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THE VEGETATION AND FLORA
OF
VACANT CROWN LAND IN THE MT BEAUMONT LAND RELEASE AREA
(MT BEAUMONT STAGE II)

by

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INTRODUCTION

Field work was undertaken on the vegetation of the Mount Beaumont Stage 2 from late December to mid-January. Early in December an introductory field-trip was undertaken by another botanist whose plant collections were also checked.

Several problems were apparent whilst collecting in the field and then later whilst identifying these collections at the Herbarium. These problems are listed below.

1. Lack of flowering specimens - this often meant that species could be overlooked where the vegetation was similar (particularly in the field, resulting in fewer collections being made) or that identification to species was impossible or doubtful. Where possible, researchers on a particular plant group were approached to check identification, but with vegetative material identification to species often proved impossible.
2. A large number of the Western Australian species flower in the spring months, others flower at different seasons in the year, so for a complete and thorough survey to be done it would be best if several field trips were spread over the whole year and collections were made over this extended period.
3. Very few annuals and ephemerals were collected. A few being collected from moist areas. Granite outcrops are known to abound in ephemerals and annuals but in January these areas were too dry. As an example, no orchids were collected.
4. Two months was insufficient time in which to draw up a comprehensive species list. At any time of the year the vegetation types present are readily described, but a species list needs to cover all the flowering periods. Some plant families which were well represented in the collections made are being revised by botanists in the eastern states, and if more time had been available these would have been sent for verification,

e.g. Leucoposon species in the family Epacridaceae.

5. A few new species have been collected but there could possibly be more if collections were made in the flowering period. To check thoroughly that a plant collected is a new species takes time - a further constraint, as descriptions and plant collections must be checked.

Within the constraints of time allowed and season in which the survey was conducted relative to flowering, the following report lists the major vegetation units for each soil type and the species identified within these units.

SOIL CLASSIFICATION

The maps used were CD 1321, sheet 2 and 3; CD 1410, sheets 1 and 4. Scale 40 chains to an inch. The soil classification had been outlined on these and is map reference number 49 in the Wildlife Research Centre map filing system. The soil classification had been compiled from aerial photography and field check by R.T. Benetti and C.A. Grant, surveyors and L. Carter and D.J. Myers, cartographers.

There were fourteen different soil types listed as occurring within the Mt. Beaumont Stage 2 release. Generally the soil variation was apparent either from vegetation change, soil colour change or both. In addition to these fourteen soils I have included a further soil type "weathered granite" as small weathered angular granite pebbles made up the soil surface and supported a different vegetation to the soil of the surrounding area.

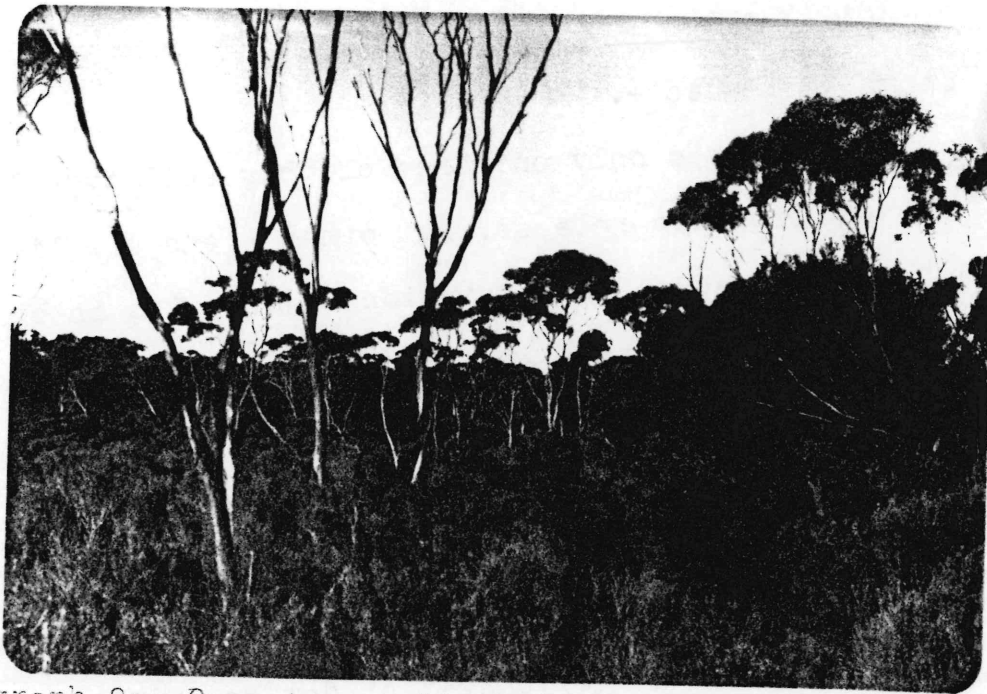
Each soil type will be discussed separately, and following the vegetation classification of Muir (1977) the vegetation units will be listed for each soil type. This will be then be followed by a species list .

1. GIBBOCK HILL: Grey sand to pale yellow sand on clay at depth 12 inches to 30 inches.

This soil supported a tree mallee or open mallee formation. Stratum 1 consisted of mallee species to 10 metres with a few Banksia shrubs 4-5m.: stratum 2, a dense Melaleuca level at 2-3m (a few plants reaching 4m): stratum 3 a shrub layer with plants 0.5-1.5m tall: stratum 4 with plants below 0.5m. Generally stratum 4 only occurred where strata 1-3 were not dense and an opening had occurred.



Photograph 1: Tree mallee: 2-10m - Acacia uncinata, A. ararathensis, Acacia acrophoralyx: 2-4m - Melaleuca pentagona (pink flowers), Melaleuca caeculata. Very few plants below 2m. Bare ground visible.



Photograph 2: Open tree mallee: 8-10m Eucalyptus uncinata,
E. scyphocalyx: 5-6m Banksia media; 2-3m Melaleuca pentagona,
M. cucullata, Nematolepis rhabdoides. The mallees of stratum 1
are spaced further apart than in the previous photograph, but
stratum 2 is much denser.

Species list;

STRATUM 1: Eucalyptus ererophila, E. leptocalyx, E. redunca,
E. scyphocalyx, E. uncinata; Banksia media.

STRATUM 2: Melaleuca cucullata, M. affin. cymbifolia, M. lateriflora,
M. pentagona, M. spathulata, Ferrosia teretifolia.

STRATUM 3: Acacia sp. (further material required for identification),
A. lineolata complex, A. nitidula complex, Baeckea latens, Leycein
brevifolia, Calothamnus gibbosus, Monostichia rosi, Conostichium
sp., Cooperhooia strophiolata, Idonaea bursarifolia, Exocarpos
aphyllus, Gompholobium baxteri, Grevillea pauciflora, G. plurijuga,
Leucopogon rubicandus, Micromyrtus glabra, Nematolepis rhabdoides,
Thebaliu lepidotum, P. tuberosum.

STRATUM 4: Boronia crassifolia, Cryptandra spyridioides, Darwinia
affin. polycephala, Hibbertia affin. stricta, Leidosperma gracile,
Loxocarya flexuosa, Spyridium cordatum.

3. CORRINGUP SAND: Deep gray sand to pale yellow sand with depth 30 inches +.

There was only one area of this soil type listed within Stage 2 proposed release, but other areas are listed to the north of the release. The vegetation description is based on this one area. At the south-eastern corner of the Corringup sand was a small claypan where the vegetation was a dense heath formation (claypans will be discussed later). Up the rise away from the claypan the vegetation changed to an open tree mallee formation.

