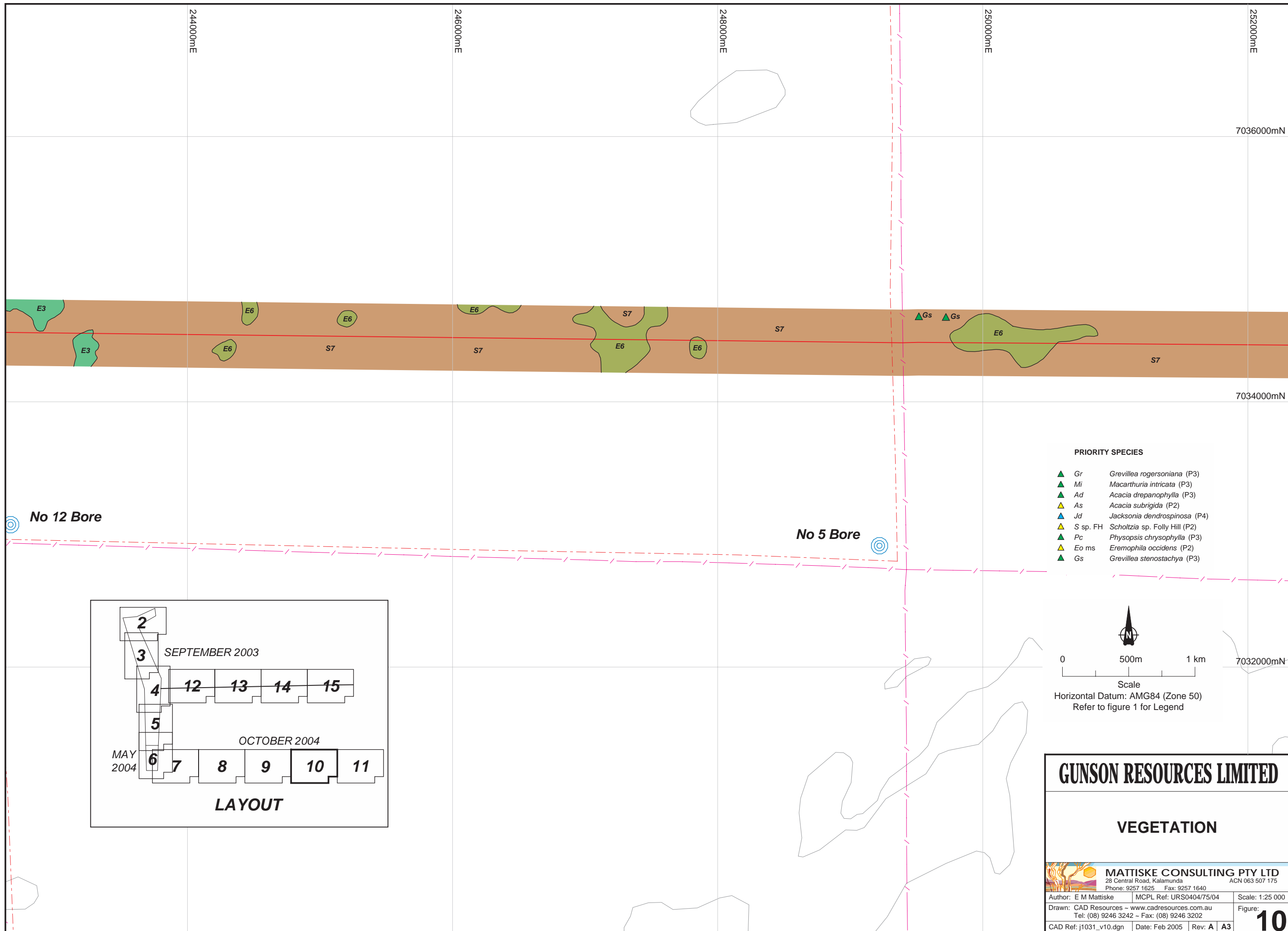
- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinosa* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)



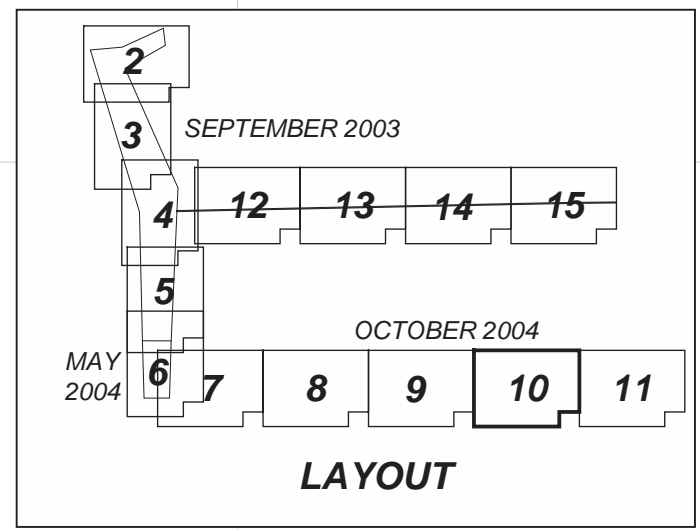
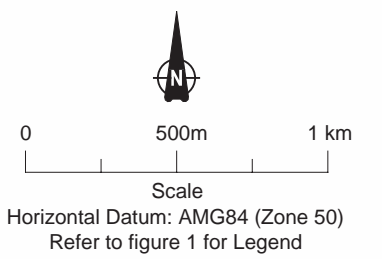
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VEGETATION

