
**FLORA AND VEGETATION SURVEY OF
THE PROPOSED CLEARING AREA FOR
RED HILL QUARRY - HANSON**

Prepared for:
Hanson Construction Materials Pty Ltd

Prepared by:
Mattiske Consulting Pty Ltd

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MATTISKE CONSULTING PTY LTD

TABLE OF CONTENTS

	Page
1. SUMMARY.....	1
2. INTRODUCTION.....	2
2.1 Climate.....	2
2.2 Landform and Soils.....	2
2.3 Regional and Local Vegetation.....	2
2.4 Rare and Priority Flora.....	5
2.5 Threatened Ecological Communities (TEC's).....	5
2.6 Declared Plant Species.....	5
2.7 Clearing of Native Vegetation.....	6
3. OBJECTIVES.....	7
4. METHODS.....	7
4.1 Flora.....	7
4.2 Vegetation Mapping.....	8
5. RESULTS.....	8
5.1 Potential Rare and Priority and Threatened Flora.....	8
5.2 Flora.....	9
5.3 Recorded Rare and Priority Flora.....	10
5.4 Exotic (introduced) species.....	10
5.5 Vegetation.....	13
5.6 Vegetation Condition.....	15
5.7 Review of Significance of Vegetation.....	15
6. DISCUSSION.....	16
7. RECOMMENDATIONS.....	18
8. ACKNOWLEDGEMENTS.....	18
9. LIST OF PERSONNEL.....	18
10. REFERENCES.....	19

TABLES

- 1: Landforms and Soils Expected to Occur in the Red Hill Quarry Project Area (from Churchward and McArthur 1980)
- 2: Representation of Vegetation Complexes Expected to Occur in the Red Hill Quarry Project Area (based on Mattiske and Havel 1998 and Conservation Commission of Western Australia 2004)
- 3: Exotic (introduced) species recorded in the Red Hill Quarry Project Area
- 4: Location of Priority Species in the Red Hill Quarry Project Area

FIGURES

- 1: Hanson Quarry - Locality
- 2: Hanson Quarry - Aerial Photography
- 3: Hanson Quarry - Vegetation
- 4: Hanson Quarry - Priority Species

APPENDICES

- A1: Definition of Rare and Priority Flora Species (Department of Environment and Conservation 2008a)
- A2: Definition of Threatened Flora Species (*Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth])
- A3: Definition of Threatened Ecological Communities (Department of Environment and Conservation 2008d)
- A4: Definition of Priority Ecological Communities (Department of Environment and Conservation 2008d)
- A5: Definition of Standard Control Codes for Declared Plant Species in Western Australia (Department of Agriculture and Food 2008)
- B: Potential Rare and Priority and Threatened Flora in the Red Hill Quarry Project Area
- C: Summary of Vascular Plant Species recorded at Red Hill Quarry 2006/2007
- D: Summary of Vascular Plant species recorded by site at Red Hill Quarry 2006/2007
- E: Summary of Vascular Plant species by vegetation community type at Red Hill Quarry 2006/2007
- F: Comparison of Vascular Plant species on the Darling Scarp in the local region near the Red Hill Quarry
- G: Summary of Most Common Vascular Plant Species Recorded at Red Hill Quarry 2006/2007
- H: GPS Site Locations at Red Hill Quarry 2006/2007
- I: Location of introduced (exotic) species at Red Hill Quarry 2006/2007

1. SUMMARY

Mattiske Consulting Pty Ltd was commissioned in 2006 by Hanson Construction Materials Pty Ltd (Hanson) to define the botanical values and the condition of the vegetation of the proposed clearing site in Hanson Red Hill Quarry, Toodyay Rd, Red Hill (Lot 11). The project area was surveyed over three months in April, October and December 2006. Initially a small section was surveyed just north of the current Red Hill operations and then a wider area was surveyed in October and December 2006. In addition a follow-up survey was conducted in winter 2007 to target ephemerals which germinate following rains. Consequently the sampling was spread over several seasons.

A total of 349 taxa (species, subspecies and varieties) from 55 families, 160 genera and species were recorded within the Red Hill Quarry Project Area (Appendix C). A total of 25 introduced (exotic) taxa were recorded within the Red Hill Quarry Project Area. One of these, *Moraea flaccida*, is listed as a Priority 1 Declared Plant species pursuant to section 37 of the *Agricultural and Related Resources Protection Act 1976* [WA] and according to the Western Australian Department of Agriculture and Food (2008).

There was a substantial overlap of the species present within the Red Hill Quarry Project Area with John Forrest National Park, Darling Range (Shire of Kalamunda) reserves and other reserves in the local region (E. M. Mattiske and Associates 1991; Armstrong 1993; Markey 1997). Approximately 50% and 60% respectively of the taxon recorded in the Red Hill Quarry Project Area were also recorded in the John Forrest National Park and Darling Range (Shire of Kalamunda) reserves (E. M. Mattiske and Associates 1991; Armstrong 1993).

The review of the Department of Environment and Conservation (2008a) databases highlighted a range of potential Rare and Priority flora species that may occur in the Red Hill Quarry Project Area. This review indicated a total of ten Rare, three Priority 1, six Priority 2, twenty-nine Priority 3 and nineteen Priority 4 flora species that may be in the area near the Red Hill Quarry Project Area. Of these species listed, the following species have been recorded historically in or near the Project Area: *Halgania corymbosa* (P3), *Darwinia pimelioides* (P4), *Calothamnus ruprestris* (P4) and *Templetonia drummondii* (P4). Many of the other species occur on the fringes of the Swan Coastal Plain and in the western fringes of the Darling Ranges. Of the potential species highlighted in the database review, five are Endangered and four are Vulnerable pursuant to s179 of the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth].

No Declared Rare species pursuant to Subsection 2 of Section 23F of the *Wildlife Conservation Act 1950* [WA] and listed by the Department of Environment and Conservation (2008a) were located during the survey of the Red Hill Quarry Project Area.

No Endangered or Vulnerable plant taxa, pursuant to s179 of the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth] were located during the survey of the Red Hill Quarry Project Area. Three Priority species were recorded during the survey: *Acacia oncinophylla* subsp. *oncinophylla* (P3), *Halgania corymbosa* (P3) and *Calothamnus rupestris* (P4). None of these Priority flora species are restricted to the Red Hill Quarry Project Area. Good populations are located within the Hanson lease outside the proposed clearing areas and in other areas within the northern Jarrah forest (E. M. Mattiske and Associates 1991; Armstrong 1993).

The survey area crosses three vegetation complexes as defined in 1:250 000 mapping by Mattiske and Havel (1998). The Darling Scarp vegetation complex is restricted to the western fringes of the Darling Ranges and is less well represented in the conservation estate (with 7.86% represented in the formal and informal reserves, based on data in the Forest Management Plan, Conservation Commission 2004). The Helena 2 vegetation complex is restricted to the deeply incised valley systems on the western fringes of the Darling Ranges and is relatively well represented in the conservation estate (with 29.93% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004). The Dwellingup 2 vegetation complex occurs on the upper lateritic hills and ranges and is relatively well represented in the conservation estate (with 23.05% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004).

These vegetation complexes are well reserved and not critically threatened due to clearing. Approximately 33% of the Darling Scarp (DS), 85% of the Dwellingup 2 (D2) and 72% of the Helena 2 (He2) vegetation complexes remain compared with the extent pre-European settlement, based on data in the Forest Management Plan (Conservation Commission 2004).

At a local scale of mapping, nine site-vegetation types were defined and mapped. All site-vegetation types have been recorded in the northern Jarrah forest previously and many are represented in the adjacent Darling Range Regional Park and John Forrest National Park (south of the Project Area) (E.M. Mattiske and Associates 1991; Heddle *et al.* 1980b).

The condition of the vegetation varied from modified (includes some rehabilitation areas) to excellent. No plant communities listed as Threatened under *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth] were located within the survey area. No plant communities listed as threatened ecological communities by the Department of Environment and Conservation (2008d) or the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth] were located within the survey area.

2. INTRODUCTION

Mattiske Consulting Pty Ltd was commissioned in 2006 by Hanson to define the botanical values and the condition of the vegetation of the proposed clearing site in Hanson Red Hill Quarry, Toodyay Rd, Red Hill. The project area was surveyed over three months in April, October and December 2006. Initially a small section was surveyed just north of the current Red Hill operations and then a wider area was surveyed in October and December 2006. In addition a follow-up survey was conducted in winter 2007 to target ephemerals which germinate following rains. Consequently the sampling was spread over several seasons.

2.1 Climate

The Red Hill Quarry Project Area experiences a dry Mediterranean climate, with winter rainfall of approximately 600 - 700 mm and 5-6 dry months per year (Beard 1990). Rainfall may be greater as the survey area occurs within 13 km of the Darling Scarp, where uplift from the scarp can increase rainfall (Gentili, 1989).

In the vegetation-mapping project for the Regional Forest Agreement, Havel and Mattiske (1998) investigated the relationships between the climate zones in the southwest forest region and the resulting vegetation. Havel (2000) later developed this concept of climatic zones in relation to vegetation. These studies led to the definition of a series of climatic zones and the vegetation within the survey area occurs in the "semiarid" zone as developed by Mattiske and Havel (1998) and as defined by Havel (2000).

2.2 Landform and Soils

The Red Hill Quarry Project Area occurs on the lateritic capped Archaean granite and metamorphic rocks of the Darling Plateau. Three landforms and soil units are represented in the Red Hill Quarry Project Area (Table 1) (Churchward and McArthur 1980).

2.3 Regional and Local Vegetation

The Red Hill Quarry Project Area occurs in the Darling Botanical District of the South-western Botanical Province as recognized by Diels (1906) and later developed by Gardner (1942) and Beard (1979, 1980). The distribution of plant communities in the South-western Botanical Province are controlled by climate, landforms and soils (eg Diels 1906; Williams 1932, 1942; Speck 1952, 1958; Lange 1960; Churchill 1961, 1968; Smith 1974; Seddon 1972; Havel 1968, 1975a, 1975b; Heddle *et al.* 1980a; Beard 1981, Mattiske and Havel 1998, Havel 2000).

Table 1: Landforms and Soils Expected to Occur in the Red Hill Quarry Project Area (from Churchward and McArthur 1980)

Landform Type	Description
DS	Darling Scarp Very steep slopes with shallow red and yellow earths and much rock outcrop.
D	Dwellingup Gently undulating landscape with duricrust on ridges; sands and gravels in shallow depressions.
H	Helena Very deeply incised valleys with steep rocky slopes and some shallow red or yellow earths.

In vegetation mapping it is necessary to define and map the plant communities into groups with common characteristics in structure and floristics. This grouping and classification has been achieved by:

- Havel on the Swan Coastal Plain (1968) and in the Northern Jarrah Forest (1975a, 1975b),
- Beard (1979) in the Pinjarra area (1:250,000),
- Heddle *et al.* (1980a) in the System 6 area; Perth, Pinjarra and Collie areas (1:250,000), and
- Mattiske and Havel (1998) in the vegetation mapping for the Regional Forest Agreement.

The classification system of Heddle *et al.* (1980a) and recently updated by Mattiske and Havel (1998) for the Regional Forest Agreement vegetation mapping, utilised the concept of vegetation complexes, emphasising the relationships between underlying landforms, soils and associated plant communities. This latter system incorporated linkages with the previous work by Havel (1975a and b) and extensive vegetation mapping on specific areas throughout the northern and central Jarrah forest by Mattiske.

The Red Hill Quarry Project Area crosses three vegetation complexes as defined in 1:250 000 mapping by Mattiske and Havel (1998) (Table 2). The Darling Scarp vegetation complex (DS) is restricted to the western fringes of the Darling Ranges and is less well represented in the conservation estate (with 7.86% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004). The Helena 2 vegetation complex (He2) is restricted to the deeply incised valley systems on the western fringes of the Darling Ranges and is relatively well represented in the conservation estate (with 29.93% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004). The Dwellingup 2 vegetation complex (D2) occurs on the upper lateritic hills and ranges and is relatively well represented in the conservation estate (with 23.05% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004). These vegetation complexes are well reserved and not critically threatened due to clearing. Approximately 33% of the Darling Scarp (DS), 85% of the Dwellingup 2 (D2) and 72% of the Helena 2 (He2) vegetation complexes remain compared with the extent pre-European settlement, based on data in the Forest Management Plan (Conservation Commission 2004).

The site-vegetation types defined by Havel (1975a, 1975b) for the northern Jarrah forest, covered the variation of plant communities on this section of the Darling Range. Although the plant communities in this area form a continuum, it is possible to classify the site-vegetation types by incorporating site descriptions (e.g. soils, topography, slope, aspect, soil moisture regimes), floristic information and structural information.

In the last twenty years, subsequent studies by Mattiske and Havel in the northern Jarrah forest have recognised a series of new vegetation types not covered previously by Havel (1975a; b). These include variations on the previously defined site vegetation types (e.g. MG, CG) as well as site-vegetation types, which were not covered by Havel (1975a; b).

Table 2: Representation of Vegetation Complexes Expected to Occur in the Red Hill Quarry Project Area (based on Mattiske and Havel, 1998 and Conservation Commission of Western Australia 2004)

Note: ^ - Areas presented are based on data supplied by the Department of Environment and Conservation from the Forest Management Plan as published by the Conservation Commission 2004

Vegetation Complex	Description	Pre-European area (ha) ^	Extant area (ha) ^	Representation in Formal and Informal Reserves (ha) ^
DS	<p>Darling Scarp (DS)</p> <p>Mosaic of open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> – <i>Corymbia calophylla</i>, with some admixtures with <i>Eucalyptus laeliae</i> in the north (subhumid zone), and <i>Corymbia haematoxylon</i> in the south (humid zone) on deeper soils adjacent to outcrops, woodland of <i>Eucalyptus wandoo</i> (subhumid and semiarid zones), low woodland of <i>Allocasuarina huegeliana</i> on shallow soils over granite outcrops, closed heath of Myrtaceae – Proteaceae species and lithic complex on near granite outcrops in all climate zones.</p>	29108.23	9866.38	2284.49
D2	<p>Dwellingup 2 (D2)</p> <p>Open forest of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> – <i>Corymbia calophylla</i> on lateritic uplands in subhumid and semiarid zones.</p>	86085.9	73526.1	19831.8
He2	<p>Helena 2 (He2)</p> <p>Mosaic of open forest of <i>Eucalyptus marginata</i> subsp. <i>thalassica</i> – <i>Corymbia calophylla</i> and woodland of <i>Eucalyptus wandoo</i> with some <i>Eucalyptus accedens</i> and <i>Eucalyptus rudis</i> on the deeper soils ranging to closed heaths and lithic complex on shallow soils associated with granite on steep slopes of valleys in semiarid and arid zones.</p>	16341.03	11816.55	4891.1

2.4 Rare and Priority Flora

Species of flora and fauna are afforded Rare or Priority conservation status where their populations are restricted geographically or threatened by local processes. The Department of Environment and Conservation (2008a) 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* [WA] and therefore it is an offence to “take” or damage rare flora without Ministerial approval. Section 23F of the *Wildlife Conservation Act 1950* [WA] defines “to take” as “... to gather, pick, cut, pull up, destroy, dig up, remove or injure the flora 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 urgent need of further survey (Priority one to three) or require monitoring every 5-10 years (Priority four). Appendix A1 presents the definitions of Declared Rare and the four Priority ratings under the *Wildlife Conservation Act 1950* [WA] as extracted from Department of Environment and Conservation (2008a).

Rare Flora species can be listed as Threatened Flora species which are a matter of national environmental significance and are listed under the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth] (Department of Environment, Water, Heritage and the Arts 2008a). A person must not take an action that has, will have, or is likely to have a significant impact on a listed threatened species or an ecological community, without approval from the Commonwealth Minister for the Environment, Water, Heritage and the Arts. Appendix A2 presents the definitions of the categories of Threatened Flora Species as extracted from the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth].

2.5 Threatened Ecological Communities (TEC’s)

Communities in Western Australia can be listed as ‘Threatened Ecological Communities’ (TEC’s) (Department of Environment and Conservation 2008c) once they have been defined by the Western Australian Threatened Ecological Communities Scientific Advisory Committee. TEC’s are listed under four categories; Presumed Totally Destroyed (PD), Critically Endangered (CR), Endangered (EN) or Vulnerable (VU) (Department of Environment and Conservation 2008d). Appendix A3 presents a summary of the definitions of Threatened Ecological Communities as extracted from the Department of Environment and Conservation (2008d).

Possible Threatened Ecological Communities can be listed as Priority Ecological Communities (PEC’s) by the Department of Environment and Conservation (2008e). PEC’s are listed under five categories based on survey criteria and current knowledge, Priority 1, 2, 3, 4 and 5 (Department of Environment and Conservation (2008d). Appendix A4 presents a summary of the definitions of Priority Ecological Communities as extracted from the Department of Environment and Conservation (2008d).

Some Western Australian TEC’s are also listed under the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth] (Department of the Environment, Water, Heritage and the Arts 2008b).

2.6 Declared Plant Species

Plant species are defined as Declared Plant species pursuant to section 37 of the *Agricultural and Related Resources Protection Act 1976* by Department of Agriculture and Food (2008) according to their threat to agriculture and the environment (Appendix A5). Mattiske Consulting Pty Ltd has electronic access to the “Declared Plants” database through licensing and an annual fee payment.

2.7 Clearing of Native Vegetation

The *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* dictate that any clearing of native vegetation in Western Australia requires a permit to do so from the Department of Environment and Conservation. Native vegetation includes aquatic and terrestrial vegetation indigenous to Western Australia, and intentionally planted vegetation declared by regulation to be native vegetation, but not vegetation planted in a plantation or planted with commercial intent *Environmental Protection Act 1986*. In the *Environmental Protection Act 1986* Section 51A, clearing is defined as: the killing or destruction of; the removal of; the severing or ringbarking of trunks or stems of; or the doing of substantial damage to some or all of the native vegetation in an area, including the flooding of land, the burning of vegetation, the grazing of stock or an act or activity that results in the above.

Ten clearing principles are specified in Schedule 5 of the *Environmental Protection Act 1986*:

1. *Native vegetation should not be cleared if it comprises a high level of biodiversity.*
2. *Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a significant habitat for fauna indigenous to Western Australia.*
3. *Native Vegetation should not be cleared if it includes, or is necessary, for the continued existence of Rare flora.*
4. *Native vegetation should not be cleared if it compromises the whole or part of, or is necessary for the maintenance of a Threatened Ecological Community.*
5. *Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.*
6. *Native vegetation should not be cleared if it is growing in, or in association with, and environment associated with a watercourse or wetland.*
7. *Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.*
8. *Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.*
9. *Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.*
10. *Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence of flooding.*

Under the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004 - Regulation 6 – Environmentally sensitive areas* are “the area covered by vegetation within 50 m of Rare Flora, to the extent to which the vegetation is continuous with the vegetation in which the Rare Flora is located”. According to the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004 - Schedule 1 -- Low impact or other mineral or petroleum activities*, environmentally sensitive areas are non-permitted areas. Therefore Ministerial approval must be granted prior to any clearing of Declared Rare Flora, including a minimum of 50 m surrounding all populations of Rare Flora.

In the case of Priority Flora, where a Clearing Permit has been issued under Section 51E of the *Environmental Protection Act 1986*, a vegetation buffer of 10 m is recommended around any Priority Flora (Department of Environment, 2008e). Any clearing or access activities that may impact on any of these values either directly or indirectly should be submitted to the Department of Environment and Conservation for due consideration prior to any activity.

Environmental Protection (Clearing of Native Vegetation) Regulations 2004 - Regulation 6 – Environmentally sensitive areas, “The area covered by a threatened ecological community” is similarly considered an environmentally sensitive area and therefore non-permitted, unless Ministerial approval is granted.

3. OBJECTIVES

The objectives of this report on the botanical values of the Red Hill Quarry Project Area are to:

- Collect and identify vascular plant species present within the survey area;
- Review the conservation status of the vascular plant species by reference to current literature, current listings (Department of Environment and Conservation 2008a) and the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth];
- Search targeted areas for Threatened, Rare and Priority flora in winter and spring months within the proposed expansion area,
- Define and map the location of any Threatened and Rare species found;
- Define and map the native vegetation and their condition by reference to the Keighery (1994);
- Identify any Priority and Threatened Ecological Communities within the survey area;
- Review the significance of the values of the survey area and provide recommendations for management, and
- Prepare a report summarising the findings.

4. METHODS

4.1 Flora

Over April, October and December 2006, several Botanists from Matiske Consulting Pty Ltd completed 20.5 field days completing a total of 102 sites. The survey area was traversed on foot. For each survey site, the flora was systematically recorded and collections of plant specimens were made where further identification was required.

During winter of 2007, two Botanists from Matiske Consulting Pty Ltd completed a targeted search for ephemerals within the existing mapped area. Replicate survey sites were targeted for each individual community classification.

All plant specimens collected during the field survey were handled and identified in accordance with the requirements of the Western Australian State Herbarium. Where necessary, specimens were compared with pressed specimens housed at the Western Australian State Herbarium, and plant taxonomists with specialist skills were consulted. Nomenclature of recorded species follows that recommended by the Western Australian Herbarium, Department of Environment and Conservation (2008b and 2008c).

4.2 Vegetation Mapping

The plant communities occurring within the survey area were described in detail and their distribution mapped using aerial photographs. The survey area recordings were undertaken at 102 sites; with regular notes between recordings on any additional species and also boundary changes. At each site the tree species were recorded in a 20-metre radius area and the understorey species were recorded in a 5-metre radius from the central point of the site. Therefore the minimum radius of 5m from the central point is equivalent to the 10m x 10m quadrats as used in the regional floristic studies. The use of standard data collection forms ensured the data was collected in a systematic format. At each site the following records were made: topography, percentage litter cover, soil type, percentage bare ground, outcropping rocks and their type, pebble type and size and number of years since fire. For each species recorded, the average height and percentage foliage cover of species both alive and dead was noted.

The vegetation was mapped utilising site data, including: data on key species (floristic); structure and location in the landscape (habitat) as per Beard (1990); and an interpretation of the aerial photographs.

Comparisons were made with previous surveys in the local region (E. M. Matiske and Associates 1991; Armstrong 1993; Markey 1997).

5. RESULTS

5.1 Potential Rare and Priority and Threatened Flora

The review of the Department of the Environment, Water, Heritage and the Arts (2008a) and Department of Environment and Conservation (2008a) databases highlighted a range of potential Threatened, Rare and Priority flora species that may occur in the area (Appendix B). This review indicated a total of ten Rare, three Priority 1, six Priority 2, twenty-nine Priority 3 and nineteen Priority 4 flora species that may be in the area near the Red Hill Project Area (Appendix B). Of these species listed, the following species have been recorded historically in or near the Project Area (Figure 4) - *Halgania corymbosa* (P3), *Darwinia pimelioides* (P4), *Calothammus ruprestris* (P4) and *Templetonia drummondii* (P4). Many of the other species occur on the fringes of the Swan Coastal Plain and in the western fringes of the Darling Ranges.