In the open tree mallee formation stratum 1 consisted of 8-10m tall with a few younger or damaged plants at 3m: Banksia media to 5m. Stratum 2 was very open with a few plants to 3m, but mostly 1.5-2m. Stratum 3 was very dense with plants 1m or less. Stratum 4 was sedges and grasses.



Photograph 3: Open tree mallee: 8-10m Eucalyptus incrassata, E. uncinata; 5m Banksia media; 1m or less Beaufortia micromera (pink flowers) other Myrtaceous shrubs.

Species List:

STRATUM 1: Eucalyptus incrassata, E. redunca, E. uncinata; 5m Banksia media.

STRATUM 2: Leptospermum roei, Persoonia teretifolia
STRATUM 3: Acacia pritzeliana, A. nitidula complex, Astroloma?
prostratum, Baeckea latens, Beaufortia micromera, Boronia
crassifolia, Calothamnus gibbosus, Conostephium drummondii, Darwinia
affin. polycephala, Gompholobium baxteri, Grevillea pauciflora,
Hakea adnata, H. cinerea, H. meisneriana, H. nitidula, Hibbertia
affin. stricta, Leucopogon minutifolius, Leucopogon sp., Melaleuca
glaberrima, M. subtrigona, Phebalium lepidotum, Verticordia sp.
(possibly undescribed).

STRATUM 4: Caustis dioica, Juncus pallidus, Lepidosperma
angustatum, L. gracile, Tricostularia sp.

Near the claypan the following species were more abundant than in the open tree mallee formation; Baeckea latens, Darwinia
affin. polycephala, Leptospermum erubescens and Melaleuca glaberrima

3. FLEMING GRAVEL: SHALLOW PHASE: Grey sand on gravel at 0-12 inches.

There was only one area of this soil type within the proposed land release, but there were two distinct types of vegetation present dependent upon the depth of the sand covering the laterite.

1. Very open shrub mallee formation where the gravel was 30cm below the surface. The mallees were less than 7m tall with several branches at the base, and occurred together in clumps with areas of shrub between. Stratum 1, mallee to 5m, very open; stratum 2, dense shrub at 1-1.5m; stratum 3 sedges and similar plants, often occurring in clumps in open areas between the shrubs.



Photograph 4: Very open shrub mallee: 5m Eucalyptus tetragona, (pale leaf), B. incrassata, Banksia media: 1-1.5 dense shrub layer of several species.

Species List:

STRATUM 1: Eucalyptus incrassata, E. rudunca, E. scyphocalyx, E. tetragona, E. uncinata, Banksia media.

STRATUM 2: Acacia nitidula complex, A. lineolata complex, Asteriscus rubrus, Desfontainia micromera, Boronia inconspicua, Callitris roei, Halothamnus gilesii, S. quadrifidus, Allocasuarina campestris, Chamaeleucium ciliatum, Gompholobium baxteri, Grevillea pauciflora, Hakea cinerea, H. laurina, H. lissocephala, Hibbertia ^{L. roei} affinis stricta, Leptospermum erubescens, Leucopogon minutifolia, Leucopogon sp., Leucopogon ciliatum, Leucopogon glaberrima, L. subtrivona, L. uncinata, Cyrtolobium pauciflorum, Leucopogon tenaxifolia, Petrophile tasticata, Elaeagnaceae effusa, Loricordia sp. (insufficient material).

STRATUM 3: Boronia nitida, Aeridocarpus campanulatus, A. sp., Leucopogon flexuosus.

2. Dense heath (shrub) where gravel pebbles are on the soil surface. The main plant at 1.5m was Allocasuarina campestris with associated Myrtaceae and Proteaceae shrubs. Stratum 1, dense shrubs at 1-1.5m: stratum 2 of varying density at less than 1m.



Photograph 5: Showing dense heath in mid-ground (bright green indicated between arrows on the photo) mainly Allocasuarina cernpestris. Surrounding this heath is open to very open shrub mallee.

Species List:

STRAND 1: Allocasuarina cernpestris, Acacia gonophylla, A. lineolaris complex, Celothamnus quadrifidus, Cryptandra affinis albiflora, Daviesia affinis incrassata: Grevillea pauciflora, Hibiscus lissocephalus, H. cinerea, Lesiopetalum rosmarinifolia, Leptospermum rosei, Leucocroton affinis ovalifolius, L. rubicundus, Melaleuca pauperiflora, M. subtriflora, M. uncinata, Petrophile fastigiata, Phellium tuberosum, Platysace effusa.

STRAND 2: Borys nitida, Lepidosperma angustatum, L. gracile.

4. CLAYPAN.

There were three distinct types of claypans seen in the Mt. Beaumont land release area. These are described under separate headings, but only the vegetation of the claypan and the sides will be dealt with in this section.

1. Low Woodland Formation of Eucalyptus occidentalis. Only one of these formations was seen in the release area. Stratum 1: trees of Eucalyptus occidentalis about 10m tall; stratum 2: very open, bushes less than 1m tall, consisting of Cassia cardiosperma. These were the only plants in the claypan itself. The vegetation on the sides of the claypan changed rapidly to tree-form mallees.

Tree form mallee, stratum 1: open, mallees 8m or taller; stratum 2: shrubs 1m or less, very scattered.



Photograph 6: Low woodland of Eucalyptus occidentalis trees with scattered Cassia cardiosperma plants. In the background the vegetation can be seen to become denser as it passes into tree form mallee,

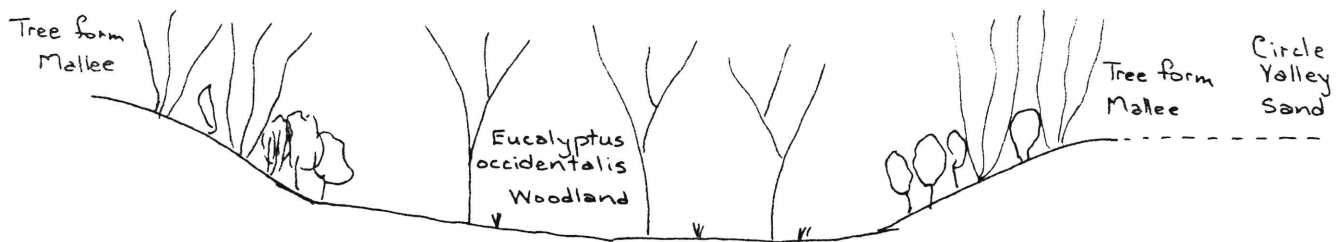


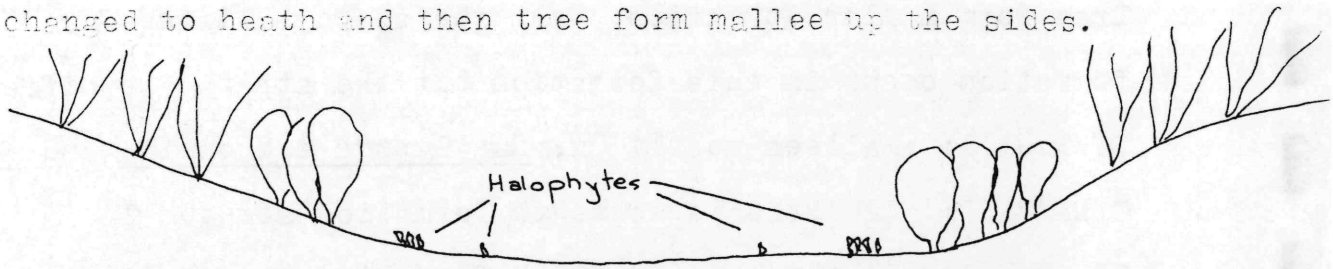
Diagram 1: Showing position of vegetation formations on the claypan.