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Author: E M Mattiske	MCPL Ref: URS0404/75/04	Scale: 1:25 000
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CAD Ref: j1031_v09.dgn	Date: Feb 2005	Rev: A A3



- PRIORITY SPECIES**
- ▲ Gr *Grevillea rogersoniana* (P3)
 - ▲ Mi *Macarthuria intricata* (P3)
 - ▲ Ad *Acacia drepanophylla* (P3)
 - ▲ As *Acacia subrigida* (P2)
 - ▲ Jd *Jacksonia dendrospinosa* (P4)
 - ▲ S sp. FH *Schoitzia* sp. Folly Hill (P2)
 - ▲ Pc *Physopsis chrysophylla* (P3)
 - ▲ Eo ms *Eremophila occidentens* (P2)
 - ▲ Gs *Grevillea stenostachya* (P3)

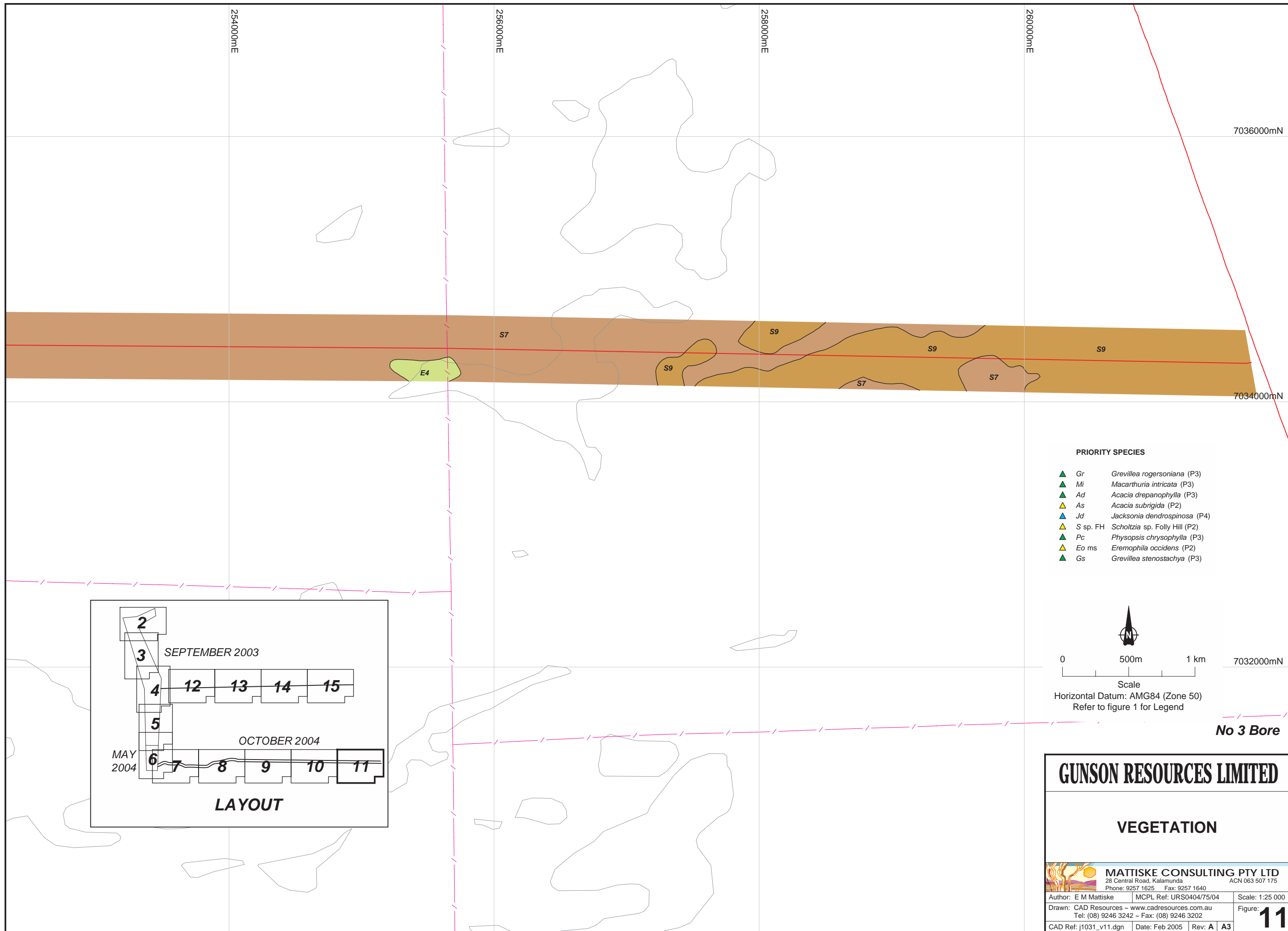


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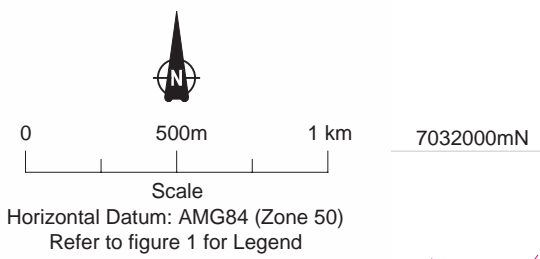
VEGETATION

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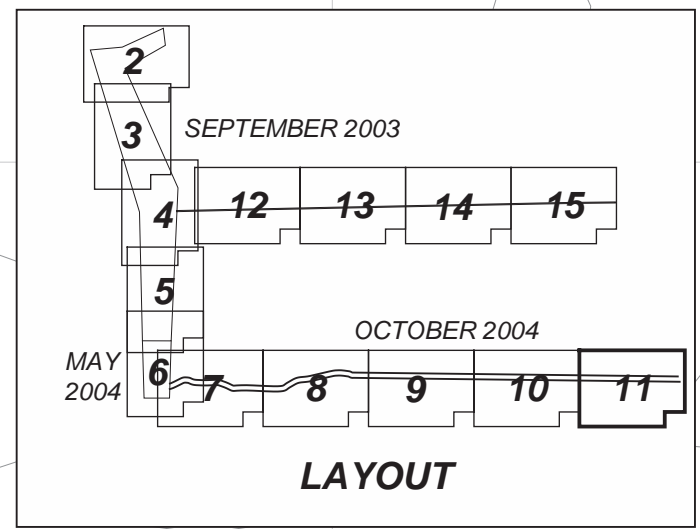
Author: E M Mattiske	MCPL Ref: URS0404/75/04	Scale: 1:25 000