Of the potential species highlighted in the database review, six are endangered and four are vulnerable pursuant to s179 of the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth]. These species have not been recorded in previous flora surveys conducted over parts of Lot 11 (Dames and Moore 1990, Matiske Consulting Pty Ltd 2007) or during the more recent survey of the proposed development area. They are described below.

1. *Acacia aphylla* is known from 35 records, mainly in the northern Jarrah Forest on the fringes of Helena Valley, Mundaring Weir and Clackline. Matiske Consulting Pty Ltd (2007) considers there to be a high probability that this species may occur in the project area as the project area includes similar habitats that support this species.
2. *Anthocercis gracilis* is known from 28 records, mainly in the northern Jarrah Forest on fringes of Helena Valley, Mundaring Weir and in John Forrest National Park. Matiske Consulting Pty Ltd (2007) considers there to be a high probability that this species may occur in the project area as the project area includes similar habitats that supports this species.
3. *Caladenia huegelii* is known from 30 records, mainly on the Swan Coastal Plain, predominantly on sandy dunes. Matiske Consulting Pty Ltd (2007) considers there to be a low probability that this species occurs in the project area as the project area is located on the Darling Plateau and does not include the habitats that supports this species.

4. *Calytrix breviseta* subsp. *breviseta* is known from 10 records, mainly in heaths on palusplain, on the Swan Coastal Plain. Mattiske Consulting Pty Ltd (2007) considers there to be a low probability that this species occurs in the project area as the project area is located on the Darling Plateau and does not include the habitats that support this species.
5. *Eleocharis keigheryi* is known from 31 records, mainly on wet claypans on the Swan Coastal Plain. Mattiske Consulting Pty Ltd (2007) considers there to be a low probability that this species occurs in the project area as the project area is located on the Darling Plateau and does not include the habitats that support this species.
6. *Grevillea curviloba* subsp. *curviloba* is known from 12 records, on sandplain, wet flats and palusplain on the Swan Coastal Plain. Mattiske Consulting Pty Ltd (2007) considers there to be a low probability that this species occurs in the project area as the project area is located on the Darling Plateau and does not include the habitats that support this species.
7. *Grevillea curviloba* subsp. *incurva* is known from 39 records, on ironstone areas and wetlands, near Muchea. Mattiske Consulting Pty Ltd (2007) considers there to be a low probability that this species occurs in the project area as the project area is located on the Darling Plateau and does not include the habitats that support this species.
8. *Grevillea flexuosa* is known from 43 records, mainly in gravelly and outcrop areas supporting Wandoo, in northern Jarrah Forest. Mattiske Consulting Pty Ltd (2007) considers there to be a high probability that this species may occur in the project area as the project area includes similar habitat that support this species.
9. *Hydatella dioica* is known from 7 records, mainly on water-logged flats, near Ellenbrook and Midland on the Swan Coastal Plain. Mattiske Consulting Pty Ltd (2007) considers there to be a low probability that this species occurs in the project area as the project area is located on the Darling Plateau and does not include the habitats that support this species.
10. *Thelymitra stellata* is known from 15 records on sandy, clay and gravelly soils, extending from Arthur River in the Wheatbelt to the Swan Coastal Plain. Mattiske Consulting Pty Ltd (2007) considers there to be a low probability that this species occurs in the project area as the project area does not include the habitats that support this species.

5.2 Flora

A total of 349 taxa (species, subspecies and varieties) from 55 families, 160 genera and species were recorded within the Red Hill Quarry Project Area (Appendix C). Twenty-six percent of these species occur in more than ten percent of the sites (Appendix E). The three most common species found were *Xanthorrhoea preissii* with 85 species, *Hibbertia hypericoides* with 78 species, and *Corymbia calophylla* with 82 species (see Appendix G). The family with the most taxa represented is the Proteaceae family representing 44 different taxa (see Appendix C).

5.3 Recorded Rare and Priority Flora

No Declared Rare species pursuant to Subsection 2 of Section 23F of the *Wildlife Conservation Act 1950* [WA] and listed by the Department of Environment and Conservation (2008a) were located during the survey of Red Hill Project Area.

Five priority species were recorded during the surveys of Red Hill Quarry (Table 3).

The Priority 3 species *Acacia oncinophylla* subsp. *oncinophylla* (MIMOSACEAE) was found at nine sites (Table 3, Figure 4) and five site-vegetation types. This taxa has 35 records at the State Herbarium, ranging from Mogumber in the North to Serpentine in the South, along the Darling Range. This species is recorded as occurring in granitic soils in heath and open woodland (Maslin, 2001). Collections in the survey area reflected previous collections in the State Herbarium.

The Priority 3 species, *Halgania corymbosa* (BORAGINACEAE) was found at one site (Table 3). It is known from 15 records from the State Herbarium. The records stretch from Millendon in the north west to Gidgegannup in the north east, to Gosnells in the south west, and Karnet to the south east (Department of Environment and Conservation 2008a). The collection in the survey area is not reflected by many previous collections in the State Herbarium.

The Priority 4 species, *Calothamnus rupestris* (MYRTACEAE) was located at 27 sites throughout the survey area (Table 3) in 6 site-vegetation types and the rehabilitation areas. This species is known from 46 records at the State Herbarium and is relatively widespread on granitic soils on the Darling Scarp and the northern Jarrah forest (Department of Environment and Conservation 2008a). This species has been used extensively in rehabilitation areas near the Darling Scarp and in gravel pits within the northern Jarrah forest.

The Priority 3 species, *Tetratheca* sp. Granite (S. Patrick SP1224) was located at one site (Table 3). It is known from 27 records from the State Herbarium. This species is recorded mainly on granitic soils from Kalamunda, Bickley, Helena Reserve and Gidgegannup (Department of Environment and Conservation 2008a).

The Priority 4 species, *Darwinia pimelioides* was located at one site (Table 3). It is known from 24 records from the State Herbarium. This species is recorded as occurring near granite boulders from Herne Hill, John Forest National Park, Darlington, Swan View, Gidgegannup and Red Hill (Department of Environment and Conservation 2008a).

5.4 Exotic (introduced) species

Twenty-five exotic (introduced) taxa recorded during the surveys of the Red Hill Quarry Project Area. This does not include the planted species. One Declared Plant pursuant to section 37 of the *Agricultural and Related Resources Protection Act 1976* according to the Department of Agriculture and Food (2008), **Moraea flaccida* was found during the surveys of Red Hill Quarry Project Area. **Moraea flaccida* is a serious pasture weed and may remain viable in the soil for many years (Department of Agriculture and Food 2008). A range of species has also been planted in the rehabilitation areas. These introduced species are listed in Table 4 and Appendix C, by site in Appendix D and by site-vegetation types in Appendix E and their location is listed in Appendix I. Of the introduced species, **Briza maxima* is the most common introduced species. The majority of the more aggressive weeds occur within disturbed areas, either on road verges or on the fringes of Susannah Brook. The species that will require targeted management and on-going monitoring to ensure control and eventual eradication on site include **Moraea flaccida*, **Gladiolus caryophyllaceus*, **Watsonia meriana* and **Watsonia meriana* var. *bulbillifera*.

Table 3: Location of Priority Species in the Red Hill Quarry Project Area (GDA94 50J)

Species	Easting (mE)	Northing (mN)	Site vegetation types	Regional distribution*
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i> (P3)	413067 412227 412370 412202 412195 413177 412304 412683 411844	6478989 6479041 6479614 6479600 6479515 6478572 6479395 6479228 6478501	CG, G1, G2, GM, MG (mainly in G1)	South West: Avon Wheatbelt, Jarrah Forest and Swan Coastal Plain
<i>Halgania corymbosa</i> (P3)	412900	6478713	MG	South West: Jarrah Forest and Swan Coastal Plain
<i>Calothamnus rupestris</i> (P4)	412812 412269 412227 412370 412195 412537 412558 412736 413177 412344 412486 412228 412202 412304 412416 412264 412853 412424 412822 412683 412579 412492 412519 412594 412758 412271 412707	6479398 6478954 6479041 6479614 6479515 6479396 6479464 6479372 6478572 6479230 6479198 6479279 6479398 6479395 6478204 6478662 6478615 6478303 6479209 6479228 6479200 6478402 6478504 6478490 6477826 6479592 6478452	CG, G1, G2, GM, MG, R and Rehabilitated Areas (mainly in G1 and GM)	South West: Avon Wheatbelt, Jarrah Forest and Swan Coastal Plain
<i>Darwinia pimelioides</i> (P4)	413602	6478656	CG	South West: Jarrah Forest and Swan Coastal Plain
<i>Tetratheca</i> sp. Granite (S. Patrick SP1224) (P3)	413150	6478718	CG	South West and Jarrah Forest

* As described by Florabase and based on Thackway and Creswell (1995) biogeographic regions.

Table 4: Exotic (introduced) species in the Red Hill Quarry Project Area (where P1 denotes Declared Plant status according to the Department of Agriculture and Food (2008), see Appendix A5)

Taxon	Common Areas found
* <i>Acacia iteaphylla</i>	A garden escapee, spread from plantings
* <i>Aira caryophyllea</i>	Common on pastures
* <i>Aira cupaniana</i>	Common on pastures
* <i>Anagallis arvensis</i> var. <i>caerulea</i>	Garden weeds, paddocks, granite rocks and disturbed natural vegetation
* <i>Avena barbata</i>	Roadsides, wasteland, disturbed bushland.
* <i>Avena</i> sp.	Common and widespread throughout WA
* <i>Bartsia trixago</i>	Semi-parasitic on roots, common on roadsides, bushland and winter-wet areas.
* <i>Brachypodium distachyon</i>	Urban bushland
* <i>Briza maxima</i>	Wastelands, granite rocks, wetlands and woodlands
* <i>Briza minor</i>	Garden weed, wasteland, granite rocks and wetlands
* <i>Disa bracteata</i>	Roadsides
* <i>Dittrichia graveolens</i>	Roadsides, paddocks, wastelands
* <i>Ehrharta longiflora</i>	Disturbed creeklines, grazed woodlands
* <i>Eucalyptus microcorys</i>	Garden escape, spreading from plantings along creeklines
* <i>Gladiolus caryophyllaceus</i>	Urban and Banksia woodlands
* <i>Hypochaeris glabra</i>	Roadsides and bushland
* <i>Moraea flaccida</i> (P1)	Woodlands, granite rocks and limestone heath
* <i>Oxalis</i> sp.	Roadsides and disturbed native vegetation
* <i>Parentucellia latifolia</i>	Wetlands, woodlands and granite rocks
* <i>Pentaschistis airoides</i>	Granite rocks, woodlands, shrublands and disturbed sites
* <i>Sonchus oleraceus</i>	Roadsides, wastelands and gardens
* <i>Ursinia anthemoides</i>	Various habitats
* <i>Vellereophyton dealbatum</i>	Disturbed sites, pastoral land, road verges and wetlands
* <i>Vulpia myuros</i>	Revegetation areas and various habitats
* <i>Watsonia meriana</i> var. <i>bulbillifera</i>	Rivers, wetlands and roadside table drains

5.5 Vegetation

Nine site-vegetation types were defined within the Red Hill Quarry Project Area (Figure 3). The community types are listed below and are a combination of Havel's (1975a and 1975b) site-vegetation types.

- G1- Mosaic of Lithic Complex on exposed granites to patches of Open to Closed Heath of Proteaceae - Myrtaceae species, including *Hakea incrassata*, *Hakea stenocarpa*, *Dryandra armata* var. *armata*, *Hakea undulata*, *Allocasuarina humilis* and *Hypocalymma angustifolium* on exposed granites. This site-vegetation type supported some 159 taxa, which in part reflects the diversity of local site conditions which range from exposed granite to shallow granite outcrops. This site-vegetation type is common in the northern Jarrah forest on the main monadnocks and is well represented in the conservation estate within the Cooke vegetation complex as defined by Mattiske and Havel (1998). 34.8% of the Cooke vegetation complex is represented in formal and informal reserves (Conservation Commission 2004). This site-vegetation type is equivalent to the "G" site-vegetation type as defined by Havel (1975b) and is locally present in the nearby John Forrest National Park and in the adjacent Darling Range Regional Park.
- G2 - Open Woodland of *Allocasuarina huegeliana* over patches of Lithic Complex and Open Heath of Proteaceae - Myrtaceae species on exposed granites. This site-vegetation type supported some 76 taxa, which in part reflects the smaller spatial extent of this community within the Project Area and the diversity of local site conditions which range from exposed granite to shallow granite outcrops. This site-vegetation type occurs mainly on the fringes of the northern Jarrah forest on the Darling Scarp and northwards through the Julimar area and then on the eastern sections of the Jarrah forest on shallow granite outcrop areas. This community also extends into the Wheatbelt. As these outcrops restrict agricultural activities, this site-vegetation type is relatively well-represented in the Darling Scarp and Yalanbee complexes and to a lesser extent the Cooke complex as defined by Mattiske and Havel (1998). The vegetation complexes vary in their representation within the south-west forest region (Darling Scarp - 7.8%, Yalanbee 5 - 29.6%, Yalanbee 6 - 22.9% and Cooke - 34.8%), Conservation Commission 2004. This site-vegetation type is equivalent to a variant of the "G" site-vegetation type as defined by Havel (1975b) and is locally present in the nearby John Forrest National Park and in the adjacent Darling Range Regional Park.
- GM - Open to Closed Heath of Proteaceae - Myrtaceae species, including *Hakea incrassata*, *Hakea stenocarpa*, *Dryandra armata* var. *armata*, *Hakea undulata*, *Melaleuca trichophylla*, *Allocasuarina humilis* and *Hypocalymma angustifolium* over granite outcropping. This site-vegetation type supported some 140 taxa, which in part reflects the diversity of local site conditions which range from exposed granite to shallow granite outcrops. This site-vegetation type occurs mainly on the fringes of the northern Jarrah forest on the Darling Scarp and northwards through the Julimar area and then on the eastern sections of the Jarrah forest within the woodlands on shallow granite outcrop areas. This community also extends into the Wheatbelt. As these outcrops restrict agricultural activities, this site-vegetation type is relatively well-represented in the Darling Scarp and Yalanbee complexes and to a lesser extent the Cooke complex as defined by Mattiske and Havel (1998). The vegetation complexes vary in their representation within the south-west forest region (Darling Scarp - 7.8%, Yalanbee 5 - 29.6%, Yalanbee 6 - 22.9% and Cooke - 34.8%), Conservation Commission 2004. This site-vegetation type is equivalent to a variant of the "G" and "M" site-vegetation types as defined by Havel (1975a and 1975b) and is locally present in the nearby John Forrest National Park and in the adjacent Darling Range Regional Park.

- CG - Open Woodland of *Eucalyptus rudis* – *Eucalyptus wandoo* – *Corymbia calophylla* over *Trymalium floribundum* subsp. *floribundum*, *Darwinia citriodora* over sedges on creeklines. This site-vegetation type supported some 76 taxa, which in part reflects the narrow extent of this creekline community and the diversity of local site conditions which range from exposed granite to eroded soils within the valley system. This site-vegetation type occurs mainly in the valley floors of the deeply incised Helena valley systems in the northern section of the Jarrah forest. This site-vegetation type is relatively well-represented in the Helena 2 complex as defined by Mattiske and Havel (1998). The vegetation complex is well-represented in the conservation estate (Helena 2 - 29.9%), Conservation Commission 2004. This site-vegetation type is equivalent to a variant of the “C” and “G” site-vegetation types as defined by Havel (1975a and 1975b) and is locally present in the nearby John Forrest National Park and in the adjacent Darling Range Regional Park.
- M - Open Woodland of *Eucalyptus wandoo* - *Eucalyptus accedens* – *Corymbia calophylla* over low understorey, including *Hibbertia hypericoides*, *Bossiaea eriocarpa*, and *Phyllanthus calycinus* on clay-loams. This site-vegetation type supported some 48 taxa, which in part reflects the extent of this community within the Project Area and the diversity of local site conditions which range from dolerite dykes (with associated clays) and clay loams. This site-vegetation type occurs mainly in the northern Jarrah forest on the Darling Scarp and northwards through the Julimar area and then on the eastern sections of the Jarrah forest within the woodlands on clay-loams and sandy-loams. This community also extends into the Wheatbelt. This site-vegetation type is relatively well-represented in the Darling Scarp and Yalanbee complexes as defined by Mattiske and Havel (1998). The vegetation complexes vary in their representation within the south-west forest region (Darling Scarp - 7.8%, Yalanbee 5 - 29.6% and Yalanbee 6 - 22.9%), Conservation Commission 2004. This site-vegetation type is equivalent to “M” site-vegetation type as defined by Havel (1975a) and is locally present in the nearby John Forrest National Park, in the Julimar conservation areas and in the adjacent Darling Range Regional Park.
- MG - Open Woodland of *Eucalyptus wandoo* and *Eucalyptus accedens* with dense understorey, including *Hakea incrassata*, *Allocasuarina humilis*, *Hakea undulata* and *Hakea trifurcata* on clay-loams over shallow granite. This site-vegetation type supported some 165 taxa, which reflects the diversity of local site conditions which range from dolerite dykes (with associated clays) and clay loams with some localized granite outcropping. This site-vegetation type occurs mainly in the northern Jarrah forest on the Darling Scarp and northwards through the Julimar area and then on the eastern sections of the Jarrah forest within the woodlands on clay-loams and sandy-loams. This community also extends into the Wheatbelt. This site-vegetation type differs from the “M” type in the dominance of the shrub species from the Proteaceae and Myrtaceae families in the understorey. This site-vegetation type is relatively well-represented in the Darling Scarp and Yalanbee complexes as defined by Mattiske and Havel (1998). The vegetation complexes vary in their representation within the south-west forest region (Darling Scarp - 7.8%, Yalanbee 5 - 29.6% and Yalanbee 6 - 22.9%), Conservation Commission 2004. This site-vegetation type is equivalent to variants of the “M” and “G” site-vegetation types as defined by Havel (1975a and 1975b) and is locally present in the nearby John Forrest National Park, in the Julimar conservation areas and in the adjacent Darling Range Regional Park.
- R - Woodland to Open Woodland of *Eucalyptus marginata* - *Corymbia calophylla* over dense understorey including *Hakea incrassata*, *Allocasuarina humilis*, *Hakea undulata* and *Hakea trifurcata* on sandy-gravels over shallow granite. This site-vegetation type supported some 165 taxa, which reflects the diversity of local site conditions which range from sandy gravels to localized shallow granite outcropping. This site-vegetation type occurs mainly in the northern Jarrah forest on the shallow soils associated with the fringes of granite outcrops associated with the Darling Scarp and Cooke vegetation complexes. This site-vegetation type is relatively well-represented in the Darling Scarp and Cooke complexes as defined by Mattiske and Havel (1998). The vegetation complexes vary in their representation within the south-west forest region (Darling Scarp - 7.8% and Cooke - 34.8%), Conservation Commission 2004. This site-vegetation type is equivalent to the “R” site-vegetation type as defined by Havel (1975a and 1975b) and is locally present in the nearby John Forrest National Park and the adjacent Darling Range Regional Park.

- P - Open Forest of *Allocasuarina fraseriana* – *Eucalyptus marginata* – *Corymbia calophylla* over low understorey, including *Grevillea wilsonii*, *Hibbertia hypericoides* and *Hakea lissocarpha* on sandy-gravels. This site-vegetation types supported some 55 taxa, which reflects the lower spatial extend of this community within the Project Area and the lack of diversity in the site conditions. This site-vegetation type occurs mainly in the northern Jarrah forest on the sandy-gravelly soils associated with the Dwellingup 1 and Dwellingup 2 vegetation complexes. This site-vegetation type is relatively well-represented in the Dwellingup units, although the floristic composition varies from north to south and east to west. The vegetation complexes vary in their representation within the south-west forest region (Dwellingup 1 - 14.7% and Dwellingup 2 - 23.0%), Conservation Commission 2004. This site-vegetation type is equivalent to the “P” site-vegetation type as defined by Havel (1975a and 1975b) and is locally present in the nearby State Forests, John Forrest National Park and the adjacent Darling Range Regional Park.
- S - Open Forest of *Eucalyptus marginata* – *Corymbia calophylla* over low understorey, including *Grevillea wilsonii*, *Hibbertia hypericoides* and *Hakea lissocarpha* on sandy-gravels. This site-vegetation type supported some 107 taxa, which reflects the spatial extend of this community within the Project Area and the lack of diversity in the site conditions. This site-vegetation type occurs mainly in the northern Jarrah forest on the gravelly soils associated with the Dwellingup 1 and 2 vegetation complexes. This site-vegetation type is relatively well-represented in the Dwellingup units. The vegetation complexes vary in their representation within the south-west forest region (Dwellingup 1 - 14.7% and Dwellingup 2 - 23.0%), Conservation Commission 2004. This site-vegetation type is equivalent to the “S” site-vegetation type as defined by Havel (1975a and 1975b) and is locally present in the nearby State Forests, John Forrest National Park and the adjacent Darling Range Regional Park.
- REH - Rehabilitated areas, including previously cleared and disturbed areas.
- D - Disturbed and cleared areas.

5.6 Vegetation Condition

Based on the condition scale developed by Keighery (1994), the condition of the vegetation varies from degraded to excellent. The degraded areas have resulted from clearing, track establishment, human activities and weed infestations along Susannah Brook from catchment areas. Dieback of the vegetation, including observations of *Banksia* deaths and *Eucalyptus marginata* (Jarrah) crowns “dieing” back, was localized and was mainly associated with drought conditions resulting from shallow soils and the lack of soil moisture. This pattern of decline is particularly evident on the shallow soils of the Darling Scarp and is related to the series of lower rainfall events.

5.7 Review of Significance of Vegetation

No plant communities listed as Threatened under the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth] were located within the Red Hill Project Area. No plant communities listed as Threatened Ecological Communities by the Department of Environment and Conservation (2008d) were located within the Red Hill Project Area.

At a regional scale the vegetation in the survey area overlaps with three vegetation complexes as defined in 1:250 000 mapping by Matiske and Havel (1998). The Darling Scarp vegetation complex is restricted to the western fringes of the Darling Ranges and is less well represented in the conservation estate (with 7.86% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004). The majority (64.4%) of the Darling Scarp vegetation complex is in private holdings.

The Helena 2 vegetation complex is restricted to the deeply incised valley systems on the western fringes of the Darling Ranges and is relatively well represented in the conservation estate (with 29.93% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004).

The Dwellingup 2 vegetation complex occurs on the upper lateritic hills and ranges and is relatively well represented in the conservation estate (with 23.05% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004).

These vegetation complexes are well reserved and not critically threatened due to clearing. Approximately 33% of the Darling Scarp (DS), 85% of the Dwellingup 2 (D2) and 72% of the Helena 2 (He2) vegetation complexes remain compared with the extent pre-European settlement, based on data in the Forest Management Plan (Conservation Commission 2004).

6. DISCUSSION

The survey work was undertaken over several seasons and therefore it was possible to cover a range of the flora species in the Project Area. Further field work was conducted in the winter of 2007 targeting ephemerals which germinate after heavy rainfall.