Species List for tree form mallee:

SERIES 1: Eucalyptus leptocalyx, E. redunca, E. uncinata (note no E. occidentalis)

SERIES 2: Acacia affin. lineolata, A. hakeoides, Dodonaea bursarifolia, Grevillea plurijuga, Halgania lavandulacea, Hibbertia stricta, Hibbertia affin. stricta, Melaleuca eleuterostachya, Microcorys glabra, Olearia affin. axillaris, O. passerinoides, Westringia rigida, Wilsonia humilis.

2. Salt Complex Formation at northern extreme at the proposed release. This was an extensive depression with halophytes growing around the edge. As with the previous claypan the vegetation changed to heath and then tree form mallee up the sides.



Tree form mallee Heath Salt Complex Bare Ground Salt Complex Heath Tree form mallee
Diagram 2: Showing the positions of the vegetation formations on the salt complex formation claypan.



Photograph 7: Depression for claypan with samphires around edge and a few plants scattered in the clay, then passing into shrubs up to 1m tall and finally the tree form mallee which can be seen in the background.

Salt complex formation: Halosarcis lylei, Lepidoglossis sp.,
Acacia sp. (more material required for identification). At the
edge, low shrubs of Melaleuca thyoides ring the salt pan.

Heath Formation: STRATUM 1: Shrubs 0.5-1.5m tall very sparse
occasionally dense. Conostachium drummondii, Ererophila coloradensis,
E. glabra, E. pachyphylla, Leucopogon rubicundus, Melaleuca
laxiflora, M. pentagona, M. quadrifaria, M. thyoides, Microcoris
glabra, Cleoris exiguifolia, Westringia rigida.

STRATUM 2: Shrubs and perennials less than 0.5m, sparse.

Barreria affin. polycephala, Disanella revoluta, Hibbertia affin.
stricta, Leucopogon sp. (1), Wilsonia humilis.

Tree Form Mallee Formation: all the species listed for the heath
formation occur in this formation but the strata are different.

STRATUM 1: Mallees mostly 1m, Suaeda exoniensis and S. unguiculata.

STRATUM 2: is the same as Heath formation stratum 1

STRATUM 3: is the same as Heath formation stratum 2.

3. Shrubland Formation which surrounds only a small amount of salt
complex formation. This was the most common type of claypan and
associated vegetation. It did not have the steep sloping sides
of the two previous claypans. These claypans were small in area
with a few heathites scattered in the clay, a low scrub formation
around the edges and behind this a tree mallee formation.



Photograph 8:

Claypan with small
clumps of Halosarcis
lylei scattered in
the clay. Melaleuca
thyoides is the
shrub at the edge,
behind is the tree
mallee formation.

Species list:

Claypan: Heloscaria lylei

Edge of Claypan: Melaleuca spathulata and M. thyoides

Tree Mallee Formation: Stratum 1, height 7m or more; stratum 2, shrubs 0.5-1.5m; stratum 3, shrubs 0.5m or less.

STRATUM 1: Eucalyptus leptocalyx, E. redunca var redunca, E. scyphocalyx, E. uncinata

STRATUM 2: Acacia nitidula complex, Conostephium drummondii, Conostephium sp. nov?, Melaleuca affin. cymbifolia, M. spathulata, M. thyoides, Phebalium cf. filifolium.

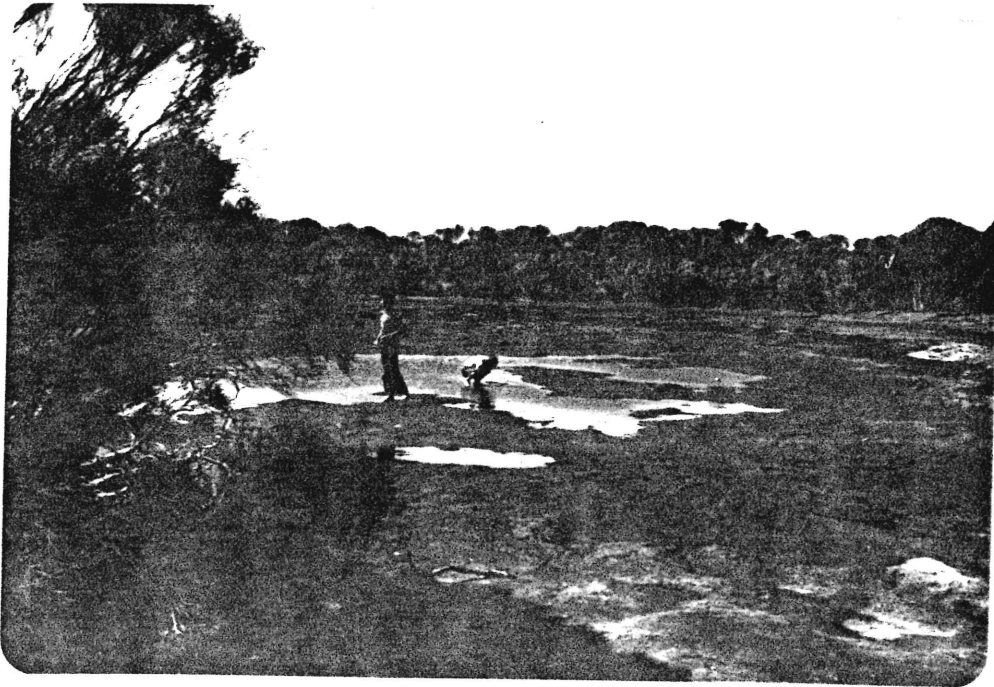
STRATUM 3: Baeckea cf. fumana, Boronia crassifolia, Cryptandra affin. glabriflora, Conostephium roei, Darwinia affin. polycephala, Glischrocaryon aureum, Hibbertia affin. stricta, Lepidosperma angustatum, L. gracile, Leucopogon sp, Leucopogon affin. dielsianus, Microcybe albiflora, Wilsonia humilis.

5. EXTENSIVE GRANITE OUTCROPS

There were two different types of massive granite outcrops, one where the grey rock was on the surface and the other where the ^{some} rock was covered by red mud. In both, the vegetation units were the same and the species only differed slightly. Generally where the granite rock outcropped there was also near some rock covered in mud. The vegetation types will be considered together but the two photographs below illustrate some of the species differences.

On the rock surface, in weathered areas with small soil buildup or moss swards, there would be, in the wetter seasons abundant annuals and ephemerals, but in the period of the survey only a few perennials were still present. Immediately surrounding the rock was a Heath formation where the shrubs (non-Eucalyptus species) were 2-3m tall and relatively dense. At 10-50cm behind the Heath formation was open shrub mallee formation, which became

senser with distance away from the rock.



Photograph 9: extensive granite outcrop with water still trapped, (there had been a thunderstorm about 9 days before). Along the rock are mainly plants of Melaleuca uncinata, a few Allocasuarina campestris and Thryptomene australis. Further behind can be seen the mallee of the open shrub mallee formation.