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Tel: (08) 9246 3242 - Fax: (08) 9246 3202		
CAD Ref: j1031_v10.dgn	Date: Feb 2005	Rev: A A3



- PRIORITY SPECIES**
- ▲ Gr *Grevillea rogersoniana* (P3)
 - ▲ Mi *Macarthuria intricata* (P3)
 - ▲ Ad *Acacia drepanophylla* (P3)
 - ▲ As *Acacia subrigida* (P2)
 - ▲ Jd *Jacksonia dendrospinosa* (P4)
 - ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
 - ▲ Pc *Physopsis chrysophylla* (P3)
 - ▲ Eo ms *Eremophila occidens* (P2)
 - ▲ Gs *Grevillea stenostachya* (P3)



No 3 Bore

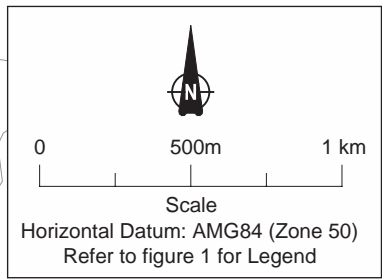


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CAD Ref: j1031_v11.dgn	Date: Feb 2005	Rev: A A3



7052000mN

219000mE

221000mE

223000mE

225000mE

PRIORITY SPECIES

- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinosa* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