A total of 349 taxa (species, subspecies and varieties) from 55 families, 160 genera and species were recorded at the proposed clearing site (Appendix C). This compares well with the range of species that have been recorded in the wider Jarrah forest and also the southwest forest region (Department of Environment and Conservation 2008a; E. M. Mattiske and Associates 1991; Armstrong 1993; Markey 1997; Havel 2000).

The surveys undertaken previously in John Forrest National Park (south of the Red Hill Quarry site) provide the closest comprehensive comparison (E. M. Mattiske and Associates 1991). More recent studies by Armstrong (1993) were reviewed; however flora data was collected along transects rather than in quadrats (as is standard) and therefore made comparison difficult (Appendix F). The list in Appendix F compares the species from the respective survey areas. There was a substantial overlap of the species present within the Red Hill Quarry Project Area with John Forrest National Park and Darling Range (Shire of Kalamunda) reserves (E. M. Mattiske and Associates 1991; Armstrong 1993). Approximately 50% and 60% respectively of the taxon recorded in the Red Hill Quarry Project Area were also recorded in the John Forrest National Park and Darling Range (Shire of Kalamunda) reserves. (E. M. Mattiske and Associates 1991; Armstrong 1993). Of these taxa in common, some were introduced species (11 in common with Red Hill and John Forrest National Park and 14 in common with Red Hill and Darling Range reserves of Shire of Kalamunda).

A total of 25 introduced (exotic) taxa were recorded within the Red Hill Quarry Project Area. One of these, **Moraea flaccida*, is listed as a Priority 1 Declared Plant species pursuant to section 37 of the *Agricultural and Related Resources Protection Act 1976* [WA] according to the Western Australian Department of Agriculture and Food (2008). It is recommended that the populations of **Moraea flaccida* are destroyed to prevent propagation yearly until no plants remain. The infested areas must be managed to prevent the spread of seed or plant parts on or in livestock, fodder, grain, vehicles and/or machinery (Department of Agriculture and Food 2008). The majority of the introduced species are restricted to either Susannah Brook or the disturbed sites within the Project Area. A thorough weed management strategy should be implemented to control, eradicate and limit further spread of invasive environmental weeds. The majority of the more aggressive weeds occur within disturbed areas, either on road verges or on the fringes of Susannah Brook. The species that will require management and monitoring on the site include **Gladiolus caryophyllaceus*, **Moraea flaccida*, **Watsonia meriana* and **Watsonia meriana* var. *bulbillifera*.

No Declared Rare species pursuant to Subsection 2 of Section 23F of the *Wildlife Conservation Act 1950* [WA] and listed by the Department of Environment and Conservation (2008a) were located during the survey of the Red Hill Quarry Project Area. No Endangered or Vulnerable plant taxa, pursuant to s179 of the *Environment Protection and Biodiversity Conservation Act 1999* [Commonwealth] were located during the survey of the Red Hill Quarry Project Area.

Three Priority species were recorded during the survey of the Red Hill Quarry Project Area. None of the Priority flora species are restricted to the Red Hill Quarry Project Area... *Acacia oncinophylla* subsp. *oncinophylla* (P3), *Halgania corymbosa* (P3) and *Calothamnus rupestris* (P4) have all been recorded in other areas within the northern Jarrah forest (eg E. M. Mattiske and Associates 1991; Armstrong 1993).. All three Priority species recorded also occur outside the proposed clearing areas.

At a regional scale the vegetation in the survey area overlaps with three vegetation complexes as defined in 1:250 0.00 mapping by Mattiske and Havel (1998). The Darling Scarp vegetation complex is restricted to the western fringes of the Darling Ranges and is less well represented in the conservation estate (with 7.86% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004).

The Helena 2 vegetation complex is restricted to the deeply incised valley systems on the western fringes of the Darling Ranges and is relatively well represented in the conservation estate (with 29.93% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004).

The Dwellingup 2 vegetation complex occurs on the upper lateritic hills and ranges and is relatively well represented in the conservation estate (with 23.05% represented in the formal and informal reserves, based on data in the Forest Management Plan (Conservation Commission 2004).

These vegetation complexes are well reserved and not critically threatened due to clearing. Approximately 33% of the Darling Scarp (DS), 85% of the Dwellingup 2 (D2) and 72% of the Helena 2 (He2) vegetation complexes remain compared with the extent pre-European settlement, based on data in the Forest Management Plan (Conservation Commission 2004).

At a local scale of mapping, nine site-vegetation types were defined and mapped. All site-vegetation types have been recorded in the northern Jarrah forest previously and many are represented in the adjacent Darling Range Regional Park and John Forrest National Park (south of the Project Area) (Mattiske and Associates 1991 and Heddle *et al.* 1980b). As only sections of the south-west forest region have been mapped at the scale of site-vegetation type level, it is not feasible to place percentages on representation.

At this juncture the key management issues appear to be related to the need to protect those areas that are not going to be disturbed, restricting activities to the essential operational areas and addressing the rehabilitation of degraded environments (both as a result of the direct clearing for quarrying activities and also the adjacent degraded environments on the fringes of tracks and in Susannah Brook).

7. RECOMMENDATIONS

The following management recommendations should be implemented to minimise the impacts of the proposed clearing on the flora and vegetation values of Red Hill Quarry Project Area:

- Given two further Priority species were recorded in winter 2007, conduct further supplementary spring surveys (according to EPA 2004) in the area to the North of Susannah Brook to target potential Threatened, Rare and Priority species;
- Implement a weed management strategy to control the known record of *Moraea flaccida* and other invasive weeds, particularly targeted at the degraded environments (including Susannah Brook); and minimise the risk of introducing and spreading invasive weeds by maintaining vehicle hygiene or other suitable means of weed control;
- Avoid unnecessary clearing of vegetation beyond that strictly required;
- Continued use of local native species in rehabilitation, utilising seed collected on-site where practicable;
- Remove and stockpile topsoil, log debris and leaf litter where possible for use in future rehabilitation programs. If possible, stockpiled topsoil should be directly replaced on disturbed areas; and
- Continue monitoring for diseases and pests.

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9. LIST OF PERSONNEL

The following personnel from Mattiske Consulting Pty Ltd were involved in this project:

Principle Ecologist	Dr E.M. Mattiske
Senior Botanists	Mrs B. Koch Dr. C. Hancock Dr. F. Itzstein-Davey
Experienced Botanists	Mr. M. Boardman Ms F. Chandler Ms. R. Chesney Ms F. de Wit Ms L. Maddox Mr. S. Reiffer Ms S. Robinson Ms. K. Rose Mr. B. Sadlo Ms B. Taylor

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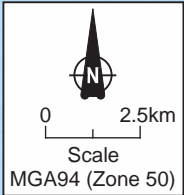
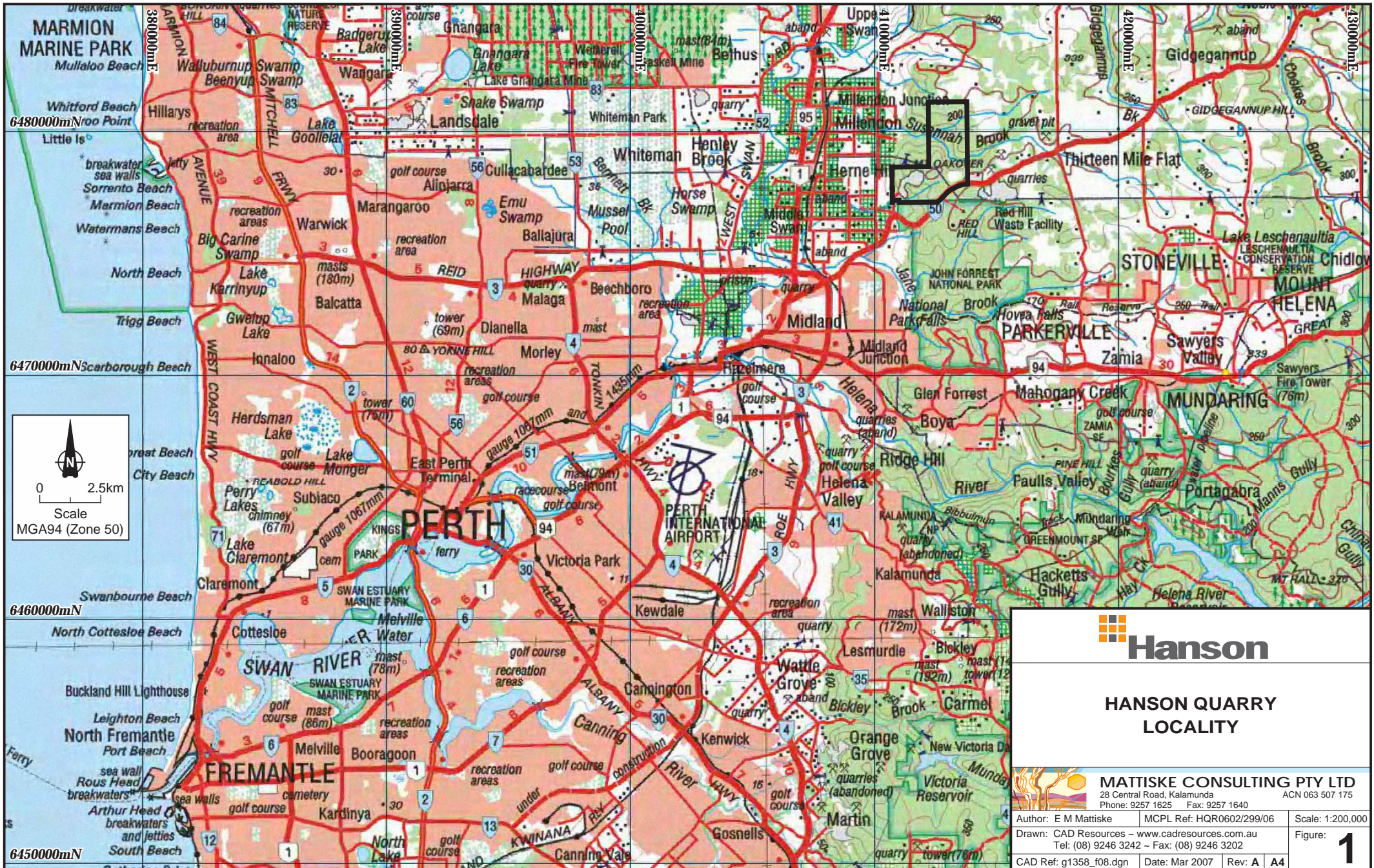
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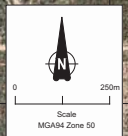
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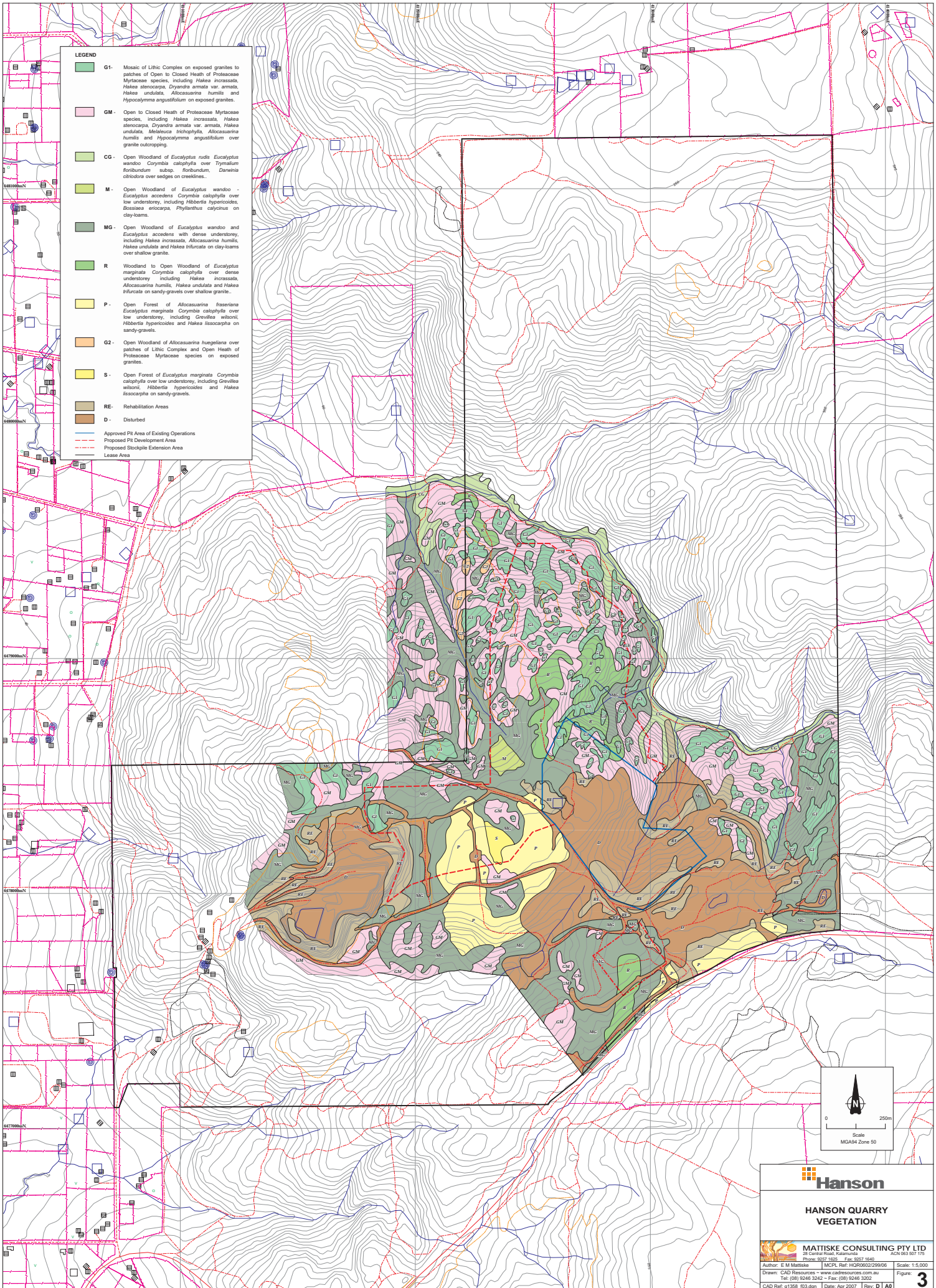
MATTISSE CONSULTING PTY LTD
 28 Central Road, Kalamunda
 Phone: 9257 1625 Fax: 9257 1640
 ACN 063 507 175

Author: E M Matisse	MCPL Ref: HQR0602/299/06	Scale: 1:200,000
Drawn: CAD Resources ~ www.cadresources.com.au		Figure:
Tel: (08) 9246 3242 ~ Fax: (08) 9246 3202		1
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AERIAL PHOTOGRAPHY**

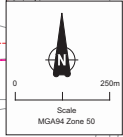
 **MATISSE CONSULTING PTY LTD**
28 Central Road, Melbourne VIC 3021
Phone: 9057 1825 Fax: 9057 1846
Author: E M Matisse | MCR Ref: H200002/25008
Drawn: CAD Resources - www.cadresources.com.au | Scale: 1:5,000
Tel: (08) 9246 3242 Fax: (08) 9246 3202
CAD Ref: g1358_107.dgn | Date: Mar 2007 | Rev: A | **2**



LEGEND

- G1- Mosaic of Lithic Complex on exposed granites to patches of Open to Closed Heath of Proteaceae Myrtaceae species, including *Hakea incrassata*, *Hakea stenocarpa*, *Dryandra eremita* var. *eremita*, *Hakea undulata*, *Allocasuarina humilis* and *Hypocalymma angustifolium* on exposed granites.
- GM- Open to Closed Heath of Proteaceae Myrtaceae species, including *Hakea incrassata*, *Hakea stenocarpa*, *Dryandra eremita* var. *eremita*, *Hakea undulata*, *Melaleuca trichophylla*, *Allocasuarina humilis* and *Hypocalymma angustifolium* over granite outcroppings.
- CG- Open Woodland of *Eucalyptus rudis* *Eucalyptus wandoo* *Corymbia calophylla* over *Trymalium floribundum* subsp. *floribundum*, *Darwinia citrifolia* over sedges on creeklines.
- M- Open Woodland of *Eucalyptus wandoo* - *Eucalyptus accedens* *Corymbia calophylla* over low understorey, including *Hibbertia hypericoides*, *Bassia encarpa*, *Phyllanthus calycinus* on claystone.
- MG- Open Woodland of *Eucalyptus wandoo* and *Eucalyptus accedens* with dense understorey, including *Hakea incrassata*, *Allocasuarina humilis*, *Hakea undulata* and *Hakea trifurcata* on claystone over shallow granite.
- R- Woodland to Open Woodland of *Eucalyptus marginata* *Corymbia calophylla* over dense understorey, including *Hakea incrassata*, *Allocasuarina humilis*, *Hakea undulata* and *Hakea trifurcata* on sandy-gravels over shallow granite.
- P- Open Forest of *Allocasuarina fraseriana* *Eucalyptus marginata* *Corymbia calophylla* over low understorey, including *Grevillea wilsonii*, *Hibbertia hypericoides* and *Hakea issacarpa* on sandy-gravels.
- G2- Open Woodland of *Allocasuarina huegeliana* over patches of Lithic Complex and Open Heath of Proteaceae Myrtaceae species on exposed granites.
- S- Open Forest of *Eucalyptus marginata* *Corymbia calophylla* over low understorey, including *Grevillea wilsonii*, *Hibbertia hypericoides* and *Hakea issacarpa* on sandy-gravels.
- RE- Rehabilitation Areas
- D- Disturbed

— Approved Pit Area of Existing Operations
— Proposed Pit Development Area
- - - Proposed Stockpile Extension Area
- - - Lease Area

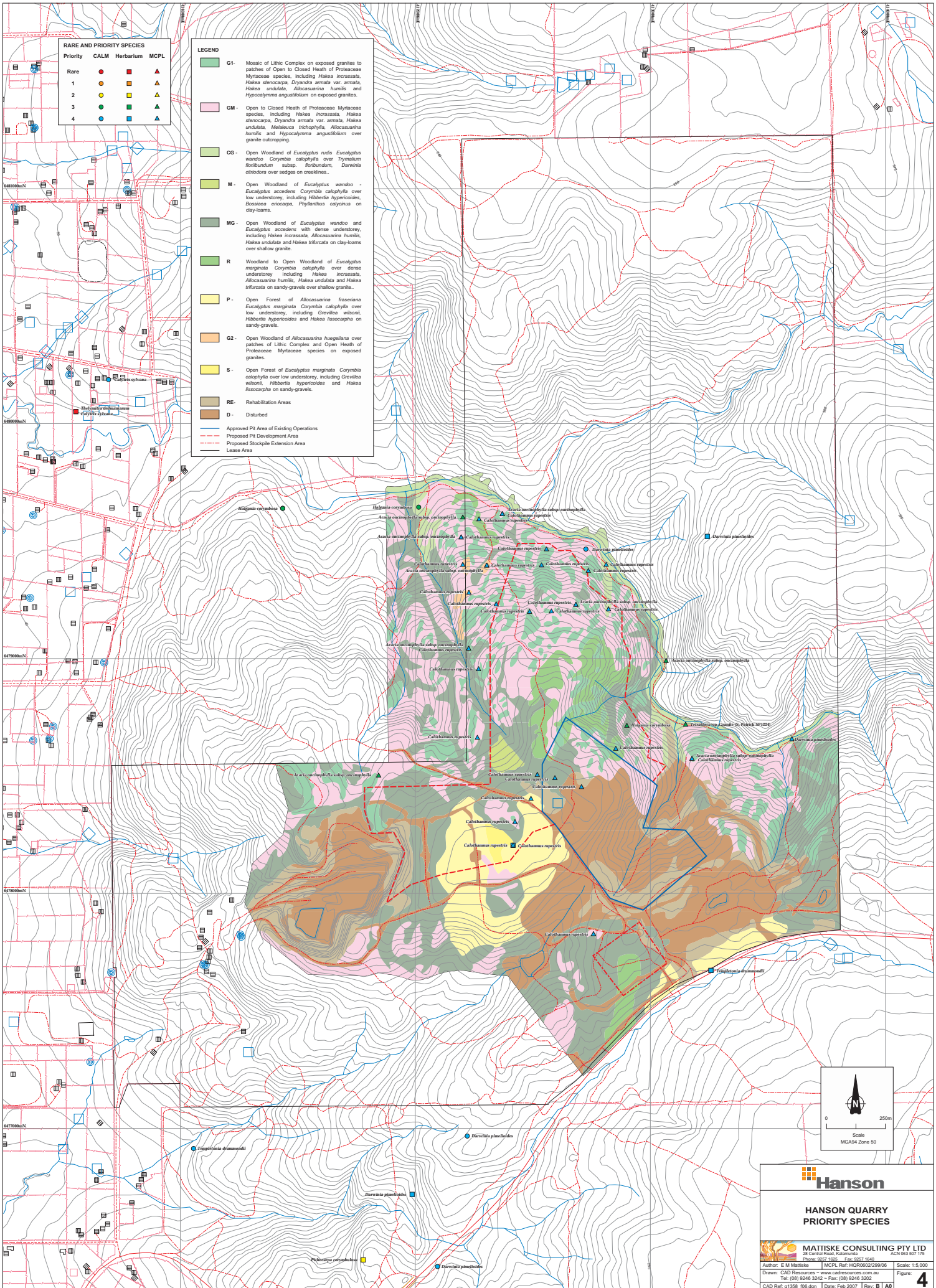


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VEGETATION**

MATTISKE CONSULTING PTY LTD
 28 Central Road, Melbourne
 Phone: 9557 1925 Fax: 9557 1846
 Author: E M Mattiske | MCR: Ref: H200602/29008
 Drawn: CAD Resources - www.cadresources.com.au
 Tel: (08) 9246 3242 - Fax: (08) 9246 3202
 CAD Ref: g1358_163.dgn | Date: Apr 2007 | Rev: D | A8

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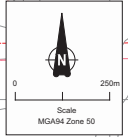