Photograph 10: Small amount of granite visible but mostly covered by a layer of red mud. Reddish coloured plants abundant in the foreground are Thryptomene australis; green tussock immediately

behind are Allocastrina campestris and Melaleuca uncinata.

Species List:

Soil areas on rock surface: Boronia nitida, Calandrinia sp.,
Carpobrotus modestus, Weitzia paniculata.

Heath Formation around rock edge: Stratum 1: shrubs 2-3m, stratum
2: shrubs 0.5-1.5m, Stratum 3: sedges and grasses, low plants.

STRATUM 1: Acacia lasiocalyx, A. triptycha, Alyogyne hakeifolia,
Callitris roei, Cassytha glabella, C. melantha, Allocastrina
campestris, Procarrpos cupressiformis, Glischrocaryon aureum,
Goodia lotifolia, Hakea commutata, H. meisneriana, Leptospermum
erubescens, Melaleuca elliptica, M. uncinata.

STRATUM 2: Allocastrina campestris, Alyogyne hakeifolia, Baeckea
latens, B. sp. nov., B. tetrasona, Callitris roei, Calothamnus
rilesii, C. glabella, Cassytha melantha, Cooperhockia strophiolata,
Glischrocaryon aureum, Goodia lotifolia, Hakea commutata,
Hibbertia stricta, Leucopogon sp., Melaleuca uncinata, Micromyrtus
imbricata, Oxylobium parviflorum, Pelargonium australe, Fimelea sp.,
Thryptomene australis.

STRATUM 3: Boronia inornata, Calandrinia sp., Carpobrotus modestus,
Danthonia setacea, Dianella revoluta, Goodenia decursiva, Juncus
pallidus, Lepidosperma angustatum, L. viscidum, Lobelia heterophylla,
Muehlenbeckia adpressa, Pelargonium australe, Stackhousia pubescens,
several species of annuals.

The halter species of the open halter formation were
Eucalyptus eremophila and E. redunca.

6. WATERLORD GRANITE, no rocks outcropping

This soil type occurs as a lead up to massive granite
outcrops, and on the soil map is included under Circle Valley
sandy loam. This soil type includes several species found in
that soil type but also includes several of the granite/laterite

associated species, and should be considered separately. The vegetation formation was characteristically open shrub mallee dominated by Eucalyptus grossa, Callitris and several Myrtaceae shrubs. At one site the mallees were taller but the species were the same and could be considered a very open tree mallee formation. The tree form mallees occurred in clumps scattered through the shrub vegetation. Stratum 1: mallees 5m or taller: stratum 2: plants 1-3m, stratum 3: shrubs 0.5-1m: stratum 4 plants less than 0.5m.



Photograph 11: Very open tree mallee: Allocasuarina conopsea Cr in background and left hand side: Petrophile festigiata on right hand side: in left foreground Leptospermum roei; mallees mainly E. grossa.

Species List:

Stratum 1: Cassynia melantha, Eucalyptus grossa, E. leptocalyx, E. incrassata, E. rudunca, E. uncinata, Hakea laurina.
 Stratum 2: Acacia lineolata complex, Allocasuarina conopsea, Callitris preissii ssp. verrucosa, C. roei, Eucalyptus grossa, Leptospermum erubescens, Lealeuca uncinata, Petrophile festigiata, Thymelaea squarrosa.

3: Asterias rubra, Boeckha latens, L. tetra, La
microthe: calothernus ribbosus, L. pileasii, C. conchiformis,
Utricularia affinis. incrassata, Dodonaea caespitosa, Erenophila
nachyphylla, Exocarpos aphyllus, Grevillea pauciflora, Hakea
comutata, H. lissocarpa, H. neisteriana, Lasionetalum rostratum
Lepidosperma viscidum, Leucopogon? breviflorus, L. minutifolius,
L. rubicundus, Lysinema ciliatum, Lalaleuca elliptica, L.
claberrima, L. lateriflora, L. pauperiflora, L. quadrifaria, L.
subtriflora, Luehlenbeckia adpressa, Phebalium tuberculatum, Lilaleuca
brevifolia, Phrynomene australis, Verticordia affinis. brownii.

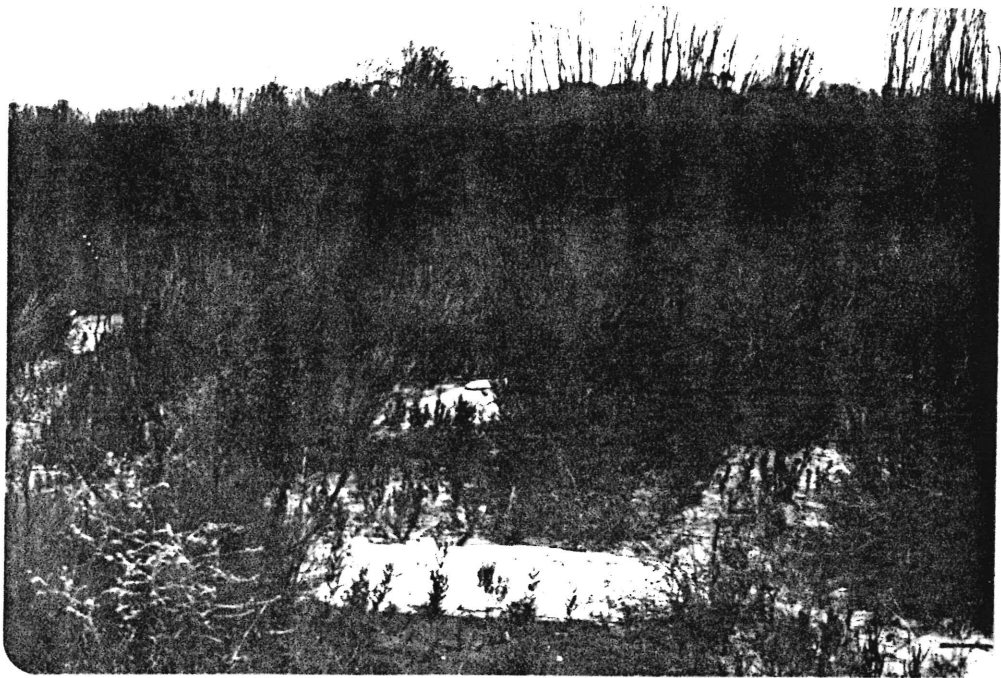
4: Acacia nitidula complex, Astroloma epicroides,
Boronia inornata, Boronia nitida, Coleanthera virgata, Carwinia
sp. in edit., Glischrocaryon roei, Gompholobium baxteri, Halorrhagis
hamata, Hibbertia affinis stricta, Lepidosperma strictum, L. viscidum,
Leucopogon sp. 1., Lobelia heterophylla, Loxocarya flexuosa,
Microcarya intricata, Mitelia microphylla, Myrtaceae unknown,
Platycheiloneura affinis, Pultanea conferta, Pultanea sp., Scaevola sp.

7. SCATTERED GRANITE OUTCROPS with some arable land.

Typically the vegetation is a tree mallee formation but
 sometimes an open tree mallee formation, with a shrub layer of vary-
 ing density. Stratum 1: mallee more than 8m tall; stratum 2: shrubs
 2-3m tall; stratum 3: shrubs 0.5-1.5m tall; stratum 4: shrubs less
 than 0.5m.



Photograph 12: tree mallee
 formation: Acacia species
 in background, few Lalaleuca
 species and Allocasuarina
compestris to 3m., other
 shrubs to 1.5m



Photograph 13: After fire showing regrowth of Melaleuca uncinata,
M. elliptica and Cooperrookia strobilata. Scattered rocks visible.