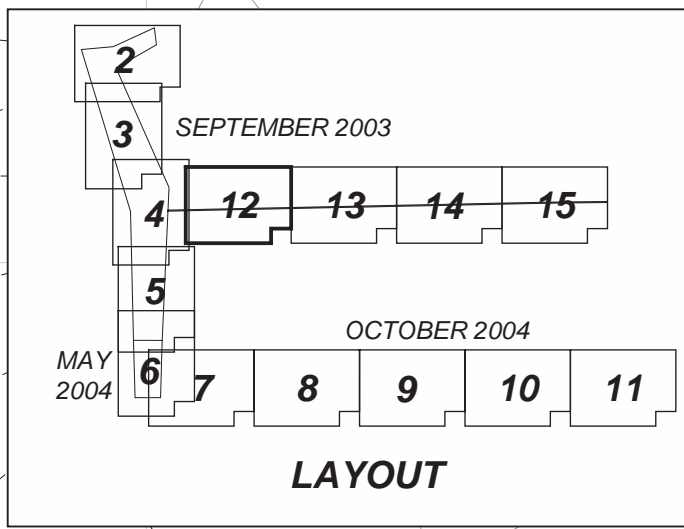
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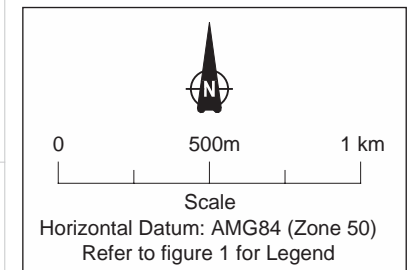
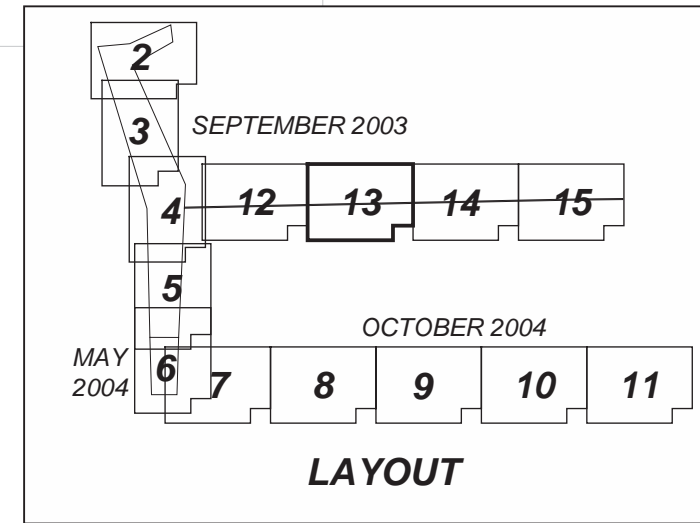
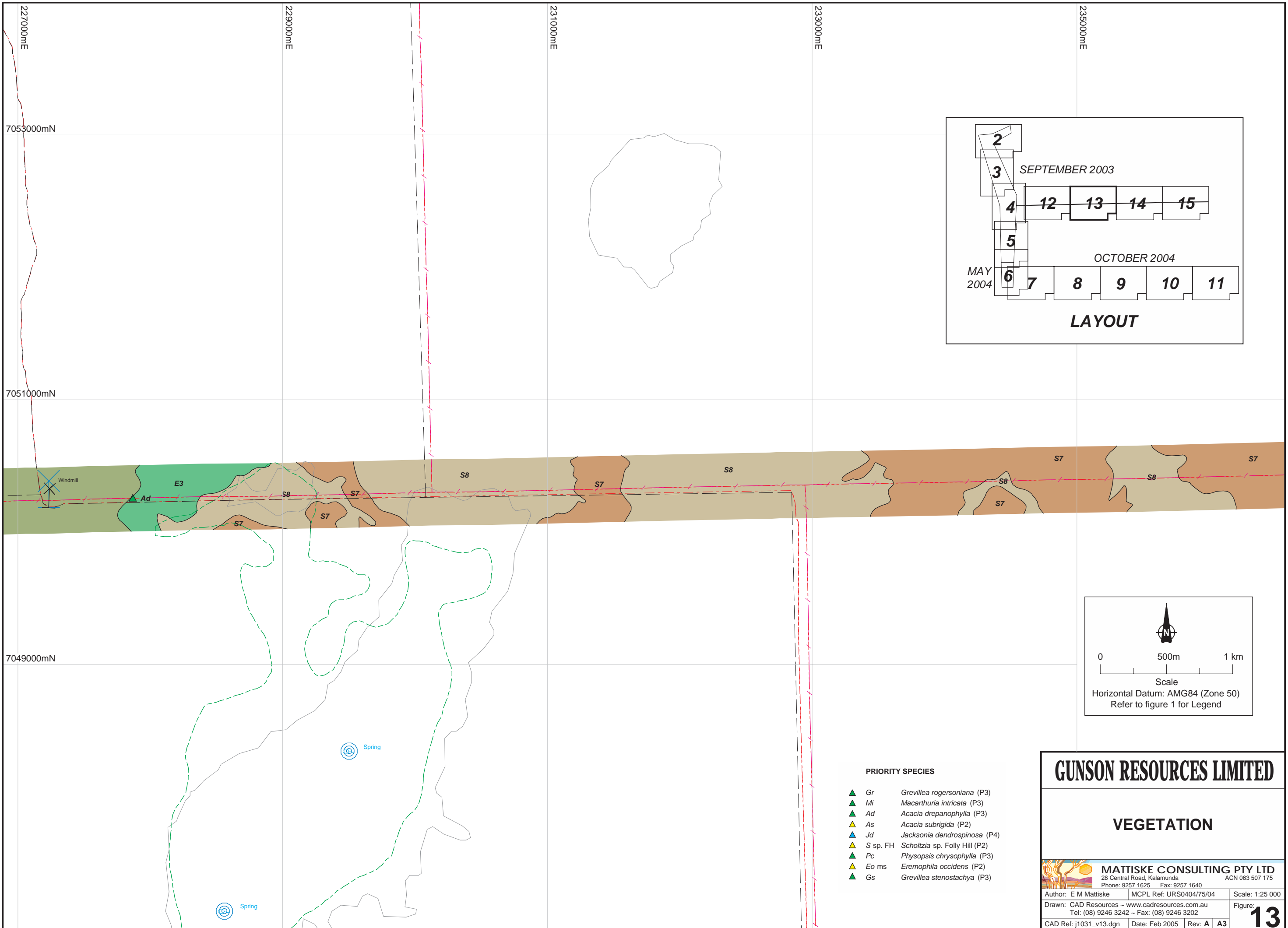
E5