RARE AND PRIORITY SPECIES

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

LEGEND

- G1- Mosaic of Lithic Complex on exposed granites to patches of Open to Closed Heath of Proteaceae Myrtaceae species, including *Hakea incrassata*, *Hakea stenocarpa*, *Dryandra armata* var. *armata*, *Hakea undulata*, *Allocasuarina humilis* and *Hypocalymma angustifolium* on exposed granites.
- GM- Open to Closed Heath of Proteaceae Myrtaceae species, including *Hakea incrassata*, *Hakea stenocarpa*, *Dryandra armata* var. *armata*, *Hakea undulata*, *Melaleuca isophylla*, *Allocasuarina humilis* and *Hypocalymma angustifolium* over granite outcropping.
- CG- Open Woodland of *Eucalyptus rudis* *Eucalyptus wandoo* *Corymbia calophylla* over *Tymnatum forficatum* ssp. *forficatum*, *Dawsonia cibicoides* over sedges on creeklines.
- M- Open Woodland of *Eucalyptus wandoo* *Eucalyptus accedens* *Corymbia calophylla* over low understorey, including *Hibbertia hypericoides*, *Bossiaea eriocarpa*, *Phyllanthus calycitrus* on clay-loams.
- MG- Open Woodland of *Eucalyptus wandoo* and *Eucalyptus accedens* with dense understorey, including *Hakea incrassata*, *Allocasuarina humilis*, *Hakea undulata* and *Hakea infurcata* on clay-loams over shallow granite.
- R- Woodland to Open Woodland of *Eucalyptus marginata* *Corymbia calophylla* over dense understorey including *Hakea incrassata*, *Allocasuarina humilis*, *Hakea undulata* and *Hakea infurcata* on sandy-gravels over shallow granite.
- P- Open Forest of *Allocasuarina fraseriana* *Eucalyptus marginata* *Corymbia calophylla* over low understorey, including *Grevillea wilsonii*, *Hibbertia hypericoides* and *Hakea issocarpa* on sandy-gravels.
- G2- Open Woodland of *Allocasuarina fraseriana* over patches of Lithic Complex and Open Heath of Proteaceae Myrtaceae species on exposed granites.
- S- Open Forest of *Eucalyptus marginata* *Corymbia calophylla* over low understorey, including *Grevillea wilsonii*, *Hibbertia hypericoides* and *Hakea issocarpa* on sandy-gravels.
- RE- Rehabilitation Areas
- D- Disturbed
- Approved Pit Area of Existing Operations
- Proposed Pit Development Area
- Proposed Stockpile Extension Area
- Lease Area



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PRIORITY SPECIES**

MATTISKE CONSULTING PTY LTD
28 Central Road, Melbourne
Phone: 9557 1925 Fax: 9557 1949
Author: E M Mattiske | MCPL Ref: H200602/29808
Drawn: CAD Resources - www.cadresources.com.au
Tel: (08) 9246 3242 - Fax: (08) 9246 3202
CAD Ref: g1358_r06.dgn | Date: Feb 2007 | Rev: B | A8

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APPENDIX A1: DEFINITION OF RARE AND PRIORITY FLORA SPECIES (Department of Environment and Conservation 2008a)

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 (i.e. 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 (i.e. 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>

APPENDIX A2: DEFINITION OF THREATENED FLORA SPECIES (Department of the Environment, Water, Heritage and the Arts. 2008a)

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>

APPENDIX A3 : DEFINITION OF THREATENED ECOLOGICAL COMMUNITIES (Department of Environment and Conservation 2008b)

Category Code	Category
PTD	<p>Presumed Totally Destroyed</p> <p>An ecological community will be listed as Presumed Totally Destroyed if there are no recent records of the community being extant and either of the following applies:</p> <ul style="list-style-type: none"> (i) records within the last 50 years have not been confirmed despite thorough searches or known likely habitats or; (ii) all occurrences recorded within the last 50 years have since been destroyed.
CE	<p>Critically Endangered</p> <p>An ecological community will be listed as Critically Endangered when it has been adequately surveyed and is found to be facing an extremely high risk of total destruction in the immediate future, meeting any one of the following criteria:</p> <ul style="list-style-type: none"> (i) The estimated geographic range and distribution has been reduced by at least 90% and is either continuing to decline with total destruction imminent, or is unlikely to be substantially rehabilitated in the immediate future due to modification; (ii) The current distribution is limited ie. highly restricted, having very few small or isolated occurrences, or covering a small area; (iii) The ecological community is highly modified with potential of being rehabilitated in the immediate future.
E	<p>Endangered</p> <p>An ecological community will be listed as Endangered when it has been adequately surveyed and is not Critically Endangered but is facing a very high risk of total destruction in the near future. The ecological community must meet any one of the following criteria:</p> <ul style="list-style-type: none"> (i) The estimated geographic range and distribution has been reduced by at least 70% and is either continuing to decline with total destruction imminent in the short term future, or is unlikely to be substantially rehabilitated in the short term future due to modification; (ii) The current distribution is limited ie. highly restricted, having very few small or isolated occurrences, or covering a small area; (iii) The ecological community is highly modified with potential of being rehabilitated in the short term future.
V	<p>Vulnerable</p> <p>An ecological community will be listed as Vulnerable when it has been adequately surveyed and is not Critically Endangered or Endangered but is facing high risk of total destruction in the medium to long term future. The ecological community must meet any one of the following criteria:</p> <ul style="list-style-type: none"> (i) The ecological community exists largely as modified occurrences that are likely to be able to be substantially restored or rehabilitated; (ii) The ecological community may already be modified and would be vulnerable to threatening process, and restricted in range or distribution; (iii) The ecological community may be widespread but has potential to move to a higher threat category due to existing or impending threatening processes.

APPENDIX A4: DEFINITION OF PRIORITY ECOLOGICAL COMMUNITIES (Department of Environment and Conservation 2008b)

Category Code	Category
P1	<p>Poorly-known ecological communities</p> <p>Ecological communities with apparently few, small occurrences, all or most not actively managed for conservation (e.g. within agricultural or pastoral lands, urban areas, active mineral leases) and for which current threats exist.</p>
P2	<p>Poorly-known ecological communities</p> <p>Communities that are known from few small occurrences, all or most of which are actively managed for conservation (e.g. within national parks, conservation parks, nature reserves, State forest, un-allocated Crown land, water reserves, etc.) and not under imminent threat of destruction or degradation.</p>
P3	<p>Poorly known ecological communities</p> <p>(i) Communities that are known from several to many occurrences, a significant number or area of which are not under threat of habitat destruction or degradation or:</p> <p>(ii) Communities known from a few widespread occurrences, which are either large or within significant remaining areas of habitat in which other occurrences may occur, much of it not under imminent threat, or;</p> <p>(iii) Communities made up of large, and/or widespread occurrences, that may or not be represented in the reserve system, but are under threat of modification across much of their range from processes such as grazing and inappropriate fire regimes.</p>
P4	<p>Ecological communities that are adequately known, rare but not threatened or meet criteria for Near Threatened, or that have been recently removed from the threatened list. These communities require regular monitoring.</p>
P5	<p>Conservation Dependent ecological communities</p> <p>Ecological communities that are not threatened but are subject to a specific conservation program, the cessation of which would result in the community becoming threatened within five years.</p>

APPENDIX A5: DEFINITION OF STANDARD CONTROL CODES FOR DECLARED PLANT SPECIES IN WESTERN AUSTRALIA (Department of Agriculture and Food 2008)

CONTROL CODE REQUIREMENTS	CONDITIONS
<p>P1 Prohibits movement</p>	<p>The movement of plants or their seeds is prohibited within the State. This prohibits the movement of contaminated machinery and produce including livestock and fodder.</p>
<p>P2 Aim is to eradicate infestation</p>	<p>Treat all plants to destroy and prevent propagation each year until no plants remain. The infested area must be managed in such a way that prevents the spread of seed or plant parts on or in livestock, fodder, grain, vehicles and/or machinery.</p>
<p>P3 Aims to control infestation by reducing area and/or density of infestation</p>	<p>The infested area must be managed in such a way that prevents the spread of seed or plant parts within and from the property on or in livestock, fodder, grain, vehicles and/or machinery. Treat to destroy and prevent seed set all plants:-</p> <ul style="list-style-type: none"> • Within 100 metres inside of the boundaries of the infestation • within 50 metres of roads and highwater mark on waterways • within 50 metres of sheds, stock yards and houses <p>Treatment must be done prior to seed set each year. Of the remaining infested area:- Where plant density is 1-10 per hectare treat 100% of infestation. Where plant density is 11-100 per hectare treat 50% of infestation. Where plant density is 101-1000 per hectare treat 10% of infestation. Properties with less than 2 hectares of infestation must treat the entire infestation. Additional areas may be ordered to be treated.</p>
<p>P4 Aims to prevent infestation spreading beyond existing boundaries of infestation.</p>	<p>The infested area must be managed in such a way that prevents the spread of seed or plant parts within and from the property on or in livestock, fodder, grain, vehicles and/or machinery. Treat to destroy and prevent seed set all plants:-</p> <ul style="list-style-type: none"> • within 100 metres inside of the boundaries of the infested property • within 50 metres of roads and highwater mark on waterways • within 50 metres of sheds, stock yards and houses <p>Treatment must be done prior to seed set each year. Properties with less than 2 hectares of infestation must treat the entire infestation. Additional areas may be ordered to be treated.</p>
<p>Special considerations</p>	<p>In the case of P4 infestations where they continue across property boundaries there is no requirement to treat the relevant part of the property boundaries as long as the boundaries of the infestation as a whole are treated. There must be agreement between neighbours in relation to the treatment of these areas.</p>

APPENDIX B: POTENTIAL RARE AND PRIORITY AND THREATENED FLORA IN THE RED HILL QUARRY PROJECT AREA

SCC - State Conservation Status (Appendix A1, DEC 2008b); FCC - Federal Conservation Status (Appendix A2, Department of the Environment, Water, Heritage and the Arts 2008a)

^ - Probability based on site preferences as defined in collections held at State Herbarium (DEC 2008a)

SPECIES	SCC	FCC	Comments (based on State Herbarium records - DEC 2008a)	Probability ^ DEC 2008a		
<i>Acacia aphylla</i>	R	V	Known from 35 records, mainly in northern Jarrah Forest on fringes of Helena Valley, Mundaring Weir and Clackline.	High		
<i>Acacia drummondii</i> subsp. <i>affinis</i>	P3					
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i>	P3					
<i>Acacia ridleyana</i>	P3					
<i>Adenanthos cygnorum</i> subsp. <i>chamaephyton</i>	P3					
<i>Anthocercis gracilis</i>	R	V	Known from 28 records, mainly in northern Jarrah Forest on fringes of Helena Valley, Mundaring Weir and in John Forrest National Park.	High		
<i>Anthotium junciforme</i>	P4					
<i>Aotus cordifolia</i>	P3					
<i>Banksia micrantha</i>	P3					
<i>Byblis gigantea</i>	P2					
<i>Caladenia arrecta</i>	P4					
<i>Caladenia huegelii</i>	R	E				
<i>Calothamnus rupestris</i>	P4					
<i>Calytrix breviseta</i> subsp. <i>breviseta</i>	R	E				
<i>Calytrix sylvana</i>	P4					
<i>Carex tereticaulis</i>	P1					
<i>Cyanicula ixioides</i> subsp. <i>ixioides</i>	P4		Known from 10 records, mainly in heaths on palusplain, on Coastal Plain.	Low		
<i>Cyathochaeta teretifolia</i>	P3					
<i>Darwinia pimelioides</i>	P4					
<i>Diplolaena andrewsii</i>	P2					
<i>Drosera occidentalis</i> subsp. <i>occidentalis</i>	P4					
<i>Eleocharis keigheryi</i>	R	V				
<i>Eryngium pinnatifidum</i> subsp. <i>palustre</i>	P3					
<i>Eryngium subdecumbens</i>	P3					
					Known from 31 records at State Herbarium, Habitat on wet claypans on coastal plain.	Low

APPENDIX B: POTENTIAL RARE AND PRIORITY AND THREATENED FLORA IN THE RED HILL QUARRY PROJECT AREA

SCC - State Conservation Status (Appendix A1, DEC 2008b); FCC - Federal Conservation Status (Appendix A2, Department of the Environment, Water, Heritage and the Arts 2008a)

^ - Probability based on site preferences as defined in collections held at State Herbarium (DEC 2008a)

SPECIES	SCC	FCC	Comments (based on State Herbarium records - DEC 2008a)	Probability ^ DEC 2008a
<i>Goodenia filiformis</i>	P3			
<i>Grevillea curviloba</i> subsp. <i>curviloba</i>	R	E	Known from 12 records at State Herbarium, on sandplain, wet flats and palusplain.	Low
<i>Grevillea curviloba</i> subsp. <i>incurva</i>	R	E	Known from 39 records at State Herbarium, on ironstone areas and wetlands, near Muchea.	Low
<i>Grevillea flexuosa</i>	R	V	Known from 43 records in gravelly and outcrop areas supporting Wandoo, in northern Jarrah Forest.	High
<i>Grevillea pimeleoides</i>	P4			
<i>Haemodorum loratum</i>	P3			
<i>Halgania corymbosa</i>	P3			
<i>Haloragis tenuifolia</i>	P3			
<i>Hemigenia rigida</i>	P1			
<i>Hydrocotyle lemnoides</i>	P4			
<i>Hydrocotyle striata</i>	P1			
<i>Hypolaena robusta</i>	P4			
<i>Isopogon drummondii</i>	P3			
<i>Jacksonia sericea</i>	P4			
<i>Lasiopetalum bracteatum</i>	P4			
<i>Lepidosperma pruinosum</i>	P3			
<i>Lepyrodia heleocharoides</i>	P3			
<i>Myriocephalus appendiculatus</i>	P3			
<i>Myriophyllum echinatum</i>	P3			
<i>Persoonia sulcata</i>	P4			
<i>Phlebocarya pilosissima</i> subsp. <i>pilosissima</i>	P3			
<i>Phyllangium palustre</i>	P2			
<i>Pimelea rara</i>	P4			
<i>Pithocarpa corymbulosa</i>	P2			
<i>Rhodanthe pyrethrum</i>	P3			
<i>Schoenus capillifolius</i>	P2			

APPENDIX B: POTENTIAL RARE AND PRIORITY AND THREATENED FLORA IN THE RED HILL QUARRY PROJECT AREA

SCC - State Conservation Status (Appendix A1, DEC 2008b); FCC - Federal Conservation Status (Appendix A2, Department of the Environment, Water, Heritage and the Arts 2008a)

^ - Probability based on site preferences as defined in collections held at State Herbarium (DEC 2008a)

SPECIES	SCC	FCC	Comments (based on State Herbarium records - DEC 2008a)	Probability ^ DEC 2008a
<i>Schoenus</i> sp. Bullsbrook (J.J. Alford 915)	P2			
<i>Schoenus</i> sp. Waroona (G.J. Keighery 12235)	P3			
<i>Senecio leucoglossus</i>	P4			
<i>Stachystemon axillaris</i>	P4			
<i>Stylidium longitubum</i>	P3			
<i>Stylidium trudgenii</i>	P3			
<i>Templetonia drummondii</i>	P4			
<i>Tetrateca pilifera</i>	P3			
<i>Tetrateca similis</i>	P3			
<i>Tetrateca</i> sp. Granite (S. Patrick SP1224)	P3			
<i>Thelymitra dedmaniarum</i>	R			
<i>Thelymitra stellata</i>	R	E	Known from 15 records on sandy, clay and gravelly soils, extending from Arthur River to Coastal Plain.	Low
<i>Thysanotus anceps</i>	P3			
<i>Thysanotus glaucus</i>	P4			
<i>Thysanotus isantherus</i>	P3			
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i>	P4			
<i>Verticordia serrata</i> var. <i>linearis</i>	P3			

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
ADIANTACEAE	<i>Cheilanthes austrotenuifolia</i> <i>Cheilanthes distans</i>
ZAMIACEAE	<i>Macrozamia fraseri</i> <i>Macrozamia riedlei</i>
POACEAE	* <i>Aira caryophyllea</i> * <i>Aira cupaniana</i> <i>Amphipogon debilis</i> <i>Austrodanthonia acerosa</i> <i>Austrodanthonia</i> sp. <i>Austrostipa campylachne</i> <i>Austrostipa elegantissima</i> <i>Austrostipa</i> sp. * <i>Avena barbata</i> * <i>Avena</i> sp. * <i>Brachypodium distachyon</i> * <i>Briza maxima</i> * <i>Briza minor</i> * <i>Bromus</i> sp. * <i>Ehrharta longiflora</i> <i>Eriachne ovata</i> <i>Neurachne alopecuroidea</i> * <i>Pentaschistis airoides</i> <i>Poa drummondiana</i> <i>Tetrarrhena laevis</i> <i>Themeda triandra</i> * <i>Vulpia myuros</i>
CYPERACEAE	<i>Cyathochaeta avenacea</i> <i>Gahnia aristata</i> <i>Lepidosperma drummondii</i> <i>Lepidosperma leptostachyum</i> <i>Lepidosperma longitudinale</i> <i>Lepidosperma pubisquameum</i> <i>Lepidosperma squamatum</i> <i>Lepidosperma</i> sp. <i>Mesomelaena tetragona</i> <i>Schoenus subfascicularis</i> <i>Schoenus brevisetis</i> <i>Schoenus ?pleiostemoneus</i> <i>Schoenus</i> sp. smooth culms (K.R. Newbey 7823) <i>Tetraria capillaris</i> <i>Tetraria octandra</i>

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
RESTIONACEAE	<i>Desmocladius asper</i> <i>Desmocladius fasciculatus</i> <i>Desmocladius flexuosus</i> <i>Hypolaena exsulca</i> <i>Lepidobolus preissianus</i> subsp. <i>preissianus</i> <i>?Lepyrodia</i> sp. <i>Loxocarya cinerea</i>
DASYPOGONACEAE	<i>Chamaexeros serra</i> <i>Kingia australis</i> <i>Lomandra caespitosa</i> <i>Lomandra hermaphrodita</i> <i>Lomandra ?hermaphrodita</i> <i>Lomandra nigricans</i> <i>Lomandra sericea</i> <i>Lomandra sonderi</i>
XANTHORRHOEACEAE	<i>Xanthorrhoea gracilis</i> <i>Xanthorrhoea preissii</i> <i>Xanthorrhoea</i> sp.
PHORMIACEAE	<i>Dianella revoluta</i> <i>Dianella revoluta</i> var. <i>divaricata</i> <i>Stypandra glauca</i>
ANTHERICACEAE	<i>Agrostocrinum scabrum</i> subsp. <i>scabrum</i> <i>Caesia micrantha</i> <i>Laxmannia squarrosa</i> <i>Thysanotus arbuscula</i> <i>Thysanotus dichotomus</i> <i>Thysanotus manglesianus</i> <i>Thysanotus multiflorus</i> <i>Thysanotus sparteus</i> <i>Tricoryne elatior</i>
COLCHICACEAE	<i>Burchardia congesta</i> <i>Burchardia</i> sp.
BORYACEAE	<i>Borya sphaerocephala</i>
AMARYLLIDACEAE	<i>Hypoxis occidentalis</i> var. <i>quadriloba</i>
JUNCACEAE	<i>Juncus pallidus</i>

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
HAEMODORACEAE	<i>Anigozanthos</i> sp. <i>Conostylis androstemma</i> <i>Conostylis setigera</i> subsp. <i>setigera</i> <i>Conostylis setosa</i> <i>Haemodorum laxum</i> <i>Haemodorum paniculatum</i> <i>Haemodorum</i> sp.
DIOSCOREACEAE	<i>Dioscorea hastifolia</i>
IRIDACEAE	* <i>Gladiolus caryophyllaceus</i> * <i>Moraea flaccida</i> <i>Orthrosanthus laxus</i> <i>Orthrosanthus laxus</i> var. <i>laxus</i> <i>Patersonia juncea</i> <i>Patersonia occidentalis</i> <i>Patersonia rudis</i> * <i>Watsonia meriana</i> var. <i>bulbillifera</i>
ORCHIDACEAE	<i>Caladenia flava</i> * <i>Disa bracteata</i> <i>Elythranthera brunonis</i> <i>Eriochilus ?dilatatus</i> <i>Pterostylis</i> sp. <i>Pyrorchis nigricans</i> <i>Thelymitra crinita</i> <i>Thelymitra macrophylla</i> <i>Thelymitra</i> sp. Orchidaceae sp.
CASUARINACEAE	<i>Allocasuarina fraseriana</i> <i>Allocasuarina huegeliana</i> <i>Allocasuarina humilis</i>
PROTEACEAE	<i>Adenanthos barbiger</i> <i>Banksia armata</i> var. <i>armata</i> <i>Banksia bipinnatifida</i> <i>Banksia bipinnatifida</i> subsp. <i>bipinnatifida</i> <i>Banksia dallanneyi</i> <i>Banksia dallanneyi</i> var. <i>dallanneyi</i> <i>Banksia fraseri</i> var. <i>fraseri</i> <i>Banksia grandis</i> <i>Banksia sessilis</i> <i>Banksia sessilis</i> var. <i>sessilis</i> <i>Banksia squarrosa</i> <i>Conospermum huegelii</i>

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
PROTEACEAE (Continued)	<i>Grevillea bipinnatifida</i> subsp. <i>bipinnatifida</i> <i>Grevillea endlicheriana</i> <i>Grevillea manglesii</i> subsp. <i>manglesii</i> <i>Grevillea synapheae</i> <i>Grevillea synapheae</i> subsp. <i>synapheae</i> <i>Grevillea wilsonii</i> <i>Hakea amplexicaulis</i> <i>Hakea ?auriculata</i> <i>Hakea cristata</i> <i>Hakea cyclocarpa</i> <i>Hakea erinacea</i> <i>Hakea incrassata</i> <i>Hakea lissocarpha</i> <i>Hakea petiolaris</i> subsp. <i>petiolaris</i> <i>Hakea ruscifolia</i> <i>Hakea stenocarpa</i> <i>Hakea trifurcata</i> <i>Hakea undulata</i> <i>Isopogon asper</i> <i>Isopogon divergens</i> <i>Isopogon dubius</i> <i>Lambertia multiflora</i> var. <i>darlingensis</i> <i>Persoonia angustiflora</i> <i>Persoonia quinquenervis</i> <i>Petrophile biloba</i> <i>Petrophile linearis</i> <i>Petrophile squamata</i> subsp. <i>squamata</i> <i>Petrophile striata</i> <i>Synaphea acutiloba</i> <i>Synaphea pinnata</i> <i>Synaphea</i> sp.
SANTALACEAE	<i>Santalum acuminatum</i>
LORANTHACEAE	<i>Nuytsia floribunda</i>
POLYGONACEAE	<i>Muehlenbeckia adpressa</i> <i>Persicaria</i> sp.
AMARANTHACEAE	<i>Ptilotus declinatus</i> <i>Ptilotus drummondii</i> var. <i>drummondii</i> <i>Ptilotus manglesii</i>
PORTULACACEAE	<i>Calandrinia calyptata</i>

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
LAURACEAE	<i>Cassytha glabella</i> forma <i>glabella</i> <i>Cassytha pomiformis</i> <i>Cassytha racemosa</i>
DROSERACEAE	<i>Drosera bulbosa</i> <i>Drosera erythrorhiza</i> <i>Drosera ?microphylla</i> <i>Drosera platystigma</i> <i>Drosera stolonifera</i> <i>Drosera</i> sp. (climbing) <i>Drosera</i> sp.
PITTOSPORACEAE	<i>Billardiera fraseri</i> <i>Marianthus coeruleopunctatus</i>
MIMOSACEAE	<i>Acacia applanata</i> <i>Acacia barbinervis</i> subsp. <i>barbinervis</i> <i>Acacia celastrifolia</i> <i>Acacia cyclops</i> <i>Acacia drummondii</i> subsp. <i>drummondii</i> <i>Acacia ericifolia</i> <i>Acacia extensa</i> * <i>Acacia iteaphylla</i> <i>Acacia lasiocarpa</i> var. <i>sedifolia</i> <i>Acacia nervosa</i> <i>Acacia obovata</i> <i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i> (P3) <i>Acacia preissiana</i> <i>Acacia pulchella</i> <i>Acacia pulchella</i> var. <i>glaberrima</i> <i>Acacia pulchella</i> var. <i>pulchella</i> <i>Acacia saligna</i> <i>Acacia teretifolia</i>
CAESALPINIACEAE	<i>Labichea lanceolata</i> subsp. <i>lanceolata</i> <i>Labichea punctata</i>
PAPILIONACEAE	<i>Bossiaea eriocarpa</i> <i>Bossiaea ornata</i> <i>Cristonia biloba</i> <i>Daviesia decurrens</i> <i>Daviesia ?hakeoides</i> <i>Daviesia horrida</i> <i>Daviesia incrassata</i> <i>Daviesia polyphylla</i> <i>Daviesia preissii</i> <i>Dillwynia laxiflora</i>