Species List:

STRATUM 1: Cassipoupa velanthe, Eucalyptus consobrata, E. leptocalyx,
E. rostrata, E. transcontinentalis, E. uncinata, Hakea laurina.

STRATUM 2: Acacia lasiocalyx, Allocasuarina campestris, Alphacyna
hekeifolia, Callitris roei, Eremophila pachyphylla, Eucalyptus
grossa, Exocarpos sparteus, Melaleuca cymbifolia, M. elliptica,
M. lateriflora, M. pauperiflora, M. pentagona, M. quadrifaria,
M. uncinata, M. undulata.

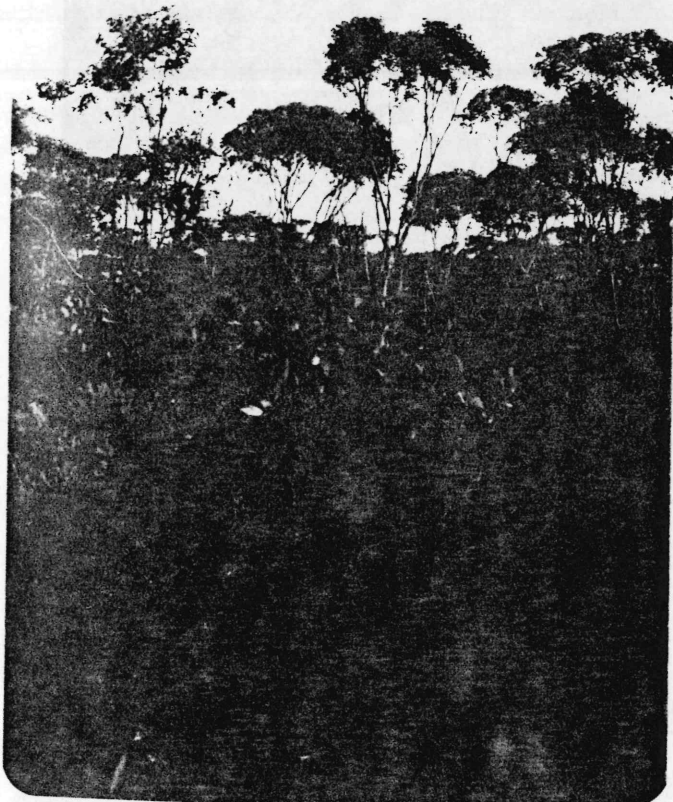
STRATUM 3: Allocasuarina campestris, Asteriscus arbuscula, Baeckea sp.,
nov., Belotermus gilesii, Cooperrookia strobilata, Lewyella
affinis incassata, Podocarpus stenoxygus, Podocarpus aphyllus, Goodenia
decussata, Scaevilla pauciflora, S. pluriflora, Hakea concolor,
H. lissocarpa, H. reiansariana, Leptospermum roei, Melaleuca
subtrigona, M. uncinata, Microcarpus alba, Caylophium parviflorum,
Phebalium tuberculatum, Fimelia brevifolia, Fimelia sp.

STRATUM 4: Astroloma epacroides, Baeckea laevis, Forstia laevis,
Ranthonia setacea, Glischrocaryon aureum, Hibbertia affinis striata,
Lepidosperma viscidum, L. striatum, Leucopogon ovalifolius, Lobelia

heterophylla, Lysichiton ciliatum, Mirbelia microphylla,
Puehlerbeckia adpressa, Platysace effusa, Pultenaea conferta,
Stachousia pubescens, Stylidium affin scusmellosum, Thryptomene
australis, Waitzia paniculata.

8. CIRCLE VALLEY SANDY LOAM, Grey to brown sand on domed clay at
0-4 inches.

Typically this soil supported a Tree or Shrub mallee formation
with the density of the mallees varying from open to sparse. The
the next stratum varied in height and density. The tree mallee
formation consisted of ; stratum 1: mallees more than 8 m. tall;
stratum 2: shrubs 1.5 -2.5m tall, or 1-1.5m tall; stratum 3: less
than 1m. For the shrub mallee the formation consisted of, stratum 1
mallees about 4m tall, with occasional ones to 7m tall; stratum 2:
shrubs 1-1.5m tall; stratum 3: shrubs less than 1m.



Photograph 14: Tree mallee
formation. Stratum 1 mainly
Eucalyptus dielsii and
E. redunca, taller than 8m.
Stratum 2 is dense at 1-1.5m
and includes Eucalyptus
grossa (large green leaf
plant in foreground).



Photograph 15: Tree mallee formation. Stratum 1 mainly amphiphile taller than 8m. Stratum 2 is sparse at 1.5-2.5m. Very few plants in stratum 3.



Photograph 16: Shrub mallee formation. Stratum 1 short 4m with the occasional mallee to 7m, stratum 2 dense at 1-1.5m, very few plants in stratum 3.

Species List:

STRATUM 1: Eucalyptus annulata, E. conglobata, E. dielsii,
E. arenophila, E. longicornis, E. pedunculata, E. scaphocalyx,
E. transcontinentalis, E. series oleosae "iron-bark", shea laurena.

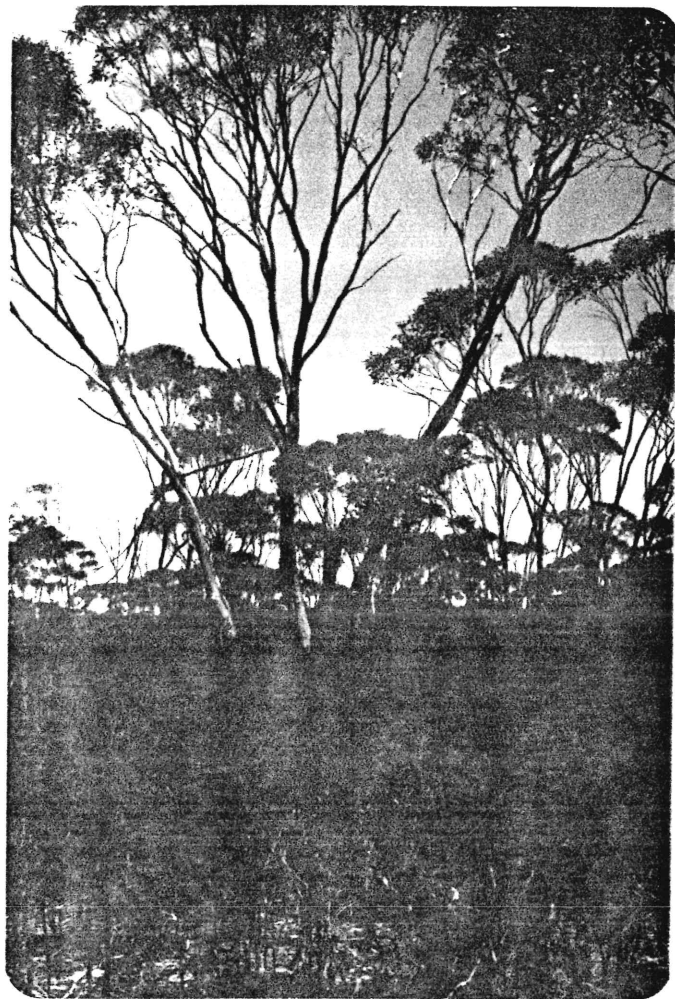
STRATUM 2: Acacia brachyclada, A. affin. dermatophylla, A. affin. nitidula complex, Acrotriche affin. cordata, Alomyza hakeifolia, Asteres ambiguus, Baeckea latens, Billardiera bicolor, Casaytha glabella, Cooperhookea strophiolata, Daviesia sp., D. affin. incrassata, Dodonaea cursarifolia, D. stenozyga, Eremophila dichroantha, Eucalyptus grossa, Erocarpos aphyllus, E. sparteus, Gastrolobium bilobum, Goodenia decursiva, Grevillea sp., G. pauciflora, G. plurijuga, Hekea commutata, H. lissocarpa, Halgania lavenderacea, Hibbertia stricta, Leucopogon rubicundus, Logania stenophylla, Melaleuca cardiophylla, M. cucullata, M. cymbifolia, M. lateriflora, M. pauperiflora, M. pentagona, M. quadrifaria, M. subtriflora, M. uncinata, M. undulata, Microcorys glabra, Micromyrtus elobata, Luehlenbeckia adpressa, Nematolepis rhebalioides, Olearia muelleri, Oxylobium nerviflorum, Personia tetrafolia, Phelipium lepidotum var. obovatum, Pimelea brachyphylla, Trynellium myrtillus.