S2



⊙ No 9 Tank

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MATTISKE CONSULTING PTY LTD <small>28 Central Road, Kalamunda ACN 063 507 175</small> <small>Phone: 9257 1625 Fax: 9257 1640</small>		
Author: E M Matiske	MCPL Ref: URS0404/75/04	Scale: 1:25 000
Drawn: CAD Resources - www.cadresources.com.au		Figure: 12
Tel: (08) 9246 3242 - Fax: (08) 9246 3202		
CAD Ref: j1031_v12.dgn	Date: Feb 2005	Rev: A A3



PRIORITY SPECIES

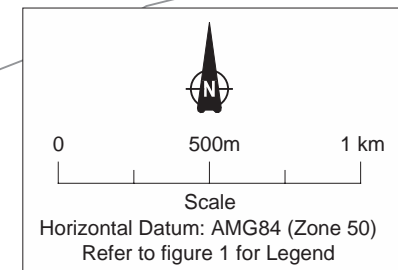
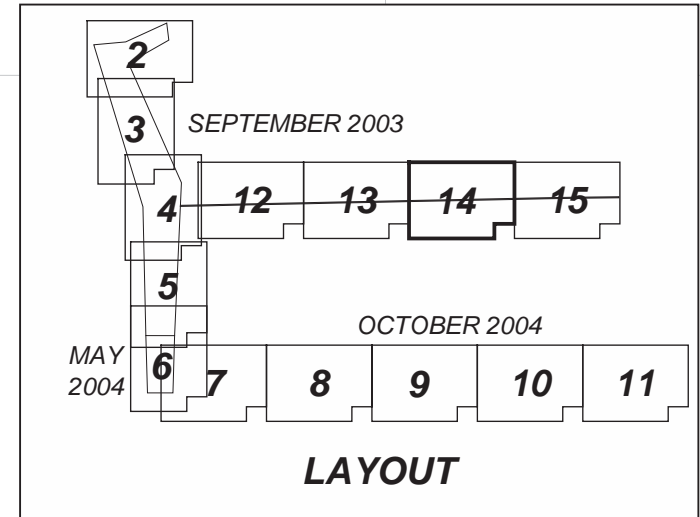
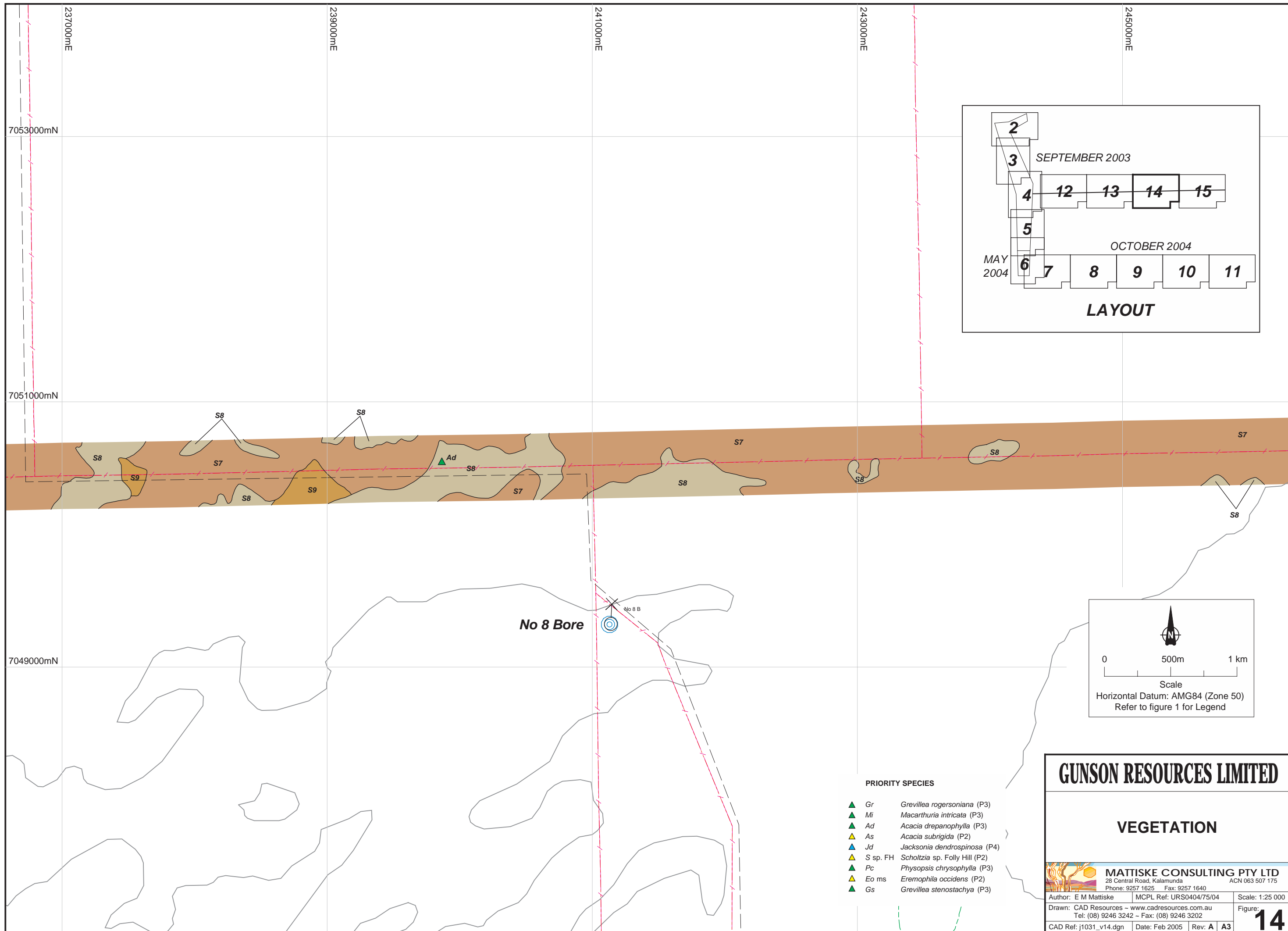
- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinosa* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