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
PAPILIONACEAE (Continued)	<i>Gastrolobium dilatatum</i> <i>Gastrolobium epacridoides</i> <i>Gastrolobium spathulatum</i> <i>Gastrolobium villosum</i> <i>Gompholobium marginatum</i> <i>Gompholobium polymorphum</i> <i>Gompholobium preissii</i> <i>Gompholobium shuttleworthii</i> <i>Hovea chorizemifolia</i> <i>Hovea pungens</i> <i>Hovea trisperma</i> <i>Isotropis cuneifolia</i> <i>Jacksonia alata</i> <i>Jacksonia angulata</i> <i>Jacksonia restioides</i> <i>Mirbelia spinosa</i> <i>Sphaerolobium linophyllum</i> <i>Viminaria juncea</i>
OXALIDACEAE	* <i>Oxalis</i> sp.
RUTACEAE	<i>Boronia cymosa</i> <i>Boronia ovata</i> <i>Philotheca spicata</i>
TREMANDRACEAE	<i>Tetratheca hirsuta</i> <i>Tetratheca nuda</i> <i>Tetratheca</i> sp. Granite (S. Patrick SP1224) (P3)
POLYGALACEAE	<i>Comesperma calymega</i> <i>Comesperma ciliatum</i> <i>Comesperma virgatum</i>
EUPHORBIACEAE	<i>Phyllanthus calycinus</i> <i>Poranthera microphylla</i>
STACKHOUSIACEAE	<i>Stackhousia monogyna</i> <i>Tripterococcus brunonis</i>
SAPINDACEAE	<i>Diplopeltis huegelii</i> subsp. <i>lehmannii</i>
RHAMNACEAE	<i>Cryptandra pungens</i> <i>Trymalium floribundum</i> <i>Trymalium floribundum</i> subsp. <i>floribundum</i> <i>Trymalium ledifolium</i> <i>Trymalium ledifolium</i> var. <i>ledifolium</i> <i>Trymalium ledifolium</i> var. <i>rosmarinifolium</i>

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
STERCULIACEAE	<i>Guichenotia sarotes</i>
	<i>Lasiopetalum floribundum</i>
	<i>Thomasia foliosa</i>
	<i>Thomasia glutinosa</i> var. <i>glutinosa</i>
	<i>Thomasia glutinosa</i> var. <i>latifolia</i>
	<i>Thomasia</i> sp.
DILLENIACEAE	<i>Hibbertia commutata</i>
	<i>Hibbertia diamesogenos</i> (ms)
	<i>Hibbertia huegelii</i>
	<i>Hibbertia hypericoides</i>
	<i>Hibbertia pachyrrhiza</i>
	<i>Hibbertia spicata</i> subsp. <i>spicata</i>
<i>Hibbertia subvaginata</i>	
THYMELAEACEAE	<i>Pimelea ciliata</i>
	<i>Pimelea ciliata</i> subsp. <i>ciliata</i>
	<i>Pimelea imbricata</i> var. <i>piligera</i>
	<i>Pimelea suaveolens</i>
	<i>Pimelea suaveolens</i> subsp. <i>suaveolens</i>
MYRTACEAE	<i>Astartea scoparia</i>
	<i>Baeckea camphorosmae</i>
	<i>Baeckea crispiflora</i> var. <i>tenuior</i>
	<i>Beaufortia macrostemon</i>
	<i>Beaufortia purpurea</i>
	<i>Calothamnus graniticus</i>
	<i>Calothamnus quadrifidus</i>
	<i>Calothamnus rupestris</i> (P4)
	<i>Calothamnus sanguineus</i>
	<i>Calytrix glutinosa</i>
	<i>Calytrix variabilis</i>
	<i>Corymbia calophylla</i>
	<i>Darwinia citriodora</i>
	<i>Darwinia pimelioides</i> (P4)
	<i>Darwinia pinifolia</i>
	<i>Eucalyptus accedens</i>
	<i>Eucalyptus marginata</i>
	<i>Eucalyptus marginata</i> subsp. <i>marginata</i>
	<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>
	* <i>Eucalyptus microcorys</i>
	<i>Eucalyptus rudis</i>
	<i>Eucalyptus rudis</i> subsp. <i>rudis</i>
<i>Eucalyptus wandoo</i>	
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
MYRTACEAE (Continued)	<i>Hypocalymma angustifolium</i> <i>Hypocalymma robustum</i> <i>Kunzea recurva</i> <i>Leptospermum erubescens</i> <i>Melaleuca incana</i> subsp. <i>incana</i> <i>Melaleuca nesophila</i> <i>Melaleuca parviceps</i> <i>Melaleuca radula</i> <i>Melaleuca trichophylla</i> <i>Verticordia acerosa</i> var. <i>acerosa</i> <i>Verticordia huegelii</i> var. <i>huegelii</i> <i>Verticordia pennigera</i> <i>Verticordia plumosa</i> var. <i>plumosa</i>
HALORAGACEAE	<i>Gonocarpus cordiger</i>
APIACEAE	<i>Pentapeltis peltigera</i> <i>Trachymene coerulea</i> subsp. <i>coerulea</i> <i>Trachymene pilosa</i> <i>Xanthosia atkinsoniana</i> <i>Xanthosia candida</i> <i>Xanthosia ciliata</i> <i>Xanthosia huegelii</i>
EPACRIDACEAE	<i>Andersonia ?involucrata</i> <i>Andersonia lehmanniana</i> subsp. <i>lehmanniana</i> <i>Astroloma ciliatum</i> <i>Astroloma pallidum</i> <i>Leucopogon capitellatus</i> <i>Leucopogon propinquus</i> <i>Leucopogon pulchellus</i> <i>Styphelia tenuiflora</i>
PRIMULACEAE	* <i>Anagallis arvensis</i> var. <i>caerulea</i>
CONVOLVULACEAE	<i>Convolvulus remotus</i>
BORAGINACEAE	<i>Halgania corymbosa</i> (P3)
LAMIACEAE	<i>Hemigenia incana</i>

**APPENDIX C: SUMMARY OF VASCULAR PLANT SPECIES RECORDED AT RED HILL
QUARRY 2006 / 2007**

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

FAMILY	SPECIES
SCROPHULARIACEAE	* <i>Bartsia trixago</i> * <i>Parentucellia latifolia</i>
RUBIACEAE	<i>Opercularia echinocephala</i>
LOBELIACEAE	<i>Lobelia rhombifolia</i> <i>Lobelia</i> sp.
GOODENIACEAE	<i>Dampiera linearis</i> <i>Goodenia</i> ? <i>coerulea</i> <i>Goodenia fasciculata</i> <i>Lechenaultia biloba</i> <i>Scaevola calliptera</i> <i>Scaevola pilosa</i>
STYLIDIACEAE	<i>Levenhookia pusilla</i> <i>Levenhookia stipitata</i> <i>Stylidium affine</i> <i>Stylidium amoenum</i> <i>Stylidium brunonianum</i> <i>Stylidium bulbiferum</i> <i>Stylidium calcaratum</i> <i>Stylidium carnosum</i> <i>Stylidium dichotomum</i> <i>Stylidium eriopodum</i> <i>Stylidium hispidum</i> <i>Stylidium piliferum</i> <i>Stylidium pycnostachyum</i>
ASTERACEAE	<i>Brachyscome iberidifolia</i> <i>Craspedia variabilis</i> * <i>Dittrichia graveolens</i> <i>Hyalosperma cotula</i> * <i>Hypochaeris glabra</i> <i>Lagenophora huegelii</i> <i>Pithocarpa pulchella</i> var. <i>pulchella</i> <i>Podolepis lessonii</i> <i>Pterochaeta paniculata</i> <i>Siloxerus humifusus</i> * <i>Sonchus oleraceus</i> <i>Trichocline spathulata</i> * <i>Ursinia anthemoides</i> * <i>Vellereophyton dealbatum</i>

APPENDIX D: SUMMARY OF VASCULAR PLANT SPECIES RECORDED BY SITE, HANSON RED HILL QUARRY 2006 / 2007

Note: * denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Site Number																				
	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	
<i>Lepidosperma squamatum</i>	x																				
<i>Leptospermum erubescens</i>	x								x				x				x				
? <i>Lepyrodia</i> sp.																					
<i>Leucopogon capitellatus</i>																					
<i>Leucopogon propinquus</i>																					
<i>Leucopogon pulchellus</i>	x						x		x	x	x			x		x	x				
<i>Levenhookia pusilla</i>																					
<i>Levenhookia stipitata</i>															x						
<i>Lobelia rhombifolia</i>																					
? <i>Lobelia</i> sp.																					
<i>Lomandra caespitosa</i>	x																				
<i>Lomandra hermaphrodita</i>																					
<i>Lomandra nigricans</i>																					
<i>Lomandra sericea</i>																					
<i>Lomandra sonderi</i>																					
<i>Loxocarya cinerea</i>									x												
<i>Macrozamia fraseri</i>																					
<i>Macrozamia riedlei</i>		x		x		x		x				x					x				x
<i>Marianthus coeruleopunctatus</i>																					
<i>Melaleuca incana</i> subsp. <i>incana</i>																					
<i>Melaleuca nesophila</i>																					
<i>Melaleuca parviceps</i>							x					x		x		x	x				
<i>Melaleuca radula</i>		x	x				x		x		x		x	x	x	x	x	x	x		
<i>Melaleuca trichophylla</i>																					
<i>Mesomelaena tetragona</i>																					
<i>Mirbelia spinosa</i>																					
* <i>Moraea flaccida</i>																					
<i>Muehlenbeckia adpressa</i>																					
<i>Neurachne alopecuroidea</i>			x										x	x	x			x			
<i>Nuytsia floribunda</i>									x	x											
<i>Opercularia echinocephala</i>																					
Orchidaceae sp.																					
<i>Orthrosanthus laxus</i>																					
<i>Orthrosanthus laxus</i> var. <i>laxus</i>	x			x																	
* <i>Oxalis</i> sp.					x																x
* <i>Parentucellia latifolia</i>			x					x													
<i>Patersonia juncea</i>																					
<i>Patersonia occidentalis</i>																					
<i>Patersonia rudis</i>																					
<i>Pentapeltis peltigera</i>																					
* <i>Pentaschistis airoides</i>																					
<i>Persicaria</i> sp.																					
<i>Persoonia angustiflora</i>																					
<i>Persoonia quinquenervis</i>																x					
<i>Petrophile biloba</i>						x			x		x		x								
<i>Petrophile linearis</i>			x										x	x							
<i>Petrophile squamata</i> subsp. <i>squamata</i>						x			x							x	x				
<i>Petrophile striata</i>	x	x		x				x									x				x
<i>Philothea spicata</i>																					
<i>Phyllanthus calycinus</i>			x	x					x			x		x				x	x		
<i>Pimelea ciliata</i>									x	x							x				
<i>Pimelea ciliata</i> subsp. <i>ciliata</i>																					
<i>Pimelea imbricata</i> var. <i>piliger</i>			x				x		x				x	x	x						

APPENDIX E: SUMMARY OF PLANT SPECIES BY SITE-VEGETATION TYPE AT RED HILL QUARRY 2006/2007

Note : * - denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC 2008a)

REH - denotes rehabilitation areas.

Site-vegetation Types (based on Havel 1975a and 1975b and descriptions in Section 5.4)

SPECIES	Site-vegetation Types									
	CG	G1	G2	GM	M	MG	P	R	S	REH
<i>Beaufortia macrostemon</i>								X	X	
<i>Beaufortia purpurea</i>						X				X
<i>Billardiera fraseri</i>								X		
<i>Boronia cymosa</i>		X								
<i>Boronia ovata</i>				X		X	X	X	X	
<i>Borya sphaerocephala</i>		X	X	X		X		X		
<i>Bossiaea eriocarpa</i>	X	X	X	X	X	X	X	X	X	
<i>Bossiaea ornata</i>					X	X		X	X	X
* <i>Brachypodium distachyon</i>	X									
<i>Brachyscome iberidifolia</i>		X								
* <i>Briza maxima</i>	X	X	X	X	X	X		X		X
* <i>Briza minor</i>		X								X
* <i>Bromus</i> sp.					X			X		X
<i>Burchardia congesta</i>	X	X				X		X		
<i>Caesia micrantha</i>				X		X				
<i>Caladenia flava</i>				X						
<i>Calandrinia calypttrata</i>		X								
<i>Calothamnus quadrifidus</i>	X	X	X	X		X		X	X	
<i>Calothamnus rupestris</i> (P4)	X	X	X	X		X		X		X
<i>Calothamnus sanguineus</i>	X	X		X		X		X		
<i>Calytrix glutinosa</i>		X	X	X		X				
<i>Calytrix variabilis</i>		X					X	X	X	
<i>Cassyltha glabella</i> forma <i>glabella</i>	X									
<i>Cassyltha pomiformis</i>		X		X	X	X		X	X	X
<i>Cassyltha racemosa</i>		X				X		X		
<i>Chamaexeros serra</i>				X		X				
<i>Cheilanthes austrotenuifolia</i>	X	X	X	X		X		X		
<i>Cheilanthes distans</i>		X	X							
<i>Comesperma calymega</i>		X					X			X
<i>Comesperma ciliatum</i>		X		X				X		
<i>Conospermum huegelii</i>		X								X
<i>Conostylis androstemma</i>		X				X				
<i>Conostylis setigera</i> subsp. <i>setigera</i>		X								
<i>Conostylis setosa</i>		X		X	X	X	X	X	X	
<i>Convolvulus remotus</i>				X						
<i>Corymbia calophylla</i>	X	X	X	X	X	X	X	X	X	X
<i>Craspedia variabilis</i>								X		
<i>Cryptandra pungens</i>		X								
<i>Cyathochaeta avenacea</i>						X			X	
<i>Dampiera linearis</i>						X				
<i>Darwinia citriodora</i>	X	X	X	X		X		X		
<i>Darwinia pinifolia</i>		X		X			X	X		
<i>Daviesia ?hakeoides</i>				X						
<i>Daviesia decurrens</i>						X		X		
<i>Daviesia horrida</i>				X		X		X		
<i>Daviesia incrassata</i>								X		
<i>Daviesia polyphylla</i>						X				

APPENDIX E: SUMMARY OF PLANT SPECIES BY SITE-VEGETATION TYPE AT RED HILL QUARRY 2006/2007

Note : * - denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC 2008a)

REH - denotes rehabilitation areas.

Site-vegetation Types (based on Havel 1975a and 1975b and descriptions in Section 5.4)

SPECIES	Site-vegetation Types									
	CG	G1	G2	GM	M	MG	P	R	S	REH
<i>Daviesia preissii</i>						X		X	X	X
<i>Desmocladius asper</i>	X	X		X		X				
<i>Desmocladius fasciculatus</i>						X	X	X	X	X
<i>Desmocladius flexuosus</i>		X	X	X		X		X		
<i>Dianella revoluta</i>						X			X	
<i>Dianella revoluta</i> var. <i>divaricata</i>						X			X	
<i>Dioscorea hastifolia</i>		X		X						
<i>Diplopeltis huegelii</i> subsp. <i>lehmannii</i>	X	X		X				X		
* <i>Disa bracteata</i>		X								
* <i>Dittrichia graveolens</i>				X						
<i>Drosera ?microphylla</i>				X	X					
<i>Drosera platystigma</i>		X					X			
<i>Drosera</i> sp. (climbing)			X					X		
<i>Drosera stolonifera</i>		X		X	X	X		X		
* <i>Ehrharta longiflora</i>	X									
<i>Elythranthera brunonis</i>		X								
<i>Eriachne ovata</i>	X									
<i>Eucalyptus accedens</i>		X	X	X	X	X			X	
<i>Eucalyptus marginata</i>				X	X	X	X	X	X	
<i>Eucalyptus marginata</i> subsp. <i>marginata</i>						X	X	X	X	
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>			X			X		X		
* <i>Eucalyptus microcorys</i>										X
<i>Eucalyptus rudis</i>	X		X							
<i>Eucalyptus rudis</i> subsp. <i>rudis</i>	X		X							
<i>Eucalyptus wandoo</i>	X		X	X	X	X		X	X	X
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	X		X	X	X	X		X	X	X
<i>Gahnia aristata</i>				X		X			X	
<i>Gastrolobium dilatatum</i>				X		X		X	X	
<i>Gastrolobium epacridoides</i>								X		
<i>Gastrolobium spathulatum</i>			X			X		X		
<i>Gastrolobium villosum</i>	X									X
* <i>Gladiolus caryophyllaceus</i>		X		X		X				
<i>Gompholobium marginatum</i>		X	X	X		X		X		
<i>Gompholobium polymorphum</i>								X		X
<i>Gompholobium preissii</i>						X			X	
<i>Gompholobium shuttleworthii</i>				X						
<i>Gonocarpus cordiger</i>				X		X		X		X
<i>Goodenia ?coerulea</i>						X		X	X	
<i>Goodenia fasciculata</i>	X									
<i>Grevillea bipinnatifida</i> subsp. <i>bipinnatifida</i>	X	X	X	X		X				
<i>Grevillea endlicheriana</i>	X	X	X	X		X				
<i>Grevillea manglesii</i> subsp. <i>manglesii</i>	X	X	X							
<i>Grevillea synapheae</i>			X	X		X	X	X	X	X
<i>Grevillea synapheae</i> subsp. <i>synapheae</i>			X	X		X	X	X	X	X
<i>Grevillea wilsonii</i>						X	X	X	X	
<i>Guichenotia sarotes</i>				X						
<i>Haemodorum laxum</i>	X	X					X		X	

APPENDIX E: SUMMARY OF PLANT SPECIES BY SITE-VEGETATION TYPE AT RED HILL QUARRY 2006/2007

Note : * - denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC 2008a)

REH - denotes rehabilitation areas.

Site-vegetation Types (based on Havel 1975a and 1975b and descriptions in Section 5.4)

SPECIES	Site-vegetation Types									
	CG	G1	G2	GM	M	MG	P	R	S	REH
<i>Haemodorum paniculatum</i>						X			X	
<i>Haemodorum</i> sp.						X			X	
<i>Hakea amplexicaulis</i>						X		X	X	X
<i>Hakea ?auriculata</i>				X				X		
<i>Hakea cristata</i>	X	X	X	X		X		X		X
<i>Hakea cyclocarpa</i>						X	X	X	X	
<i>Hakea erinacea</i>		X	X	X		X		X	X	X
<i>Hakea incrassata</i>		X		X		X		X		
<i>Hakea lissocarpha</i>	X			X	X	X	X	X	X	
<i>Hakea petiolaris</i> subsp. <i>petiolaris</i>	X	X	X	X						
<i>Hakea ruscifolia</i>						X		X	X	
<i>Hakea stenocarpa</i>		X		X		X		X	X	
<i>Hakea trifurcata</i>	X	X		X	X	X	X	X	X	X
<i>Hakea undulata</i>	X	X		X		X		X	X	X
<i>Halgania corymbosa</i> (P3)						X				
<i>Hemigenia incana</i>		X						X	X	
<i>Hibbertia commutata</i>		X	X	X	X	X	X	X	X	
<i>Hibbertia diamesogenos</i> (ms)				X						
<i>Hibbertia huegelii</i>							X		X	
<i>Hibbertia hypericoides</i>	X	X	X	X	X	X	X	X	X	X
<i>Hibbertia pachyrrhiza</i>						X		X	X	X
<i>Hibbertia spicata</i> subsp. <i>spicata</i>		X		X				X		
<i>Hibbertia subvaginata</i>	X	X	X	X	X	X		X	X	X
<i>Hovea chorizemifolia</i>					X	X		X	X	
<i>Hovea pungens</i>		X	X	X		X		X		
<i>Hovea trisperma</i>		X			X	X	X		X	
<i>Hyalosperma cotula</i>	X	X		X						
<i>Hypocalymma angustifolium</i>		X	X	X		X		X		X
<i>Hypocalymma robustum</i>						X		X	X	
* <i>Hypochoeris glabra</i>		X		X					X	
<i>Hypolaena exsulca</i>	X									
<i>Isopogon asper</i>			X	X		X		X	X	
<i>Isopogon divergens</i>		X	X							
<i>Isopogon dubius</i>						X				
<i>Jacksonia alata</i>		X								
<i>Jacksonia angulata</i>		X								
<i>Jacksonia restioides</i>		X		X		X		X		
<i>Juncus pallidus</i>	X									
<i>Kingia australis</i>		X						X		
<i>Labichea lanceolata</i> subsp. <i>lanceolata</i>	X	X	X			X		X		
<i>Lagenophora huegelii</i>				X	X		X		X	
<i>Lasiopetalum floribundum</i>										X
<i>Laxmannia squarrosa</i>		X		X			X	X	X	
<i>Lechenaultia biloba</i>		X		X				X		
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>		X								
<i>Lepidosperma drummondii</i>		X								
<i>Lepidosperma leptostachyum</i>		X		X	X	X		X	X	

APPENDIX E: SUMMARY OF PLANT SPECIES BY SITE-VEGETATION TYPE AT RED HILL QUARRY 2006/2007

Note : * - denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC 2008a)

REH - denotes rehabilitation areas.