STRATUM 3: Acacia acanthoclada, A. sorophylla, Anthotium humile, Astroloma epacridis, Boronia inconspicua, B. inornata, Carpobrotus virescens, Comesperma conferta, Danthonia setacea, Dianella revoluta, Eremophila glabra, Glischrocaryon roei, Goodenia concinna, Hibbertia affin. stricta, Lepidosperma angustatum, L. gracile, L. affin. striatum, L. cf. tenue, Leucopogon sp., L. sp. affin. conostephioides, L. minutifolius, Lobelia heterophylla, Oxylobium sp. (sml. leaf), Frostanthera microphylla, Pultenaea conferta, P. cymbifolia, Stipa serociliatum, S. hemisporum, Spyridium cordatum, Stylidium affin. squarrellosum, Teucrium filifolia, Trachymene anisocarpa.

9. CIRCLE VALLEY SAND. Grey sand yellowing with depth on clay at 4-12 inches.

This soil type was concentrated in the north-west portion of the proposed release area. Typically the vegetation was a tree mallee formation with stratum 2 varying in density. On the rises

the vegetation had dense stands of mallees but in the valley it became more shrubby. Stratum 1: mallees 4m or more in height, stratum 2: Melaleucas at 2-3m, stratum 3: less than 0.5-1.5m, stratum 4: less than 0.5m.



Photograph 17: Free mallee: Eucalyptus uncinata is tall tree in centre: Melaleuca sps forming stratum 2 in fore- and mid-ground.

Species List:

- Stratum 1: Eucalyptus eremophila, E. axiantha, E. leptocalyx, E. redunca, E. scyphocalyx, E. uncinata.
- Stratum 2: Melaleuca cardiophylla, M. cymbifolia, M. levisflora, M. pauciflora, M. pentagona, M. spathulata, M. thyoidea.
- Stratum 3: Acacia sp., A. nitidula complex, A. pritzeliana, Gonostaphium drummondii, G. roei, G. sp., Cooperhookea strophiolepis, Levinsia sp., Podocarpus bursarifolia, Xerophila calorhados, B. pachyphylla, Gompholobium baxteri, Grevillea pauciflora, G. plurijuga, Leucoposon rubicundus, Microcorys alba, Micromyrtus elobata, Tomelia sp., Utricularia sp., Persea teretifolia, Thalictrum filifolium.

SPERM. 4: Poronia crassifolia, Cryptandra affin. albriflora,
Lernia affin. polycephala, Hibbertia affin. stricta, Leriosperma
erectum, L. gracile, Leucopogon sp., L. affin. dielmannii,
Microcybe albiflora, Patersonia juncea, Stylidium affin. squarrellosum,
Westringia rigida.

10. BEETE SANDY LOAM: Light grey or brown powdery calcareous sandy
loam < clay loam and light clay.

This soil is characteristically very powdery, making a lot
of dust when disturbed. Typically the formation was open woodland
with about 80% of the trees being Eucalyptus series oleosa "iron-
bark" and undescribed species. Stratum 1: trees 10m or more with a
few mallees; stratum 2: Melaleuca sps. 1.5-2m, some tree-like reaching
3m, occurring in clumps or scattered; Stratum 3, shrubs less than 1m
in height, often under 0.5m.



Photograph 18: Open woodland: E. oleosa "iron-bark" is the most
common species. Melaleuca species to 3m on right hand side, shrub
less than 1m under several mallees.

Some areas listed as Beete Sandy Loam on the soil map had a
redder coloured soil than the typical and supported

different Eucalyptus species. These were considered to be overlap areas between Peats sandy loam and the adjoining soil type, and are not considered under this soil type.

Species List:

STRATUM 1: Eucalyptus affinis, brachycarpa, E. floribunda, E. sericea also as "iron-bark", E. transcontinentalis, E. uncinata.

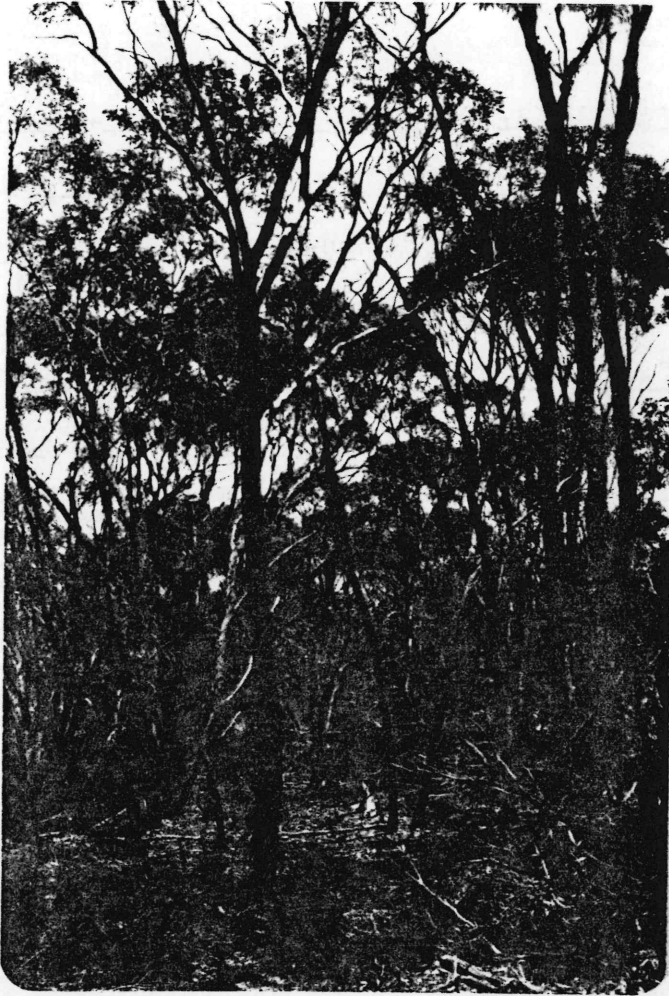
STRATUM 2: Eremophila gilesii, Grevillea plurijuga, Hakea commutata, Hilsonia lavenderacea, Melaleuca cardiophylla, M. cristifolia, M. eleuterostachys, M. pauperiflora, M. pentagona, M. quadrifaria.