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Author: E M Mattiske	MCPL Ref: URS0404/75/04	Scale: 1:25 000
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CAD Ref: j1031_v13.dgn	Date: Feb 2005	Rev: A A3



PRIORITY SPECIES

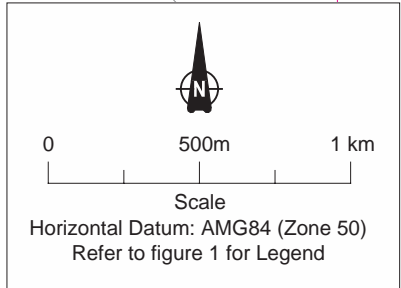
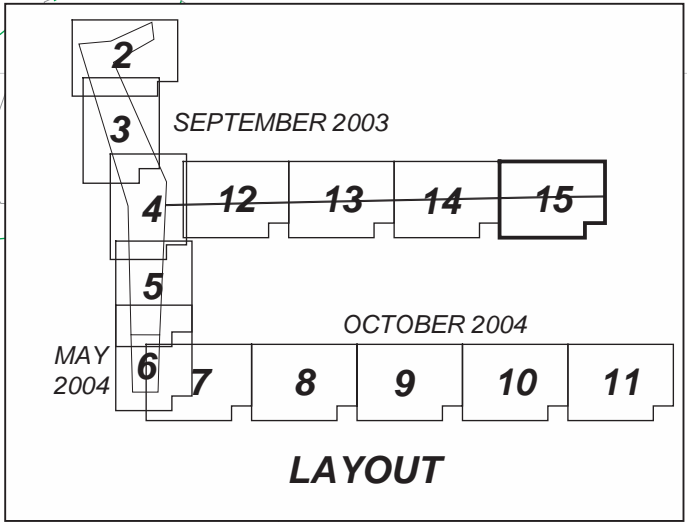
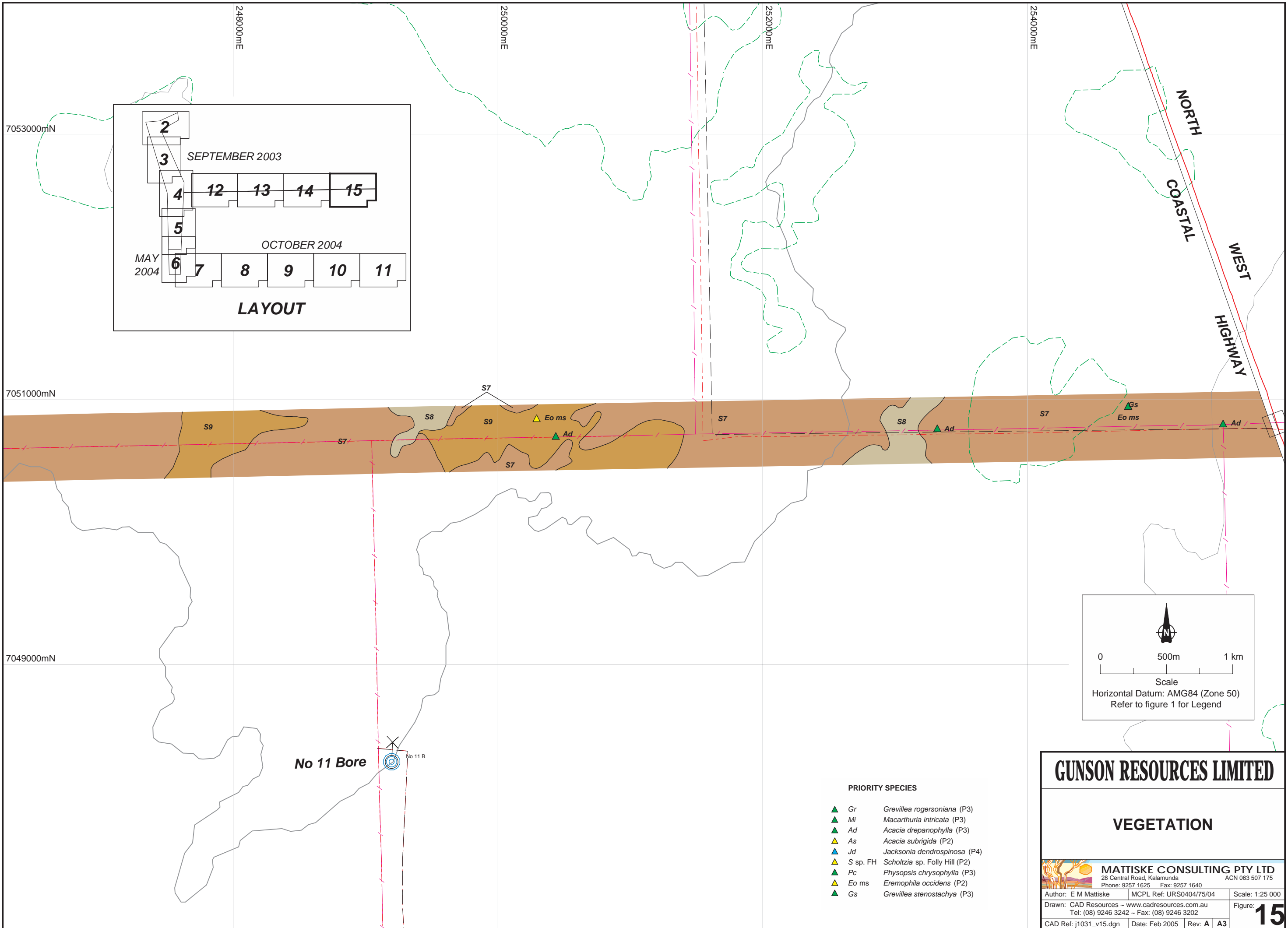
- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinoso* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidentens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

GUNSON RESOURCES LIMITED

VEGETATION

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Drawn: CAD Resources - www.cadresources.com.au	Tel: (08) 9246 3242 - Fax: (08) 9246 3202	Figure: 14
CAD Ref: j1031_v14.dgn	Date: Feb 2005	Rev: A A3