Site-vegetation Types (based on Havel 1975a and 1975b and descriptions in Section 5.4)

SPECIES	Site-vegetation Types									
	CG	G1	G2	GM	M	MG	P	R	S	REH
<i>Lepidosperma longitudinale</i>	X									
<i>Lepidosperma pubisquamum</i>	X	X	X	X		X	X	X	X	
<i>Lepidosperma</i> sp.		X								
<i>Lepidosperma squamatum</i>		X				X		X	X	X
<i>Leptospermum erubescens</i>		X	X	X		X	X	X		
<i>Leucopogon capitellatus</i>								X		
<i>Leucopogon pulchellus</i>		X	X	X		X		X	X	X
<i>Levenhookia pusilla</i>		X							X	
<i>Levenhookia stipitata</i>		X					X		X	
<i>Lobelia rhombifolia</i>									X	
? <i>Lobelia</i> sp.	X									
<i>Lomandra hermaphrodita</i>							X	X	X	
<i>Lomandra nigricans</i>							X			
<i>Lomandra sericea</i>						X	X	X	X	
<i>Lomandra sonderi</i>		X								
<i>Loxocarya cinerea</i>		X								
<i>Macrozamia fraseri</i>		X	X			X		X		
<i>Macrozamia riedlei</i>	X	X		X	X	X		X	X	X
<i>Marianthus coeruleopunctatus</i>	X									
<i>Melaleuca incana</i> subsp. <i>incana</i>						X				
<i>Melaleuca nesophila</i>										X
<i>Melaleuca parviceps</i>		X	X	X		X		X		X
<i>Melaleuca radula</i>	X	X	X	X	X	X		X		
<i>Melaleuca trichophylla</i>				X		X		X		
<i>Mesomelaena tetragona</i>									X	
* <i>Moraea flaccida</i>		X								
<i>Muehlenbeckia adpressa</i>	X	X								
<i>Neurachne alopecuroidea</i>	X	X	X	X		X	X	X	X	
<i>Nuytsia floribunda</i>		X				X		X		X
<i>Opercularia echinocephala</i>									X	
<i>Orthrosanthus laxus</i>					X	X		X	X	
<i>Orthrosanthus laxus</i> var. <i>laxus</i>					X	X		X	X	
* <i>Oxalis</i> sp.	X				X					
* <i>Parentucellia latifolia</i>		X		X						
<i>Patersonia juncea</i>						X		X		
<i>Patersonia occidentalis</i>								X		
<i>Patersonia rudis</i>							X			
<i>Pentapeltis peltigera</i>						X		X	X	X
* <i>Pentaschistis airoides</i>		X		X						
<i>Persicaria</i> sp.	X									
<i>Persoonia angustiflora</i>						X			X	
<i>Persoonia quinquenervis</i>		X		X				X	X	
<i>Petrophile biloba</i>	X	X	X	X		X		X		X
<i>Petrophile linearis</i>		X		X						
<i>Petrophile squamata</i> subsp. <i>squamata</i>		X	X	X				X		
<i>Petrophile striata</i>	X	X		X	X	X	X	X	X	
<i>Philothea spicata</i>								X	X	

APPENDIX E: SUMMARY OF PLANT SPECIES BY SITE-VEGETATION TYPE AT RED HILL QUARRY 2006/2007

Note : * - denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC 2008a)

REH - denotes rehabilitation areas.

Site-vegetation Types (based on Havel 1975a and 1975b and descriptions in Section 5.4)

SPECIES	Site-vegetation Types									
	CG	G1	G2	GM	M	MG	P	R	S	REH
<i>Phyllanthus calycinus</i>	X	X		X	X	X		X	X	X
<i>Pimelea ciliata</i>		X	X	X		X		X		
<i>Pimelea ciliata</i> subsp. <i>ciliata</i>		X	X	X		X		X		
<i>Pimelea imbricata</i> var. <i>piligera</i>	X	X	X	X				X		
<i>Pimelea suaveolens</i>				X		X	X	X	X	
<i>Pimelea suaveolens</i> subsp. <i>suaveolens</i>				X		X	X	X	X	
<i>Poa drummondiana</i>					X	X		X	X	
<i>Podolepis lessonii</i>	X	X	X							
<i>Poranthera microphylla</i>									X	
<i>Pterochaeta paniculata</i>		X		X		X	X		X	X
<i>Ptilotus declinatus</i>		X								
<i>Ptilotus drummondii</i> var. <i>drummondii</i>		X								X
<i>Ptilotus manglesii</i>					X	X	X	X	X	
<i>Santalum acuminatum</i>		X		X		X				
<i>Scaevola calliptera</i>						X		X	X	
<i>Scaevola pilosa</i>				X	X					
<i>Schoenus brevisetis</i>				X						
<i>Schoenus ?pleiostemoneus</i>								X		
<i>Schoenus</i> sp. smooth culms (K.R. Newbey 7823)		X	X							
<i>Schoenus subfascicularis</i>						X				
<i>Siloxerus humifusus</i>		X								
* <i>Sonchus oleraceus</i>	X									
<i>Sphaerolobium linophyllum</i>		X								
<i>Stackhousia monogyne</i>		X	X							
<i>Stylidium affine</i>	X	X		X	X	X		X	X	
<i>Stylidium amoenum</i>		X				X	X	X	X	X
<i>Stylidium brunonianum</i>		X	X	X		X		X		X
<i>Stylidium bulbiferum</i>	X	X	X	X	X	X		X		
<i>Stylidium calcaratum</i>		X		X				X		
<i>Stylidium dichotomum</i>		X		X						
<i>Stylidium eriopodum</i>		X		X		X				X
<i>Stylidium hispidum</i>		X			X	X	X	X	X	
<i>Stylidium piliferum</i>									X	
<i>Stylidium pycnostachyum</i>				X						
<i>Stypandra glauca</i>		X				X		X		
<i>Styphelia tenuiflora</i>						X	X	X	X	X
<i>Synaphea acutiloba</i>		X		X		X				
<i>Synaphea pinnata</i>						X				
<i>Tetragia capillaris</i>						X	X	X	X	
<i>Tetragia octandra</i>	X					X	X	X	X	
<i>Tetragia hirsuta</i>		X	X					X		
<i>Tetragia nuda</i>				X		X		X		
<i>Thelymitra crinita</i>		X		X						
<i>Thelymitra macrophylla</i>	X					X				
<i>Themeda triandra</i>				X						
<i>Thomasia foliosa</i>	X			X	X	X				
<i>Thomasia glutinosa</i> var. <i>glutinosa</i>						X		X		

APPENDIX E: SUMMARY OF PLANT SPECIES BY SITE-VEGETATION TYPE AT RED HILL QUARRY 2006/2007

Note : * - denotes introduced species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC 2008a)

REH - denotes rehabilitation areas.

Site-vegetation Types (based on Havel 1975a and 1975b and descriptions in Section 5.4)

SPECIES	Site-vegetation Types									
	CG	G1	G2	GM	M	MG	P	R	S	REH
<i>Thomasia glutinosa</i> var. <i>latifolia</i>						X		X		X
<i>Thysanotus dichotomus</i>	X	X								
<i>Thysanotus manglesianus</i>				X				X		
<i>Thysanotus multiflorus</i>	X	X						X		
<i>Thysanotus sparteus</i>						X		X	X	X
<i>Trachymene coerulea</i> subsp. <i>coerulea</i>						X		X		
<i>Trachymene pilosa</i>		X		X				X		
<i>Trichocline spathulata</i>					X	X		X		
<i>Tricoryne elatior</i>		X		X		X	X			
<i>Tripterococcus brunonis</i>		X	X	X	X	X		X		X
<i>Trymalium floribundum</i>	X			X				X		
<i>Trymalium floribundum</i> subsp. <i>floribundum</i>	X			X				X		
<i>Trymalium ledifolium</i>	X	X	X	X	X	X		X		
<i>Trymalium ledifolium</i> var. <i>ledifolium</i>	X	X	X	X	X	X		X		
* <i>Ursinia anthemoides</i>		X	X	X					X	
<i>Verticordia acerosa</i> var. <i>acerosa</i>		X	X	X		X		X		X
<i>Verticordia huegelii</i> var. <i>huegelii</i>		X	X							
<i>Verticordia pennigera</i>		X		X		X		X		
<i>Verticordia plumosa</i> var. <i>plumosa</i>		X								
<i>Viminaria juncea</i>	X					X				
* <i>Vulpia myuros</i>		X								
* <i>Watsonia meriana</i> var. <i>bulbillifera</i>	X	X								
<i>Xanthorrhoea gracilis</i>		X				X		X	X	X
<i>Xanthorrhoea preissii</i>	X	X	X	X	X	X	X	X	X	X
<i>Xanthosia atkinsoniana</i>		X		X						
<i>Xanthosia candida</i>		X	X			X	X	X	X	
<i>Xanthosia ciliata</i>								X		X

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

Note: * denotes introduced and planted species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Acacia alata</i>	x			x
<i>Acacia applanata</i>		x		
* <i>Acacia baileyana</i>	x			
<i>Acacia barbinervis</i>	x	x	x	x
<i>Acacia barbinervis</i> subsp. <i>barbinervis</i>		x		
<i>Acacia celastrifolia</i>		x		
<i>Acacia cyclops</i>	x			
* <i>Acacia decurrens</i>	x			
<i>Acacia drummondii</i>	x			
<i>Acacia drummondii</i> subsp. <i>drummondii</i>		x		
<i>Acacia extensa</i>	x	x	x	
<i>Acacia incrassata</i>				x
* <i>Acacia iteaphylla</i>	x	x		
<i>Acacia lasiocarpa</i> var. <i>sedifolia</i>		x		
* <i>Acacia longifolia</i>	x			
<i>Acacia nervosa</i>	x	x	x	x
<i>Acacia obovata</i>				x
<i>Acacia oncinophylla</i>	x			
<i>Acacia oncinophylla</i> subsp. <i>ocnophylla</i> (P3)		x		x
* <i>Acacia podalyriifolia</i>	x			
<i>Acacia preissiana</i>	x	x		
<i>Acacia pulchella</i>	x	x	x	x
<i>Acacia pulchella</i> var. <i>glaberrima</i>		x		
<i>Acacia pulchella</i> var. <i>pulchella</i>		x	x	
* <i>Acacia pycnantha</i>	x		x	
<i>Acacia restiacea</i>				x
<i>Acacia saligna</i>	x	x	x	x
<i>Acacia sessilis</i>	x			x
<i>Acacia stenoptera</i>				x
<i>Acacia teretifolia</i>	x			x
<i>Acacia willdenowiana</i>	x		x	x
* <i>Acaena echinata</i>			x	
<i>Actinotus glomeratus</i>	x			
<i>Actinotus leucocephalus</i>	x			x
<i>Adenanthos barbiger</i>	x	x	x	x
<i>Adenanthos cygnorum</i>	x			
<i>Adiantum aethiopicum</i>	x			
* <i>Agapanthus</i> sp.	x			
* <i>Agave americana</i>	x			
<i>Agonis flexuosa</i>	x			
<i>Agrostocrinum scabrum</i>	x	x	x	x
<i>Agrostocrinum scabrum</i> subsp. <i>scabrum</i>		x		
* <i>Aira caryophyllea</i>	x	x	x	x
* <i>Aira cupaniana</i>		x	x	
<i>Alexgeorgea nitens</i>				x
* <i>Allium orientale</i>	x			
* <i>Allium triquetrum</i>	x			
<i>Allocasuarina fraseriana</i>	x	x	x	x
<i>Allocasuarina huegeliana</i>		x		
<i>Allocasuarina humilis</i>	x	x	x	x
* <i>Allocasuarina</i> sp. (non local) (Planted)	x			
<i>Alternanthera nodiflora</i>	x			
<i>Amperea ericoides</i>	x			
<i>Amphipogon amphipogonoides</i>	x			
<i>Amphipogon debilis</i>	x			x
<i>Amphipogon laguroides</i>	x			
<i>Amphipogon strictus</i>				x

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

Note: * denotes introduced and planted species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Amphipogon turbinatus</i>	x			x
<i>Amyema miquelii</i>	x			
<i>Amyema preissii</i>	x			
* <i>Anagallis arvensis</i>	x	x	x	x
* <i>Anagallis arvensis</i> var. <i>caerulea</i>		x	x	
<i>Andersonia aristata</i>	x			x
<i>Andersonia heterophylla</i>	x			
<i>Andersonia ?involuta</i>		x		
<i>Andersonia lehmanniana</i>			x	x
<i>Anigozanthos bicolor</i> subsp. <i>bicolor</i>				x
<i>Anigozanthos flavidus</i>	x			
<i>Anigozanthos humilis</i>	x			
<i>Anigozanthos manglesii</i>	x		x	x
<i>Anigozanthos viridis</i>	x			
<i>Anthocercis gracilis</i>				x
<i>Aotus cordifolia</i> (P3)	x			
<i>Aphelia brizula</i>	x		x	x
<i>Aphelia cyperoides</i>				x
* <i>Arctotheca calendula</i>	x		x	
<i>Arnocrinum preissii</i>	x			
* <i>Arundo donax</i>	x			
* <i>Asparagus asparagoides</i>	x			x
<i>Astartea scoparia</i>	x	x	x	
<i>Astroloma ciliatum</i>	x	x	x	x
<i>Astroloma foliosum</i>	x			
<i>Astroloma pallidum</i>	x	x	x	x
<i>Dichopogon capillipes</i>			x	
<i>Austrodanthonia acerosa</i>		x		
<i>Austrodanthonia</i> sp.		x	x	
<i>Austrodanthonia setacea</i>				x
<i>Austrostipa campylachne</i>		x		x
<i>Austrostipa compressa</i>	x			x
<i>Austrostipa elegantissima</i>	x	x		x
<i>Austrostipa semibarbata</i>	x			
<i>Austrostipa</i> sp.		x	x	
* <i>Avena barbata</i>		x		x
* <i>Avena fatua</i>	x		x	
* <i>Avena</i> sp.		x		
* <i>Babiana</i> sp.	x			
<i>Baeckea camphorosmae</i>	x	x	x	x
<i>Baeckea crispiflora</i>	x			
<i>Baeckea crispiflora</i> var. <i>tenuior</i>		x		
<i>Baeckea</i> sp. Darling Range (R.J. Cranfield 1673)	x			
<i>Banksia attenuata</i>	x			
<i>Banksia grandis</i>	x	x	x	x
<i>Banksia incana</i>	x			
<i>Banksia littoralis</i>				x
<i>Banksia menziesii</i>	x			
* <i>Bartsia trixago</i>	x	x		x
<i>Baumea articulata</i>	x			
<i>Baumea riparia</i>	x			
<i>Baumea rubiginosa</i>				x
<i>Beaufortia macrostemon</i>	x	x		
<i>Beaufortia purpurea</i>		x		x
<i>Beaufortia squarrosa</i>	x			
<i>Billardiera fraseri</i>	x	x		x
<i>Billardiera heterophylla</i>	x			

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

Note: * denotes introduced and planted species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Blancoa canescens</i>	x			
<i>Boronia crenulata</i>	x			
<i>Boronia cymosa</i>		x	x	x
<i>Boronia ovata</i>	x	x	x	x
<i>Boronia ramosa</i>	x			
<i>Boronia tenuis</i> (P4)	x			
<i>Borya constricta</i>				x
<i>Borya sphaerocephala</i>	x	x	x	x
<i>Bossiaea aquifolium</i>	x			
<i>Bossiaea eriocarpa</i>	x	x	x	x
<i>Bossiaea ornata</i>	x	x	x	x
<i>Bossiaea</i> sp. Waroona am.				x
* <i>Brachychiton</i> sp. (Planted)	x			
* <i>Brachypodium distachyon</i>	x	x		x
<i>Brachyscome iberidifolia</i>		x	x	x
* <i>Briza maxima</i>	x		x	x
* <i>Briza minor</i>	x	x		x
* <i>Bromus hordeaceus</i>	x			
* <i>Bromus</i> sp.		x		
<i>Burchardia congesta</i>	x	x	x	x
<i>Burchardia multiflora</i>				x
<i>Caesia micrantha</i>		x	x	x
<i>Caesia occidentalis</i>	x			
<i>Caladenia flava</i>		x	x	x
<i>Caladenia footeana</i>				x
<i>Caladenia longicauda</i>	x			
<i>Caladenia longicauda</i> subsp. <i>longicauda</i>				x
<i>Caladenia macrostylis</i>				x
<i>Caladenia marginata</i>				x
<i>Calandrinia calyptrata</i>		x		
<i>Calandrinia corrigioloides</i>				x
<i>Calectasia narragara</i>	x			x
* <i>Callistemon</i> sp. (non local) (Planted)	x			
<i>Callitris preissii</i>	x			
<i>Calothamnus quadrifidus</i>	x	x	x	x
<i>Calothamnus rupestris</i> (P4)	x	x		
<i>Calothamnus sanguineus</i>	x	x	x	x
<i>Calytrix angulata</i>	x			
<i>Calytrix aurea</i>	x			
<i>Calytrix depressa</i>	x			
<i>Calytrix flavescens</i>	x			
<i>Calytrix fraseri</i>	x			
<i>Calytrix glutinosa</i>	x	x		x
<i>Calytrix variabilis</i>	x	x	x	x
* <i>Canna x orchiodes</i>	x			
<i>Carex inversa</i>	x			
<i>Cassytha glabella</i>	x	x		x
<i>Cassytha glabella</i> forma <i>glabella</i>		x		
<i>Cassytha pomiformis</i>	x	x		x
<i>Cassytha racemosa</i>	x	x	x	x
<i>Caustis dioica</i>	x			
* <i>Centaurium erythraea</i>	x			x
* <i>Centranthus</i> sp.	x			
<i>Centrolepis aristata</i>	x		x	x
<i>Centrolepis drummondiana</i>				x
<i>Centrolepis inconspicua</i>				x

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
* <i>Cerastium glomeratum</i>	x			x
* <i>Chamaecytisus palmensis</i>	x			
<i>Chamaescilla corymbosa</i>	x		x	x
<i>Chamaescilla versicolor</i>			x	
<i>Chamaexeros serra</i>		x	x	x
* <i>Chamelaucium uncinatum</i> (Planted)	x			
<i>Cheilanthes austrotenuifolia</i>	x	x	x	x
<i>Cheilanthes distans</i>		x		
<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>				x
<i>Chordifex sinuosus</i>				x
<i>Chorizandra enodis</i>	x		x	
<i>Chorizema dicksonii</i>	x		x	x
<i>Chorizema ilicifolium</i>	x		x	
* <i>Cicendia filiformis</i>				x
* <i>Citrus limon</i> (Planted)	x			
<i>Clematis pubescens</i>	x			
* <i>Colocasia esculenta</i>	x			
<i>Comesperma calymega</i>	x	x		x
<i>Comesperma ciliatum</i>	x	x		x
<i>Comesperma confertum</i>	x			
<i>Comesperma polygaloides</i>			x	
<i>Comesperma virgatum</i>	x		x	x
<i>Conospermum capitatum</i>	x			
<i>Conospermum huegelii</i>	x	x		x
<i>Conospermum triplinervium</i>	x			
<i>Conospermum undulatum</i> (R)				x
<i>Conostephium pendulum</i>	x			
<i>Conostylis aculeata</i>	x			
<i>Conostylis androstemma</i>	x	x	x	x
<i>Conostylis candicans</i>	x			
<i>Conostylis caricina</i>	x			
<i>Conostylis juncea</i>	x			x
<i>Conostylis serrulata</i>			x	
<i>Conostylis setigera</i>	x	x	x	x
<i>Conostylis setigera</i> subsp. <i>setigera</i>		x		
<i>Conostylis setosa</i>	x	x	x	x
<i>Conothamnus trinervis</i>	x			
<i>Convolvulus remotus</i>		x		x
* <i>Conyza</i> sp.	x			
* <i>Cortaderia selloana</i>	x			
<i>Corymbia calophylla</i>	x	x		x
* <i>Cotoneaster</i> sp.	x			
<i>Craspedia variabilis</i>		x	x	x
<i>Crassula exserta</i>			x	x
<i>Crassula closiana</i>				x
* <i>Crepis foetida</i>				x
<i>Cristonia biloba</i>	x		x	x
<i>Cryptandra arbutiflora</i>	x		x	x
<i>Cryptandra nutans</i>				x
<i>Cryptandra pungens</i>		x		
<i>Cyanicula gemmata</i>				x
<i>Cyanicula sericea</i>				x
* <i>Cyathea cooperi</i>	x			
<i>Cyathochaeta avenacea</i>	x	x	x	x
* <i>Cynodon dactylon</i>	x			
* <i>Cyperus congestus</i>	x			
* <i>Cyperus polystachyos</i>	x			

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Cytogonidium leptocarpoides</i>	x			
<i>Dampiera alata</i>	x		x	x
<i>Dampiera linearis</i>	x	x	x	x
<i>Darwinia citriodora</i>	x	x	x	x
<i>Darwinia pimelioides</i> (P4)				x
<i>Darwinia pinifolia</i>		x		
<i>Darwinia thymoides</i>	x		x	x
<i>Dasyogon bromeliifolius</i>	x			
<i>Daucus glochidiatus</i>				x
<i>Daviesia angulata</i>				x
<i>Daviesia cordata</i>	x		x	
<i>Daviesia decurrens</i>	x	x	x	x
<i>Daviesia divaricata</i>	x			
<i>Daviesia ?hakeoides</i>		x	x	
<i>Daviesia horrida</i>	x	x	x	x
<i>Daviesia incrassata</i>		x		
<i>Daviesia longifolia</i>	x			
<i>Daviesia nudiflora</i>	x			x
<i>Daviesia physodes</i>	x			
<i>Daviesia polyphylla</i>		x		x
<i>Daviesia preissii</i>	x	x	x	x
<i>Daviesia rhombifolia</i>	x			x
<i>Daviesia triflora</i>	x			
<i>Desmocladius asper</i>		x		x
<i>Desmocladius fasciculatus</i>	x	x	x	x
<i>Desmocladius flexuosus</i>	x	x	x	
<i>Dianella revoluta</i>	x	x	x	
<i>Dianella revoluta</i> var. <i>divaricata</i>		x		x
<i>Dichelachne crinita</i>				x
<i>Dichopogon capillipes</i>	x		x	x
<i>Dichopogon preissii</i>				x
<i>Dioscorea hastifolia</i>	x	x	x	x
<i>Dillwynia</i> sp. A FPR				x
<i>Dillwynia laxiflora</i>			x	
* <i>Diosma</i> sp. (Planted)	x			
<i>Diplopeltis huegelii</i>	x	x	x	
<i>Diplopeltis huegelii</i> subsp. <i>lehmannii</i>		x		x
* <i>Dipogon lignosus</i>	x			
* <i>Disa bracteata</i>	x	x		x
* <i>Dittrichia graveolens</i>	x	x	x	
<i>Diuris brumalis</i>				x
<i>Diuris</i> aff. <i>corymbosa</i> A. Brown det. am				x
<i>Diuris laxiflora</i>				x
<i>Diuris longifolia</i>	x			
<i>Diuris porrifolia</i>				x
<i>Dodonaea ericoides</i>	x			
<i>Drosera bulbosa</i>	x			
<i>Drosera erythrorhiza</i>	x		x	x
<i>Drosera gigantea</i>	x			
<i>Drosera glanduligera</i>	x		x	x
<i>Drosera heterophylla</i>				x
<i>Drosera leucoblata</i>	x			
<i>Drosera macrantha</i>			x	x
<i>Drosera menziesii</i>	x		x	x
<i>Drosera ?microphylla</i>		x		
<i>Drosera neesii</i>				x
<i>Drosera pallida</i>			x	x