STRATUM 3: Acacia ingrata, A. merrallii, A. pachypoda, A. pritzellii, A. scopophylla, Boscia rufa, Madroa stenocarpa, Excoecaria subulata, Macaranga huegelii, Microcybe multiflora var multiflora, Cleistanthus muelleri, Pultanea conferta, Scaevola bursariifolia,

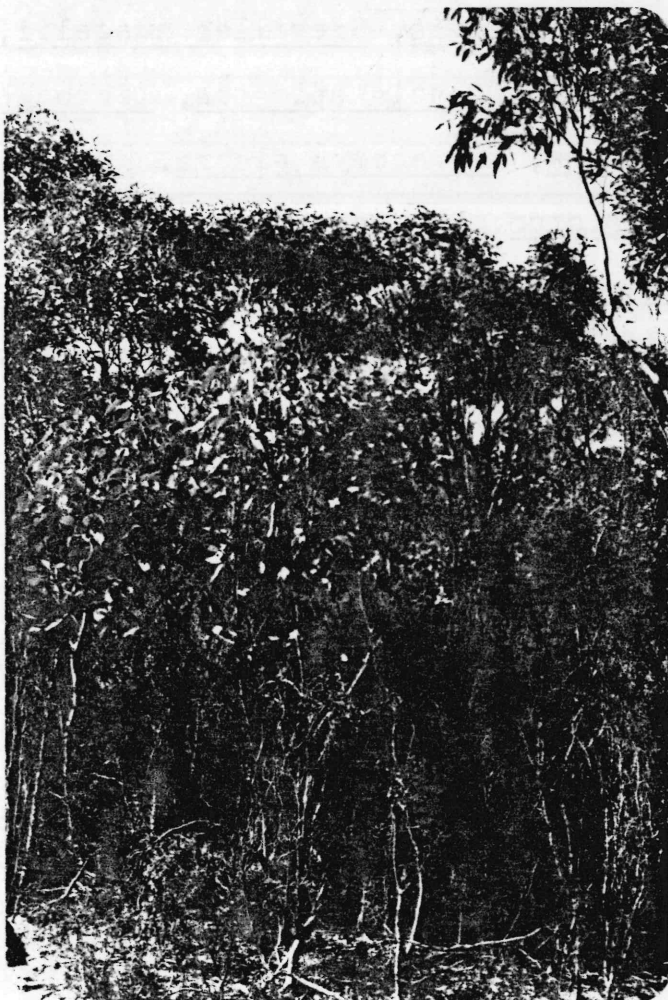
11. KUMARU SANDY LOAM: Brown sandy loam on clay at 0-4 inches, lime.

The vegetation of this soil varied from a tree mallee formation with an open understorey to a shrub mallee with dense understorey, but the species were the same. The soil type tended to have several small depressions where the understorey tended to be thickest. Where the mallee and understorey were open, clumps of plants 1m or less in height would occur.

Tree mallee formation: stratum 1: mallees 8m or more; stratum 2: shrubs 1-2m predominantly Melaleuca species varying considerably in density; stratum 3: occurred mainly in the openings, shrubs less than 1m. Shrub mallee formation: stratum 1: mallees 4-5m; stratum 2: shrubs 0.5-1.5m, varying considerably in density; stratum 3: plants less than 0.5m only occurring in open areas.



Photograph 19: Tree mallee formation; Eucalyptus eremophila smooth bark mallee, E. longicornis rough bark mallee. No Melaleucas. Stratum 3, Scaevola bursariifolia, Acacia ingrata.



Photograph 20: Mallee shrub: Eucalyptus dielsii, yellow flowered mallee, E. transcontinentalis in foreground. Melaleuca species dense to 1.5m. Very few plants in stratum 3.

Species List:

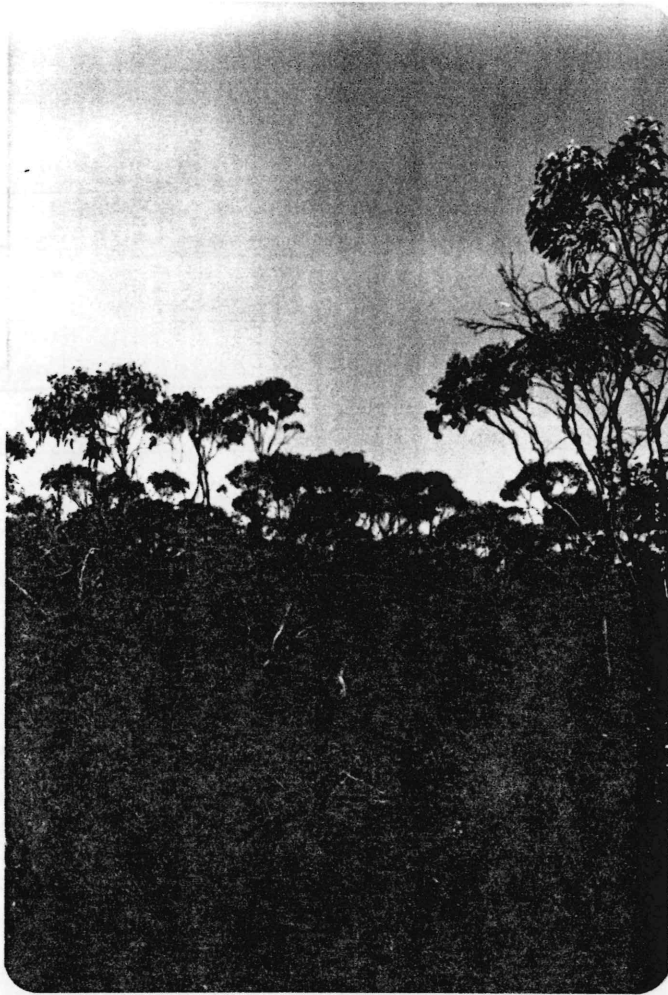
STRATUM 1: Cassytha melantha, Eucalyptus annulata, E. affin.
brachycorys, E. dielsii, E. ererophila, E. flocktoniae, E. leptocalyx,
E. longicornis, E. series oleosae "iron-bark", E. redunca,
E. scyphocalyx, E. transcontinentalis, E. uncinata.

STRATUM 2: Acacia affin dermatophylla, A. lachnophylla, Allocasuarina
campestris, Alyogyne hakeifolia, Dillwynia uncinata, Oxocarpus
aphyllus, Grevillea pauciflora, G. plurijuga, Podocarpus
cotinifolius, Hakea commutata, H. meisneriana, Leptomeria
cupressiformis, Melaleuca cardiophylla, M. cucullata, M. cymbifolia,
M. aleuterostachya, M. pauperiflora, M. pentagona, M. quadrifaria,
M. uncinata, Olearia muelleri.

STRATUM 3: Acacia acanthoclada, A. brachyclada, A. nitidula complex,
A. sorophylla, Astartea orbisus, Baeckea latens, Colonia inornata,
Cooperhookea strophiolata, Daviesia affin incrassata, Podocarpus
artica, D. stenozysa, Ererophila dichroantha, E. glabra, Glinchroa
aurea, Goodenia concinna, G. laevis, Grevillea huegelii, Hibbertia
stricta, Kennedia prostrata, Lawrencia spicatus, Microcybe albiflora,
M. multiflora var. multiflora, Microcorys glabra, Muehlenbeckia
adpressa, Oxylobium parviflorum, Pimelea brachyphylla, Platysace
commutata, Pultenaea adunca, Pultenaea conferta, Pultenaea cymbifolia,
Scesevola bursariifolia, Spyridium cordatum, Stackhousia pubescens,
Teucrium filifolium, Westringia risida, Wilsonia humilis.