PRIORITY SPECIES

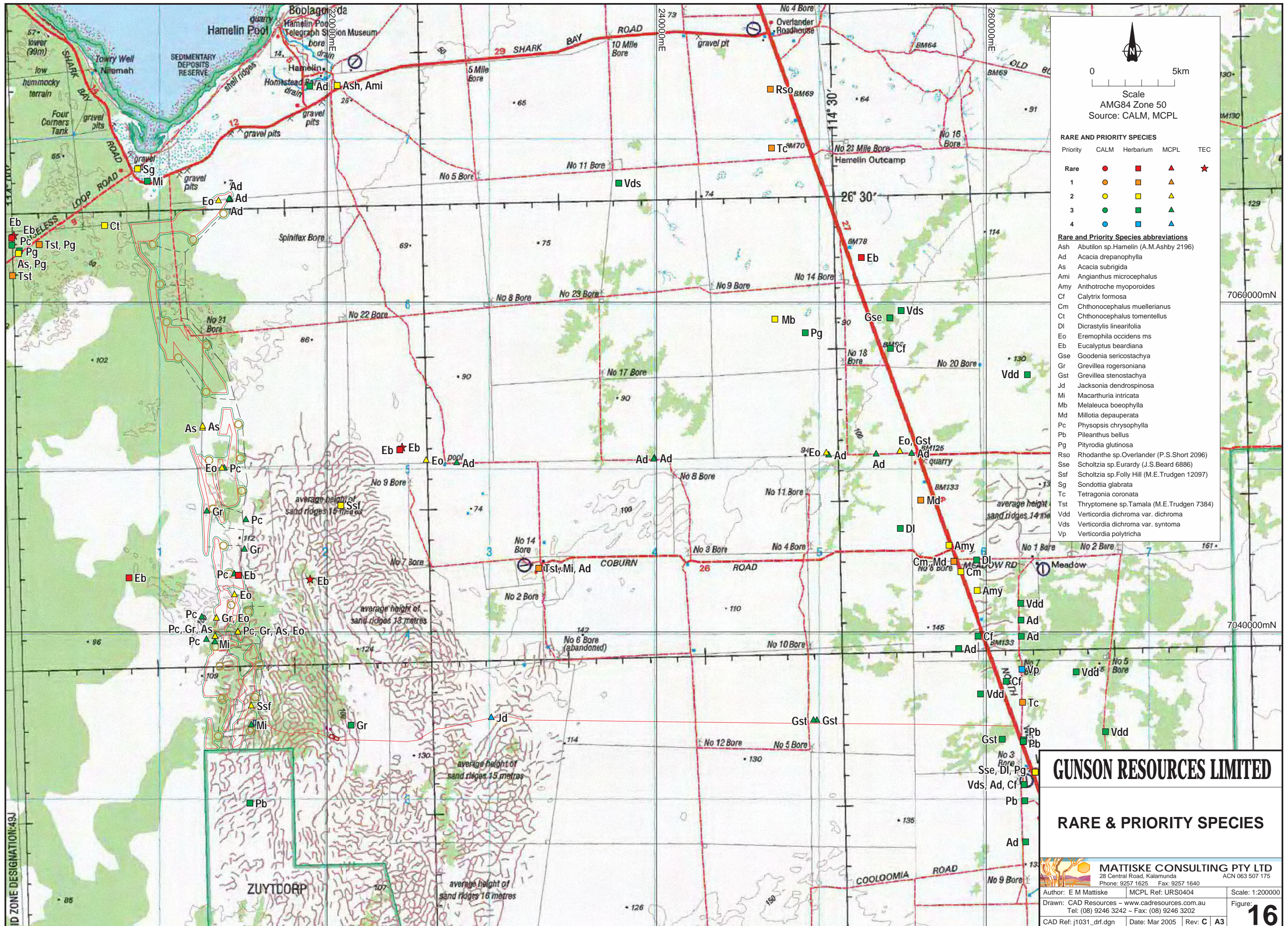
- ▲ Gr *Grevillea rogersoniana* (P3)
- ▲ Mi *Macarthuria intricata* (P3)
- ▲ Ad *Acacia drepanophylla* (P3)
- ▲ As *Acacia subrigida* (P2)
- ▲ Jd *Jacksonia dendrospinosa* (P4)
- ▲ S sp. FH *Scholtzia* sp. Folly Hill (P2)
- ▲ Pc *Physopsis chrysophylla* (P3)
- ▲ Eo ms *Eremophila occidentens* (P2)
- ▲ Gs *Grevillea stenostachya* (P3)

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CAD Ref: j1031_v15.dgn	Date: Feb 2005	Rev: A A3



Scale
AMG84 Zone 50
Source: CALM, MCPL

RARE AND PRIORITY SPECIES

Priority	CALM	Herbarium	MCPL	TEC
Rare	●	■	▲	★
1	●	■	▲	★
2	●	■	▲	★
3	●	■	▲	★
4	●	■	▲	★

- Rare and Priority Species abbreviations**
- Ash Abutilon sp. Hamelin (A.M. Ashby 2196)
 - Ad Acacia drepanophylla
 - As Acacia subrigida
 - Ami Angianthus microcephalus
 - Amy Anthrotroche myoporoides
 - Cf Calytrix formosa
 - Cm Chthonocephalus muellerianus
 - Ct Chthonocephalus tomentellus
 - DI Dicrostylis linearifolia
 - Eo Eremophila occidentalis ms
 - Eb Eucalyptus beardiana
 - Gse Goodenia sericostachya
 - Gr Grevillea rogersoniana
 - Gst Grevillea stenostachya
 - Jd Jacksonia dendrospinosa
 - Mi Macarthuria intricata
 - Mb Melaleuca boeophylla
 - Md Millotia depauperata
 - Pc Physopsis chrysophylla
 - Pb Pileanthus bellus
 - Pg Pityrodia glutinosa
 - Rso Rhodanthe sp. Overlander (P.S. Short 2096)
 - Sse Scholtzia sp. Euryard (J.S. Beard 6886)
 - Ssf Scholtzia sp. Folly Hill (M.E. Trudgen 12097)
 - Sg Sondotia glabrata
 - Tc Tetragonia coronata
 - Tst Thryptomene sp. Tamala (M.E. Trudgen 7384)
 - Vdd Verticordia dichroma var. dichroma
 - Vds Verticordia dichroma var. syntoma
 - Vp Verticordia polytricha

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RARE & PRIORITY SPECIES

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 CAD Ref: j1031_drf.dgn Date: Mar 2005 Rev: C A3