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Drosera platystigma</i>	x	x	x	
<i>Drosera rosulata</i>				x
<i>Drosera stolonifera</i>	x	x	x	x
<i>Drosera</i> sp. (climbing)		x	x	
<i>Banksia armata</i>	x	x	x	x
<i>Banksia armata</i> var. <i>armata</i>		x	x	
<i>Banksia bipinnatifida</i>	x	x	x	x
<i>Banksia bipinnatifida</i> subsp. <i>bipinnatifida</i>		x	x	
<i>Banksia fraseri</i> var. <i>fraseri</i>		x		x
<i>Banksia dallanneyi</i>		x	x	
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	x	x	x	x
<i>Banksia sessilis</i>	x	x	x	x
<i>Banksia sessilis</i> var. <i>sessilis</i>		x	x	
<i>Banksia squarrosa</i>	x	x		
<i>Banksia squarrosa</i> subsp. <i>squarrosa</i>	x	x		
<i>Banksia</i> sp. aff. <i>pteridifolia</i>	x			
* <i>Echium plantagineum</i>	x			
* <i>Ehrharta calycina</i>	x		x	x
* <i>Ehrharta longiflora</i>	x	x		x
<i>Elythranthera brunonis</i>	x	x		x
<i>Elythranthera emarginata</i>	x			
* <i>Eragrostis curvula</i>	x			
<i>Eremaea fimbriata</i>	x			
<i>Eremaea pauciflora</i>	x			
<i>Eriachne ovata</i>		x		
* <i>Eriobotrya japonica</i>	x			
<i>Eriochilus dilatatus</i>			x	
<i>Eriochilus dilatatus</i> subsp. <i>multiflorus</i>				x
<i>Eriochilus helonomos</i>				x
<i>Eriochilus</i> sp.				x
* <i>Erodium botrys</i>	x			
<i>Eryngium pinnatifidum</i> subsp. <i>pinnatifidum</i>				x
* <i>Erythrina</i> sp.	x			
<i>Eucalyptus accedens</i>		x		x
<i>Eucalyptus marginata</i>	x	x		x
<i>Eucalyptus marginata</i> subsp. <i>marginata</i>	x	x		
<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>		x		
* <i>Eucalyptus microcorys</i>		x		
<i>Eucalyptus patens</i>	x			x
<i>Eucalyptus rudis</i>	x	x		
<i>Eucalyptus rudis</i> subsp. <i>rudis</i>	x	x		
<i>Eucalyptus todtiana</i>	x			
<i>Eucalyptus wandoo</i>	x	x		x
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	x	x		
<i>Eucalyptus</i> sp.	x			
<i>Euchilopsis linearis</i>	x			
* <i>Euphorbia pepus</i>	x			x
<i>Eutaxia virgata</i>	x			
* <i>Ficus carica</i>	x			
* <i>Freesia alba</i> x <i>leichtlinii</i>	x			
* <i>Freesia</i> aff. <i>alba</i> x <i>leichtlinii</i> FPR				x
* <i>Fumaria capreolata</i>				x
* <i>Fumaria muralis</i>	x			
<i>Gahnia aristata</i>		x		x
<i>Gahnia trifida</i>	x			
* <i>Galium divaricatum</i>				x
* <i>Gastridium phleoides</i>				x

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Gastrolobium acutum</i>	x			x
<i>Gastrolobium calycinum</i>			x	
<i>Gastrolobium capitatum</i>	x		x	x
<i>Gastrolobium dilatatum</i>		x	x	x
<i>Gastrolobium epacridoides</i>		x		
<i>Gastrolobium oxylobioides</i>	x			
<i>Gastrolobium spathulatum</i>	x	x	x	x
<i>Gastrolobium spinosum</i>	x			x
<i>Gastrolobium villosum</i>		x	x	x
* <i>Gazania</i> sp.	x			
* <i>Genista linifolia</i>	x			
* <i>Genista monspessulana</i>	x			
* <i>Geranium molle</i>	x			
* <i>Gladiolus caryophyllaceus</i>	x	x	x	x
* <i>Gladiolus undulatus</i>	x			
<i>Glischrocaryon aureum</i>	x			
<i>Glischrocaryon aureum</i> var. <i>aureum</i>				x
* <i>Gomphocarpus fruticosus</i>	x			
<i>Gompholobium aristatum</i>	x			
<i>Gompholobium confertum</i>	x			
<i>Gompholobium knightianum</i>	x		x	
<i>Gompholobium marginatum</i>	x	x	x	x
<i>Gompholobium ovatum</i>				x
<i>Gompholobium polymorphum</i>	x	x	x	x
<i>Gompholobium preissii</i>	x	x	x	x
<i>Gompholobium scabrum</i>	x			
<i>Gompholobium shuttleworthii</i>	x	x		x
<i>Gompholobium tomentosum</i>	x			
<i>Gonocarpus cordiger</i>	x	x	x	x
<i>Gonocarpus nodulosus</i>				x
<i>Goodenia coerulea</i>	x	x		x
<i>Goodenia fasciculata</i>	x	x	x	x
<i>Goodenia filiformis</i> (P3)	x			
<i>Goodenia incana</i>	x			
<i>Grevillea bipinnatifida</i>	x	x	x	x
<i>Grevillea bipinnatifida</i> subsp. <i>bipinnatifida</i>		x	x	
<i>Grevillea biternata</i>	x			
<i>Grevillea crithmifolia</i>	x			
<i>Grevillea endlicheriana</i>	x	x	x	x
<i>Grevillea manglesii</i> subsp. <i>manglesii</i>	x	x		
<i>Grevillea pilulifera</i>	x		x	x
<i>Grevillea pimeleoides</i> (P4)				x
<i>Grevillea quercifolia</i>	x			
* <i>Grevillea</i> sp. (non local)	x			
<i>Grevillea synapheae</i>	x	x	x	x
<i>Grevillea synapheae</i> subsp. <i>synapheae</i>		x	x	
<i>Grevillea thelemanniana</i> (P4)	x			
<i>Grevillea wilsonii</i>	x	x	x	x
<i>Guichenotia sarotes</i>		x		
<i>Haemodorum brevisepalum</i>	x			
<i>Haemodorum discolor</i>				x
<i>Haemodorum laxum</i>	x	x	x	x
<i>Haemodorum loratum</i>	x			
<i>Haemodorum paniculatum</i>	x	x		x
<i>Haemodorum simplex</i>	x		x	x
<i>Haemodorum simulans</i>	x			
<i>Haemodorum</i> sp.		x		

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

Note: * denotes introduced and planted species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Haemodorum spicatum</i>	x			x
<i>Hakea amplexicaulis</i>	x	x	x	x
<i>Hakea auriculata</i>	x	x		
<i>Hakea ceratophylla</i>	x			
<i>Hakea conchifolia</i>	x			
<i>Hakea cristata</i>	x	x	x	x
<i>Hakea cyclocarpa</i>	x	x	x	x
<i>Hakea erinacea</i>	x	x	x	x
<i>Hakea incrassata</i>	x	x	x	x
<i>Hakea lissocarpha</i>	x	x	x	x
<i>Hakea myrtoides</i>				x
<i>Hakea petiolaris</i> subsp. <i>petiolaris</i>		x		
<i>Hakea prostrata</i>	x			
<i>Hakea ruscifolia</i>	x	x	x	x
<i>Hakea stenocarpa</i>	x	x	x	x
<i>Hakea sulcata</i>	x			
<i>Hakea trifurcata</i>	x	x	x	x
<i>Hakea undulata</i>	x	x	x	x
<i>Hakea varia</i>	x			
<i>Hakea</i> sp. (non local)	x			
<i>Halgania corymbosa</i> (P3)		x		
<i>Hardenbergia comptoniana</i>	x			
<i>Helichrysum macranthum</i>	x			
<i>Hemiantra pungens</i>	x			x
<i>Hemigenia incana</i>	x	x		x
<i>Hemigenia sericea</i>	x			
* <i>Hesperantha falcata</i>				x
<i>Hibbertia acerosa</i>	x			x
<i>Hibbertia amplexicaulis</i>	x			
<i>Hibbertia aurea</i>				x
<i>Hibbertia commutata</i>	x	x	x	x
<i>Hibbertia diamesogenos</i> (ms)		x		
<i>Hibbertia glomerata</i>	x			
<i>Hibbertia huegelii</i>	x	x	x	x
<i>Hibbertia hypericoides</i>	x	x	x	x
<i>Hibbertia lasiopus</i>				x
<i>Hibbertia nymphaea</i>	x			
<i>Hibbertia ovata</i>			x	
<i>Hibbertia pachyrrhiza</i>	x	x		
<i>Hibbertia spicata</i>	x	x		
<i>Hibbertia spicata</i> subsp. <i>spicata</i>		x		x
<i>Hibbertia subvaginata</i>	x	x	x	x
<i>Homalosciadium homalocarpum</i>				x
<i>Hovea chorizemifolia</i>	x	x	x	x
<i>Hovea pungens</i>	x	x		x
<i>Hovea trisperma</i>	x	x	x	x
<i>Hyalosperma cotula</i>		x		x
<i>Hybanthus calycinus</i>	x			
<i>Hybanthus debilissimus</i>			x	
<i>Hybanthus floribundus</i>	x			x
<i>Hydrocotyle</i> ? <i>alata</i>			x	
<i>Hydrocotyle callicarpa</i>				x
<i>Hypocalymma angustifolium</i>	x	x	x	x
<i>Hypocalymma robustum</i>	x	x	x	x
* <i>Hypochaeris glabra</i>	x	x	x	x
<i>Hypolaena exsulca</i>		x		
<i>Hypoxis glabella</i>				x

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

Note: * denotes introduced and planted species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Hypoxis occidentalis</i>				x
<i>Hypoxis occidentalis</i> var. <i>quadriloba</i>			x	
* <i>Ipomoea cairica</i>	x			
* <i>Ipomoea indica</i>	x			
* <i>Iris</i> sp.	x			
* <i>Isolepis marginata</i>			x	x
<i>Isopogon asper</i>	x	x	x	x
<i>Isopogon divergens</i>		x		
<i>Isopogon drummondii</i> (P3)	x			
<i>Isopogon dubius</i>	x	x	x	x
<i>Isopogon sphaerocephalus</i>	x		x	x
<i>Isotoma hypocrateriformis</i>	x			x
<i>Isotropis cuneifolia</i>	x			x
* <i>Ixia maculata</i>				x
* <i>Ixia polystachya</i>	x			
<i>Jacksonia alata</i>	x	x	x	x
<i>Jacksonia angulata</i>		x		
<i>Jacksonia floribunda</i>	x			
<i>Jacksonia furcellata</i>	x			
<i>Jacksonia lehmannii</i>	x			
<i>Jacksonia restioides</i>	x	x		x
<i>Jacksonia sternbergiana</i>	x			
* <i>Jacaranda</i> sp. (Planted)	x			
<i>Johnsonia pubescens</i>	x			
* <i>Juncus bufonius</i>	x			x
<i>Juncus caespiticius</i>	x			x
* <i>Juncus capitatus</i>				x
<i>Juncus holoschoenus</i>	x			
* <i>Juncus microcephalus</i>	x			
<i>Juncus pallidus</i>	x	x		
<i>Juncus planifolius</i>	x			
<i>Juncus subsecundus</i>	x			
<i>Kennedia coccinea</i>	x		x	x
<i>Kennedia prostrata</i>	x		x	x
<i>Kennedia stirlingii</i>	x			x
* <i>Kickxia elatine</i>	x			
* <i>Kickxia elatine</i> subsp. <i>elatine</i>				x
<i>Kingia australis</i>	x	x		
<i>Kunzea micrantha</i>	x			x
<i>Kunzea recurva</i>	x			
<i>Kunzea</i> sp.	x			
<i>Labichea lanceolata</i> subsp. <i>lanceolata</i>		x		
<i>Labichea punctata</i>	x		x	x
<i>Lagenophora huegelii</i>	x	x	x	x
<i>Lambertia multiflora</i>	x			
* <i>Lantana camara</i>	x			
<i>Lasiopetalum bracteatum</i> (P4)	x			x
<i>Lasiopetalum floribundum</i>		x		
* <i>Lathyrus tingitanus</i>	x			
* <i>Lavandula dentata</i>	x			
* <i>Lavandula stoechas</i>	x			
<i>Lawrencella rosea</i>			x	x
<i>Laxmannia grandiflora</i>				x
<i>Laxmannia sessiliflora</i>	x			x
<i>Laxmannia squarrosa</i>	x	x	x	x
<i>Lechenaultia biloba</i>	x	x	x	x
<i>Lechenaultia expansa</i>	x			

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Lepidobolus preissianus</i>				x
<i>Lepidobolus preissianus</i> subsp. <i>preissianus</i>		x		
<i>Lepidosperma angustatum</i>	x		x	
<i>Lepidosperma drummondii</i>	x	x		
<i>Lepidosperma gracile</i>			x	
<i>Lepidosperma leptostachyum</i>	x	x		
<i>Lepidosperma longitudinale</i>		x	x	
<i>Lepidosperma pubisquamum</i>		x		
<i>Lepidosperma scabrum</i>	x			
<i>Lepidosperma tenue</i>			x	
<i>Lepidosperma squamatum</i>		x	x	
<i>Lepidosperma tetraquetrum</i>	x		x	x
<i>Lepidosperma tuberculatum</i>			x	x
<i>Lepidosperma</i> sp.		x	x	x
<i>Leporella fimbriata</i>				x
<i>Leptomeria cunninghamii</i>	x		x	x
<i>Leptospermum erubescens</i>	x	x		x
* <i>Leptospermum laevigatum</i>	x			
<i>Lepyrodia glauca</i>	x			
<i>Leucopogon capitellatus</i>		x	x	x
<i>Leucopogon conostephioides</i>			x	
<i>Leucopogon nutans</i>			x	
<i>Leucopogon pulchellus</i>	x	x	x	x
<i>Leucopogon propinquus</i>			x	x
<i>Leucopogon sprengeioides</i>				x
<i>Leucopogon verticillatus</i>	x			
<i>Levenhookia pusilla</i>	x	x	x	x
<i>Levenhookia stipitata</i>	x	x		x
* <i>Lilium</i> sp.	x			
* <i>Linum trigynum</i>	x			x
<i>Lobelia anceps</i>	x			x
<i>Lobelia gibbosa</i>				x
<i>Lobelia rhombifolia</i>		x		x
<i>Lobelia rhytidisperma</i>	x			x
<i>Lobelia tenuior</i>				x
<i>Lobelia</i> sp.		x		
* <i>Lolium perenne</i>				x
* <i>Lolium rigidum</i>	x			
<i>Lomandra brittanii</i>				x
<i>Lomandra caespitosa</i>				x
<i>Lomandra hermaphrodita</i>	x	x	x	x
<i>Lomandra integra</i>			x	x
<i>Lomandra micrantha</i>				x
<i>Lomandra</i> aff. <i>micrantha</i> . semi-terete leaf am				x
<i>Lomandra nigricans</i>		x	x	x
<i>Lomandra pauciflora</i>			x	
<i>Lomandra preissii</i>	x			x
<i>Lomandra purpurea</i>	x		x	x
<i>Lomandra sericea</i>	x	x	x	x
<i>Lomandra sonderi</i>		x	x	x
<i>Lomandra spartea</i>	x		x	x
* <i>Lonicera</i> sp.	x			
<i>Lophostemon</i> sp.	x			
* <i>Lotus angustissimus</i>				x
<i>Loxocarya cinerea</i>		x	x	x
<i>Loxocarya striata</i>	x			
<i>Ludwigia</i> sp.	x			

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
* <i>Lupinus</i> sp.	x			
<i>Lyginia barbata</i>	x			
<i>Lyperanthus serratus</i>				x
<i>Lysinema ciliatum</i>	x			x
* <i>Lythrum hyssopifolia</i>	x			
<i>Macarthuria australis</i>	x			
<i>Macrozamia fraseri</i>		x		
<i>Macrozamia riedlei</i>	x	x	x	x
<i>Marianthus bicolor</i>			x	x
<i>Marianthus coeruleopunctatus</i>		x		x
<i>Marianthus drummondianus</i>	x			
<i>Meeboldina cana</i>	x			
<i>Meeboldina coangustata</i>	x		x	
<i>Melaleuca incana</i>	x			
<i>Melaleuca incana</i> subsp. <i>incana</i>		x		
<i>Melaleuca lateritia</i>	x			
<i>Melaleuca nesophila</i>		x		
<i>Melaleuca parviceps</i>		x	x	
<i>Melaleuca pauciflora</i>	x			
<i>Melaleuca preissiana</i>	x			x
<i>Melaleuca radula</i>	x	x	x	x
<i>Melaleuca rhapsiophylla</i>	x			
<i>Melaleuca</i> aff. <i>scabra</i> am				x
<i>Melaleuca seriata</i>	x			
<i>Melaleuca trichophylla</i>		x	x	
<i>Melaleuca uncinata</i>	x			
<i>Melaleuca</i> sp.	x			
<i>Melia azedarach</i>	x			
* <i>Melinis repens</i>	x			
* <i>Mentha x piperita</i>	x			
<i>Mesomelaena graciliceps</i>			x	
<i>Mesomelaena pseudostygia</i>	x			
<i>Mesomelaena tetragona</i>	x	x	x	
<i>Microcorys longifolia</i>				x
<i>Microlaena stipoides</i>				x
<i>Microtis atrata</i>	x			
<i>Microtis media</i>	x			
<i>Millotia tenuifolia</i>				x
<i>Mirbelia dilatata</i>	x			
<i>Mirbelia spinosa</i>	x			x
<i>Monotaxis grandiflora</i>	x			
* <i>Monstera deliciosa</i> (Planted)	x			
* <i>Moraea flaccida</i>		x		x
* <i>Moraea lewisiae</i>	x			
* <i>Moraea miniata</i>	x			
* <i>Morus</i> sp.	x			
<i>Muehlenbeckia adpressa</i>	x	x		x
<i>Neurachne alopecuroidea</i>	x	x	x	x
<i>Nuytsia floribunda</i>	x	x		
* <i>Oenothera glazioviana</i>	x			
<i>Olax scalariformis</i> (P3)	x			
* <i>Olea europaea</i>	x			
* <i>Oleander</i> sp. (Planted)			x	
<i>Olearia elaeophila</i>	x			
<i>Olearia paucidentata</i>	x		x	x
<i>Opercularia apiciflora</i>	x			x
<i>Opercularia echinocephala</i>	x	x	x	x

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Opercularia hispidula</i>	x		x	
<i>Opercularia vaginata</i>	x		x	x
<i>Ophioglossum lusitanicum</i>	x			
* <i>Opuntia stricta</i>	x			
* <i>Orobanche minor</i>	x			
<i>Orthrosanthus laxus</i>	x	x	x	
<i>Orthrosanthus laxus</i> var. <i>laxus</i>		x	x	x
* <i>Oxalis caprina</i>	x			
* <i>Oxalis corymbosa</i>	x			
* <i>Oxalis glabra</i>	x			
<i>Oxalis perennans</i>	x			x
* <i>Oxalis pes-caprae</i>	x			
* <i>Oxalis purpurea</i>	x			
* <i>Oxalis</i> sp.		x		
<i>Paraserianthes lophantha</i>	x			
* <i>Parentucellia latifolia</i>		x	x	x
* <i>Parentucellia viscosa</i>	x			x
* <i>Paspalum dilatatum</i>	x			
* <i>Paspalum distichum</i>	x			
* <i>Paspalum urvillei</i>	x			
<i>Patersonia babianoides</i>	x		x	x
<i>Patersonia juncea</i>	x	x		x
<i>Patersonia occidentalis</i>	x	x	x	x
<i>Patersonia pygmaea</i>	x		x	x
<i>Patersonia rudis</i>	x	x		
<i>Patersonia rudis</i> subsp. <i>rudis</i>				x
<i>Patersonia umbrosa</i>	x			
* <i>Pelargonium capitatum</i>	x			
<i>Pelargonium littorale</i> subsp. <i>littorale</i>				x
* <i>Pennisetum clandestinum</i>	x			
* <i>Pennisetum macrourum</i>	x			
<i>Pentapeltis peltigera</i>	x	x	x	x
* <i>Pentaschistis airoides</i>	x	x		x
<i>Pericalymma ellipticum</i>	x			
* <i>Persicaria</i> sp.		x		
<i>Persoonia angustiflora</i>	x	x		x
<i>Persoonia elliptica</i>	x			
<i>Persoonia longifolia</i>	x			
<i>Persoonia quinquenervis</i>		x		
<i>Persoonia saccata</i>	x			
<i>Petrophile biloba</i>	x	x	x	x
<i>Petrophile linearis</i>	x	x		x
<i>Petrophile macrostachya</i>	x			
<i>Petrophile media</i>	x			
<i>Petrophile seminuda</i>	x		x	x
<i>Petrophile squamata</i> subsp. <i>squamata</i>		x		
<i>Petrophile striata</i>	x	x	x	x
* <i>Petrorhagia dubia</i>	x			x
<i>Pheladenia deformis</i>				x
<i>Philydrella pygmaea</i>				x
<i>Philothea spicata</i>	x	x	x	x
<i>Phlebocarya ciliata</i>	x			
<i>Phlebocarya filifolia</i>	x			
<i>Phyllanthus calycinus</i>	x	x	x	x
<i>Phylloglossum drummondii</i>				x
* <i>Physalis peruviana</i>	x			
<i>Pimelea angustifolia</i>	x			

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Pimelea argentea</i>	x			
<i>Pimelea ciliata</i>	x	x	x	x
<i>Pimelea ciliata</i> subsp. <i>ciliata</i>		x	x	
<i>Pimelea imbricata</i>	x			
<i>Pimelea imbricata</i> var. <i>piligera</i>		x	x	x
<i>Pimelea lehmanniana</i>	x			
<i>Pimelea preissii</i>	x			
<i>Pimelea rosea</i>	x			
<i>Pimelea spectabilis</i>	x			
<i>Pimelea suaveolens</i>	x	x	x	
<i>Pimelea suaveolens</i> subsp. <i>suaveolens</i>		x		x
<i>Pimelea sylvestris</i>	x			
* <i>Pinus</i> sp.	x			
<i>Pithocarpa pulchella</i>	x			
<i>Pittosporum</i> sp.	x			
<i>Pityrodia bartlingii</i>	x			
* <i>Plantago lanceolata</i>	x			
<i>Platysace compressa</i>	x		x	x
<i>Platysace juncea</i>	x			
<i>Platytheca galioides</i>	x			
<i>Pleurosorus rutifolius</i>	x			
<i>Poa drummondiana</i>		x		x
* <i>Podalyria sericea</i>	x			
<i>Podolepis gracilis</i>				x
<i>Podolepis lessonii</i>		x	x	x
<i>Podotheca angustifolia</i>				x
* <i>Polygala myrtifolia</i>	x			
* <i>Polygala virgata</i>	x			
* <i>Populus</i> sp.	x			
<i>Poranthera microphylla</i>		x		x
* <i>Portulacaria afra</i>	x			
<i>Prasophyllum giganteum</i>	x			
<i>Prasophyllum gracile</i>				x
<i>Prasophyllum parvifolium</i>	x			
<i>Prasophyllum</i> sp.			x	
* <i>Prunus</i> sp. (Planted)	x			
<i>Pteridium esculentum</i>	x			
<i>Pterochaeta paniculata</i>	x	x		x
<i>Pterostylis barbata</i>			x	x
<i>Pterostylis</i> aff. <i>pyramidalis</i> SCP GJK/NG 1867 cbs				x
<i>Pterostylis pyramidalis</i>			x	
<i>Pterostylis recurva</i>	x			x
<i>Pterostylis sanguinea</i>				x
<i>Pterostylis vittata</i>			x	x
<i>Ptilotus declinatus</i>	x	x		x
<i>Ptilotus drummondii</i>	x			
<i>Ptilotus drummondii</i> var. <i>drummondii</i>		x		x
<i>Ptilotus esquamatus</i>	x			
<i>Ptilotus manglesii</i>	x	x		x
<i>Ptilotus polystachyus</i>	x			
<i>Pultenaea ericifolia</i>	x			x
<i>Pyrorchis nigricans</i>	x		x	
<i>Quinetia urvillei</i>			x	x
<i>Ranunculus colonorum</i>	x			
* <i>Raphanus raphanistrum</i>	x			
<i>Regelia ciliata</i>	x			
<i>Rhodanthe citrina</i>				x

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SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Rhodanthe corymbosa</i>				x
* <i>Ricinus communis</i>	x			
* <i>Romulea rosea</i>	x		x	x
* <i>Rosa</i> sp.	x			
* <i>Rubus laudatus</i>	x			
<i>Rulingia cygnorum</i>	x			x
? <i>Rumex</i> sp. rhizomatus herb am				x
* <i>Rumex crispus</i>	x			
* <i>Salix babylonica</i>	x			
<i>Santalum acuminatum</i>	x	x	x	x
<i>Scaevola calliptera</i>		x		x
<i>Scaevola canescens</i>	x			x
<i>Scaevola glandulifera</i>	x			x
<i>Scaevola paludosa</i> (P2)	x			
<i>Scaevola pilosa</i>	x	x		x
<i>Scaevola platyphylla</i>	x		x	x
<i>Scaevola repens</i>				x
<i>Scaevola striata</i>			x	
* <i>Schefflera actinophylla</i> (Planted)	x			
* <i>Schinus</i> sp.	x			
<i>Schoenus benthamii</i> (P3)	x			
<i>Schoenus bifidus</i>				x
<i>Schoenus ?brevisetis</i>		x		x
<i>Schoenus clandestinus</i>				x
<i>Schoenus globifer</i>	x			
<i>Schoenus granmatophyllus</i>	x			x
<i>Schoenus ?latitans</i>			x	
<i>Schoenus nanus</i>				x
<i>Schoenus ?pleiostemoneus</i>		x		
<i>Schoenus sculptus</i>				x
<i>Schoenus subfascicularis</i>		x		
<i>Schoenus subflavus</i>				x
<i>Schoenus</i> sp. smooth culms (K.R. Newbey 7823)		x		
<i>Schoenus unispiculatus</i>				x
<i>Scholtzia involucrata</i>	x			
* <i>Senecio diaschides</i>				x
<i>Senecio hispidulus</i>	x			
* <i>Silene gallica</i>	x			
<i>Siloxerus humifusus</i>		x		x
<i>Siloxerus multiflorus</i>				x
* <i>Solanum nigrum</i>	x			
* <i>Sonchus asper</i>	x			
* <i>Sonchus oleraceus</i>	x	x		x
<i>Sowerbaea laxiflora</i>			x	x
* <i>Sparaxis</i> sp.	x			
<i>Sparaxis bulbifera</i>				x
* <i>Spartium junceum</i> (planted)	x			
<i>Sphaerolobium linophyllum</i>		x		
<i>Sphaerolobium macranthum</i>	x			
<i>Sphaerolobium medium</i>	x			x
<i>Spiculaea ciliata</i>	x			
* <i>Stachys arvensis</i>	x			
<i>Stachystemon vermicularis</i>	x			
<i>Stackhousia monogyna</i>	x	x	x	x
<i>Stenanthemum emarginatum</i>				x
<i>Stenanthemum humile</i>	x			
<i>Stenanthemum tridentatum</i>	x			

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

Note: * denotes introduced and planted species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
* <i>Stenotaphrum secundatum</i>	x			
<i>Stirlingia latifolia</i>	x			x
<i>Stirlingia simplex</i>				x
<i>Stylidium affine</i>	x	x	x	x
<i>Stylidium amoenum</i>	x	x	x	x
<i>Stylidium breviscapum</i>	x			
<i>Stylidium brunonianum</i>	x	x	x	x
<i>Stylidium bulbiferum</i>	x	x	x	x
<i>Stylidium calcaratum</i>	x	x	x	x
<i>Stylidium carnosum</i>	x		x	x
<i>Stylidium ciliatum</i>	x			x
<i>Stylidium dichotomum</i>	x	x		x
<i>Stylidium diuroides</i>	x			x
<i>Stylidium divaricatum</i>	x			
<i>Stylidium ecorne</i>				x
<i>Stylidium eriopodum</i>		x		
<i>Stylidium hispidum</i>	x	x	x	x
<i>Stylidium junceum</i>	x		x	x
<i>Stylidium lineatum</i>			x	x
<i>Stylidium petiolare</i>				x
<i>Stylidium piliferum</i>	x	x	x	
<i>Stylidium pubigerum</i>	x			x
<i>Stylidium pycnostachyum</i>		x	x	x
<i>Stylidium repens</i>	x		x	x
<i>Stylidium ?rupestre</i>			x	
<i>Stylidium schoenoides</i>	x		x	x
<i>Stypandra glauca</i>	x	x	x	x
<i>Styphelia tenuiflora</i>				x
<i>Synaphea acutiloba</i>	x	x		x
<i>Synaphea gracillima</i>				x
<i>Synaphea petiolaris</i>	x		x	
<i>Synaphea pinnata</i>		x	x	x
<i>Synaphea spinulosa</i>	x			
<i>Taxandria linearifolia</i>	x		x	x
<i>Templetonia drummondii</i> (P4)	x		x	x
<i>Tetragia capillaris</i>		x	x	x
<i>Tetragia octandra</i>	x	x	x	x
<i>Tetragia laevis</i>	x		x	x
<i>Tetragia hirsuta</i>	x	x	x	
<i>Tetragia nuda</i>	x	x		x
<i>Tetragia setigera</i>				x
<i>Thelymitra antennifera</i>	x			x
<i>Thelymitra benthamiana</i>	x			x
<i>Thelymitra crinita</i>	x	x		x
<i>Thelymitra flexuosa</i>				x
<i>Thelymitra macrophylla</i>	x	x		x
<i>Thelymitra</i> sp.			x	
<i>Themeda triandra</i>	x	x		
<i>Thomasia foliosa</i>	x	x	x	x
<i>Thomasia glutinosa</i>				x
<i>Thomasia glutinosa</i> var. <i>glutinosa</i>		x		
<i>Thomasia glutinosa</i> var. <i>latifolia</i>		x		
<i>Thomasia grandiflora</i>	x			
<i>Thomasia macrocarpa</i>	x			
* <i>Thunbergia alata</i>	x			
<i>Thysanotus anceps</i> (P3)	x			
<i>Thysanotus dichotomus</i>	x	x		x

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

Note: * denotes introduced and planted species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
<i>Thysanotus manglesianus</i>		x		x
<i>Thysanotus multiflorus</i>	x	x	x	x
<i>Thysanotus patersonii</i>	x		x	
<i>Thysanotus sparteus</i>	x	x	x	x
<i>Thysanotus tenellus</i>				x
<i>Thysanotus thyrsoides</i>	x			x
* <i>Tolpis barbata</i>				x
<i>Trachymene coerulea</i> subsp. <i>coerulea</i>		x		x
<i>Trachymene pilosa</i>	x	x	x	x
<i>Tremulina tremula</i>	x			
* <i>Tribolium uniolae</i>	x			
<i>Tribonanthes australis</i>	x			
<i>Tribonanthes brachypetala</i>				x
<i>Tribonanthes longipetala</i>	x		x	x
<i>Trichocline spathulata</i>	x	x	x	x
<i>Tricoryne elatior</i>	x	x	x	x
<i>Tricoryne</i> sp. aff <i>humilis</i> am				x
* <i>Trifolium angustifolium</i>	x			x
* <i>Trifolium arvense</i>	x			
* <i>Trifolium campestre</i>	x			
* <i>Trifolium cernuum</i>	x			x
<i>Trifolium dubium</i>				x
* <i>Trifolium hirtum</i>	x			
<i>Trifolium ligusticum</i>				x
<i>Trifolium subterraneum</i>				x
<i>Triglochin centrocarpa</i>				x
<i>Tripterococcus brunonis</i>	x	x	x	x
* <i>Tropaeolum majus</i>	x			
<i>Trymalium angustifolium</i>				x
<i>Trymalium floribundum</i>	x	x	x	x
<i>Trymalium floribundum</i> subsp. <i>floribundum</i>		x		
<i>Trymalium ledifolium</i>	x	x	x	
<i>Trymalium ledifolium</i> var. <i>ledifolium</i>		x		
<i>Trymalium ledifolium</i> var. <i>rosmarinifolium</i>				x
* <i>Typha orientalis</i>	x			
* <i>Ursinia anthemoides</i>	x	x	x	x
<i>Velleia</i> ? <i>trinervis</i>			x	
* <i>Vellereophyton dealbatum</i>	x			
<i>Verticordia acerosa</i>	x			
<i>Verticordia acerosa</i> var. <i>acerosa</i>		x		x
<i>Verticordia acerosa</i> var. <i>preissii</i>				x
<i>Verticordia densiflora</i>	x			
<i>Verticordia huegelii</i>	x		x	x
<i>Verticordia huegelii</i> var. <i>huegelii</i>		x		
<i>Verticordia insignis</i>				x
<i>Verticordia lindleyi</i>	x			
<i>Verticordia pennigera</i>		x	x	x
<i>Verticordia plumosa</i> var. <i>plumosa</i>		x	x	
* <i>Vicia sativa</i>	x			
<i>Viminaria juncea</i>	x	x	x	
* <i>Vinca major</i>	x			
* <i>Viola</i> sp.	x			
* <i>Vulpia myuros</i>		x	x	x
* <i>Wahlenbergia capensis</i>	x			
<i>Wahlenbergia preissii</i>				x
<i>Waitzia suaveolens</i>	x			x
* <i>Watsonia meriana</i>	x	x		x

APPENDIX F: COMPARISON OF SPECIES ON THE DARLING SCARP NEAR RED HILL

Note: * denotes introduced and planted species; P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	Darling Range Reserves Kalamunda	Hanson Mattiske Consulting	John Forrest Mattiske Consulting	Markey Northern Darling Scarp
* <i>Watsonia meriana</i> var. <i>bulbillifera</i>	x	x		
<i>Wurmbea dioica</i>				x
<i>Xanthorrhoea acanthostachya</i>	x			x
<i>Xanthorrhoea gracilis</i>	x	x	x	x
<i>Xanthorrhoea preissii</i>	x	x	x	x
<i>Xanthosia atkinsoniana</i>	x	x		x
<i>Xanthosia candida</i>	x	x	x	x
<i>Xanthosia ciliata</i>	x	x		x
<i>Xanthosia fruticulosa</i>	x			
<i>Xanthosia huegelii</i>	x		x	x
<i>Xylomelum occidentale</i>	x			
* <i>Yucca</i> sp. (planted)	x			
* <i>Zantedeschia aethiopica</i>	x			
* <i>Zingiber</i> sp. (Planted)	x			

APPENDIX G: SUMMARY OF MOST COMMON VASCULAR PLANT SPECIES RECORDED AT RED HILL QUARRY 2006 / 2007

Note: P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	% Recording Sites
<i>Xanthorrhoea preissii</i>	85
<i>Corymbia calophylla</i>	82
<i>Hibbertia hypericoides</i>	78
<i>Banksia dallanneyi</i> var. <i>dallanneyi</i>	60
<i>Hibbertia commutata</i>	48
<i>Hakea erinacea</i>	46
<i>Leucopogon pulchellus</i>	42
<i>Macrozamia riedlei</i>	41
<i>Hakea undulata</i>	40
<i>Hibbertia subvaginata</i>	40
<i>Acacia pulchella</i>	39
<i>Melaleuca radula</i>	39
<i>Petrophile striata</i>	37
<i>Bossiaea eriocarpa</i>	35
<i>Calothamnus quadrifidus</i>	34
<i>Phyllanthus calycinus</i>	33
<i>Stylidium bulbiferum</i>	33
<i>Baekkea camphorosmae</i>	32
<i>Borya sphaerocephala</i>	32
<i>Calothamnus rupestris</i> (P4)	31
<i>Melaleuca parviceps</i>	30
<i>Gompholobium marginatum</i>	29
<i>Hakea lissocarpha</i>	29
<i>Petrophile biloba</i>	29
<i>Tripterococcus brunonis</i>	29
<i>Calothamnus sanguineus</i>	28
<i>Darwinia citriodora</i>	28
<i>Boronia ovata</i>	27
<i>Cheilanthes austrotenuifolia</i>	27
<i>Eucalyptus wandoo</i> subsp. <i>wandoo</i>	27
<i>Hakea trifurcata</i>	27
<i>Stylidium amoenum</i>	27
<i>Conostylis setosa</i>	26
<i>Hakea cristata</i>	26
<i>Lepidosperma pubisquameum</i>	25
<i>Pimelea imbricata</i> var. <i>piligera</i>	25
<i>Grevillea bipinnatifida</i> subsp. <i>bipinnatifida</i>	24
<i>Isopogon asper</i>	24
<i>Trymalium ledifolium</i> var. <i>ledifolium</i>	24
<i>Allocasuarina humilis</i>	23
<i>Gastrolobium dilatatum</i>	22
<i>Hypocalymma angustifolium</i>	22
<i>Stylidium brunonianum</i>	22
<i>Verticordia acerosa</i> var. <i>acerosa</i>	22
<i>Stylidium affine</i>	21
<i>Banksia armata</i> var. <i>armata</i>	19
<i>Lepidosperma leptostachyum</i>	19
<i>Lomandra sericea</i>	19

**APPENDIX G: SUMMARY OF MOST COMMON VASCULAR PLANT SPECIES RECORDED AT
RED HILL QUARRY 2006 / 2007**

Note: P1, P2, P3 and P4 denote - Priority Flora Species (DEC, 2008a)

SPECIES	% Recording Sites
<i>Pimelea suaveolens</i> subsp. <i>suaveolens</i>	19
<i>Calytrix glutinosa</i>	18
<i>Cassytha pomiformis</i>	18
<i>Hakea stenocarpa</i>	18
<i>Laxmannia squarrosa</i>	18
<i>Lepidosperma squamatum</i>	18
<i>Stylidium hispidum</i>	18
<i>Banksia bipinnatifida</i> subsp. <i>bipinnatifida</i>	17
<i>Banksia sessilis</i> var. <i>sessilis</i>	17
<i>Bossiaea ornata</i>	17
<i>Drosera stolonifera</i>	17
<i>Eucalyptus marginata</i>	17
<i>Styphelia tenuiflora</i>	17
<i>Hovea pungens</i>	16
<i>Xanthosia candida</i>	16
<i>Grevillea synapheae</i> subsp. <i>synapheae</i>	15
<i>Hakea amplexicaulis</i>	15
<i>Hibbertia pachyrrhiza</i>	15
<i>Labichea lanceolata</i> subsp. <i>lanceolata</i>	15
<i>Leptospermum erubescens</i>	15
<i>Neurachne alopecuroidea</i>	15
<i>Petrophile squamata</i> subsp. <i>squamata</i>	15
<i>Eucalyptus wandoo</i>	14
<i>Grevillea endlicheriana</i>	14
<i>Thomasia foliosa</i>	14
<i>Trymalium ledifolium</i>	14
<i>Desmocladius fasciculatus</i>	13
<i>Desmocladius flexuosus</i>	13
<i>Nuytsia floribunda</i>	13
<i>Pentapeltis peltigera</i>	13
<i>Daviesia decurrens</i>	12
<i>Hakea cyclocarpa</i>	12
<i>Xanthorrhoea gracilis</i>	12
<i>Banksia dallanneyi</i>	11
<i>Darwinia pinifolia</i>	11
<i>Eucalyptus accedens</i>	11
<i>Hovea chorizemifolia</i>	11
<i>Verticordia huegelii</i> var. <i>huegelii</i>	11
<i>Acacia applanata</i>	10
<i>Allocauarina fraseriana</i>	10
<i>Banksia fraseri</i> var. <i>fraseri</i>	10
<i>Grevillea manglesii</i> subsp. <i>manglesii</i>	10
<i>Pterochaeta paniculata</i>	10
<i>Tetraria capillaris</i>	10

APPENDIX H: GPS SITE LOCATIONS AT RED HILL QUARY 2006 / 2007

SITE	EASTING GDA94 ZONE 50	NORTHING GDA94 ZONE 50
1	412001	6478546
2	412216	6478536
3	412264	6478662
4	412257	6478740
5	412366	6478759
6	412269	6478954
7	412307	6479052
8	412227	6479041
9	412260	6479166
10	412228	6479279
11	412370	6479614
12	412271	6479592
13	412202	6479600
14	412195	6479515
15	412202	6479398
16	412304	6479395
17	412428	6479404
18	412537	6479396
19	412576	6478700
20	412791	6478686
21	412900	6478713
22	413035	6478702
23	413185	6478700
24	412901	6478905
25	412760	6478898
26	412597	6478903
27	412558	6479464
28	412736	6479372
29	413177	6478572
30	412915	6478570
31	412853	6478615
32	412599	6478807
33	411853	6478437
34	411844	6478501
35	412094	6478474
36	412116	6477868
37	412416	6478204
38	412550	6478426
39	412424	6478303
40	412447	6478320
41	412441	6478414
42	412492	6478402
43	412503	6478578
44	412519	6478504
45	412594	6478490
46	412707	6478452
47	412220	6478212
48	412100	6478100
49	412200	6477900
50	412400	6477903
51	412400	6478080
52	412500	6478200

APPENDIX H: GPS SITE LOCATIONS AT RED HILL QUARY 2006 / 2007

SITE	EASTING GDA94 ZONE 50	NORTHING GDA94 ZONE 50
53	412060	6477890
54	413602	6478656
55	413150	6478718
56	412200	6478400
57	412000	6478400
58	412415	6478316
59	411523	6478516
60	411617	6478421
61	413093	6477645
62	412796	6477454
63	412759	6477627
64	412758	6477826
65	412676	6477784
66	412598	6477711
67	412654	6477686
68	412728	6477643
69	412984	6477797
70	41300	6477620
71	412898	6477495
72	412899	6477652
73	412900	6477773
74	412867	6477859
75	412754	6477767
76	412762	6477348
77	412241	6479723
78	412453	6479584
79	412652	6479511
80	412819	6479402
81	418970	6479203
82	413033	6478993
83	413040	6478800
84	413045	6478604
85	412550	6479266
86	412418	6478003
87	412140	6477728
88	412139	6478103
89	412351	6478160
90	412227	6478495
91	412159	6478520
92	412385	6478526
93	412364	6478624
94	412523	6478647
95	412419	6478785
96	412505	6478788
97	412421	6478997
98	412344	6479230
99	412383	6479080
100	412822	6479209
101	412683	6479228
102	412579	6479200
103	412486	6479198
104	412535	6479012

APPENDIX H: GPS SITE LOCATIONS AT RED HILL QUARY 2006 / 2007

SITE	EASTING GDA94 ZONE 50	NORTHING GDA94 ZONE 50
105	412844	6479000
106	413059	6478990
107	413067	6478989
108	412812	6479398

**APPENDIX I: LOCATION OF INTRODUCED (EXOTIC) SPECIES AT RED HILL
QUARRY 2006 / 2007**

P1 - Declared Plant according to Department of Agriculture and Food (2008). See Appendix A5

SPECIES	EASTING GDA94 ZONE 50	NORTHING GDA94 ZONE 50
<i>*Acacia iteaphylla</i>	412900	6477773
<i>*Aira caryophyllea</i>	412159	6478520
	412344	6479230
	412419	6478785
	412421	6478997
	412523	6478647
	413067	6478989
<i>*Aira cupaniana</i>	412415	6478316
	412500	6478200
<i>*Anagallis arvensis var. caerulea</i>	411844	6478501
	412227	6479041
	412228	6479279
	412853	6478615
<i>*Avena barbata</i>	412819	6479402
<i>*Avena sp.</i>	412523	6478647
<i>*Bartsia trixago</i>	412558	6479464
<i>*Brachypodium distachyon</i>	413059	6478990
	413067	6478989
<i>*Briza maxima</i>	412159	6478520
	412202	6479600
	412227	6479041
	412228	6479279
	412269	6478954
	412344	6479230
	412364	6478624
	412366	6478759
	412421	6478997
	412486	6479198
	412492	6478402
	412523	6478647
	412537	6479396
	412598	6477711
	412736	6479372
	412819	6479402
	412844	6479000
	412901	6478905
<i>*Briza minor</i>	412366	6478759

**APPENDIX I: LOCATION OF INTRODUCED (EXOTIC) SPECIES AT RED HILL
QUARRY 2006 / 2007**

P1 - Declared Plant according to Department of Agriculture and Food (2008). See Appendix A5

SPECIES	EASTING GDA94 ZONE 50	NORTHING GDA94 ZONE 50
*? <i>Bromus</i> sp.	412364	6478624
	412523	6478647
* <i>Disa bracteata</i>	412366	6478759
* <i>Dittrichia graveolens</i>	412424	6478303
* <i>Ehrharta longiflora</i>	412819	6479402
* <i>Eucalyptus microcorys</i>	412416	6478204
* <i>Gladiolus caryophyllaceus</i>	412202	6479600
	412344	6479230
	412418	6478003
	412441	6478414
	412486	6479198
	412505	6478788
	412579	6479200
	412632	6479012
	412683	6479228
* <i>Hypochaeris glabra</i>	412001	6478546
	412257	6478740
	412366	6478759
	412400	6477903
	412736	6479372
* <i>Moraea flaccida</i> (P1)	412202	6479600
* <i>Oxalis</i> sp.	412364	6478624
	412812	6479398
* <i>Parentucellia latifolia</i>	412159	6478520
	412419	6478785
* <i>Pentaschistis airoides</i>	412202	6479600
	412227	6479041
	412257	6478740
	412269	6478954
	412366	6478759
	412736	6479372
* <i>Sonchus oleraceus</i>	412819	6479402

**APPENDIX I: LOCATION OF INTRODUCED (EXOTIC) SPECIES AT RED HILL
QUARRY 2006 / 2007**

P1 - Declared Plant according to Department of Agriculture and Food (2008). See Appendix A5

SPECIES	EASTING GDA94 ZONE 50	NORTHING GDA94 ZONE 50
<i>*Ursinia anthemoides</i>	412159	6478520
	412227	6479041
	412228	6479279
	412257	6478740
	412366	6478759
	412415	6478316
	412486	6479198
	412736	6479372
<i>*Vellereophyton dealbatum</i>	412140	6477728
<i>*Vulpia myuros</i>	412736	6479372
<i>*Watsonia meriana</i> var. <i>bulbillifera</i>	412241	6479723
	412453	6479584
	412652	6479511
	412736	6479372
	412812	6479398
	412819	6479402
	413040	6478800
	413045	6478604
	413059	6478990
	413067	6478989
	413602	6478656
418970	6479203	