12. CIRCLE VALLEY SANDY LOAM AND BEETE SANDY LOAM.

This soil type supported a tree mallee formation with a
Melaleuca layer at 2.5-3m. The density of the Melaleuca sps.
varied. Stratum 1: mallee plants 8m or more in height; stratum 2:
mainly Melaleuca species 2-3m, varied considerably in density;
stratum 3: plants below 1m tall - the presence of this stratum was
dependent upon the density of strata 1 and 2.



Photograph 21: Tree mallee with dense undergrowth. The mallees are Eucalyptus uncinata, E. transcontinentalis and E. eremophila. Stratum 2 shows a dense Melaleuca layer to 2.5m tall.



Photograph 22: Tree mallee with open ground. Mallee species, Eucalyptus uncinata and E. longicornis. Melaleuca pentagona (pink flower) up to 2.5m tall with only a few smaller plants present at stratum 3.

Species list:

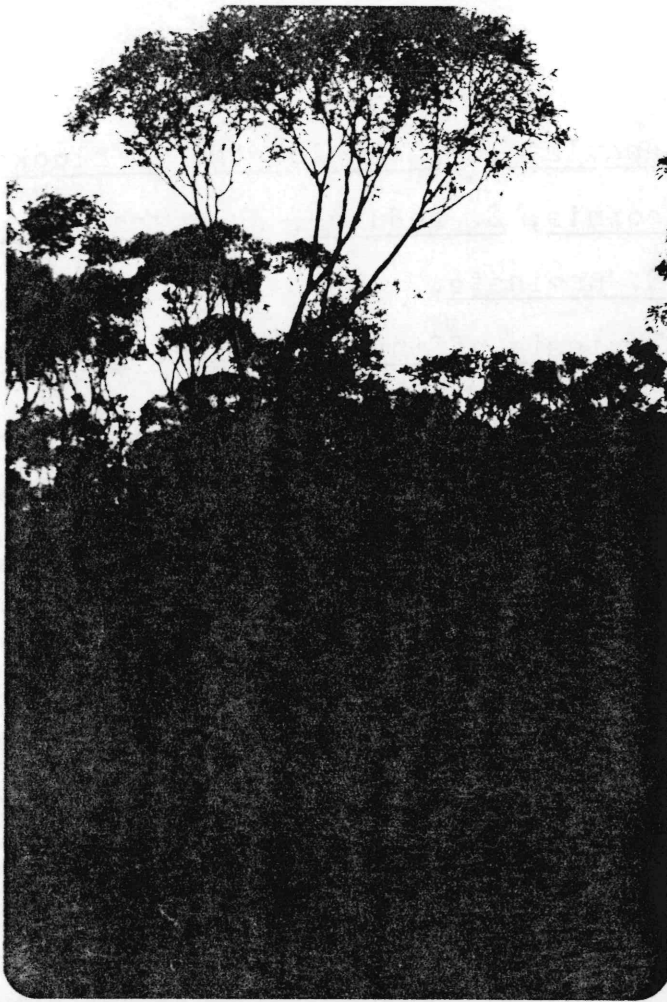
STRATUM 1: Eucalyptus annulata, E. conglobata, E. dielsii,
E. leptocalyx, E. longicornis, E. series oleosae "iron-bark",
E. rudecta, E. transcontinentalis, E. uncinata.

STRATUM 2: Acacia sp., A. lachnophylla, Bohsonsea stenozysa,
Brachophila pachyphylla, Grevillea plurijuga, Melaleuca cardiophylla,
M. cucullata, M. cymbifolia, M. eleuterostachya, M. lateriflora,
M. laxiflora, M. pauperiflora, M. pentagona, M. quadrifaria, M. uncinata,
Persoonia teretifolia, Scaevola hursariiifolia.

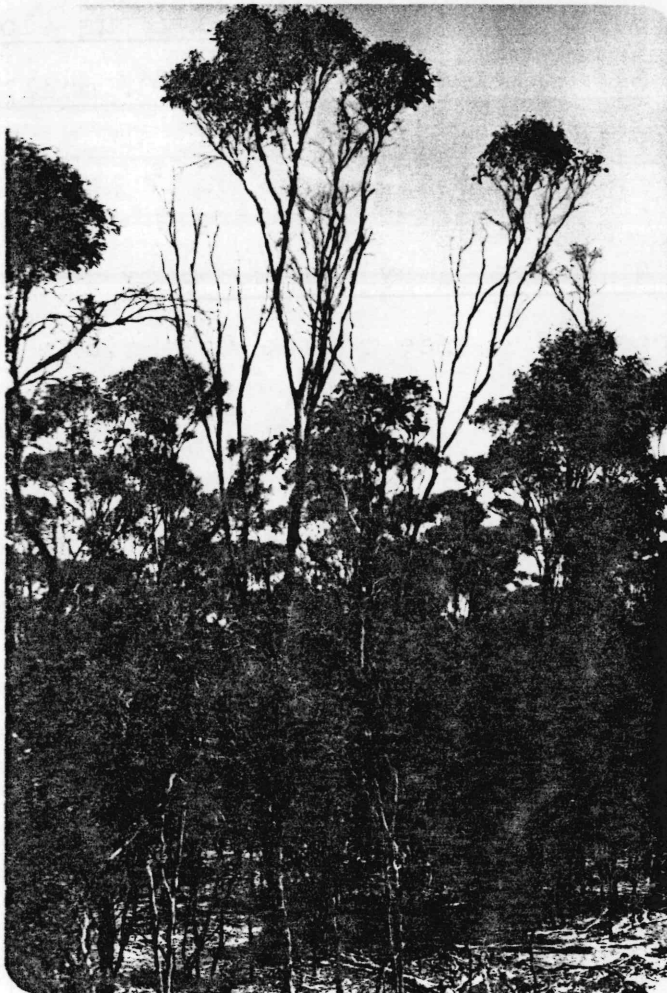
STRATUM 3: Acacia brachyclada, A. ingrata, A. pritzeliana,
A. serophylla, Boronia inornata, Laviesia affinis incrassata, Bohsonsea
hursariiifolia, Exocarpos aphyllus, Glischrocaryon aureum, Goodenia
concinna, Grevillea huegelii, G. pauciflora, Halsania lavandulacea,
Hibbertia affinis stricta, Microcybe multiflora var multiflora,
Microcorys glabra, Pultenaea conferta, Westringia rigida.

13. SIBBLE VALLEY SANDY LOAM AND HUMAL SANDY LOAM COMPLEX

This soil supported a tree mallee formation with Melaleuca species to 2.5-3m tall. The density of stratum 2 varied but at all localities sampled some plants were 2.5-3m tall. Stratum 3 at 1m or less was present but this was dependent upon the density of the upper strata. Stratum 1: mallees 8m or more in height; stratum 2: 1-3m tall, mainly Melaleuca species, varying in density from open to very dense; stratum 3: less than 1m tall, density dependant upon the density of strata 1 and 2.



Photograph 23: Tree mallee formation. Taken on an overcast day. The Melaleuca species are dense at 2.5m. Abundant limb litter on the ground. Tall mallee is Eucalyptus annulata.



Photograph 24: Tree mallee formation showing an open Melaleuca stratum. The tall mallees are Eucalyptus uncinata, the shorter one E. longicornis.

Species List:

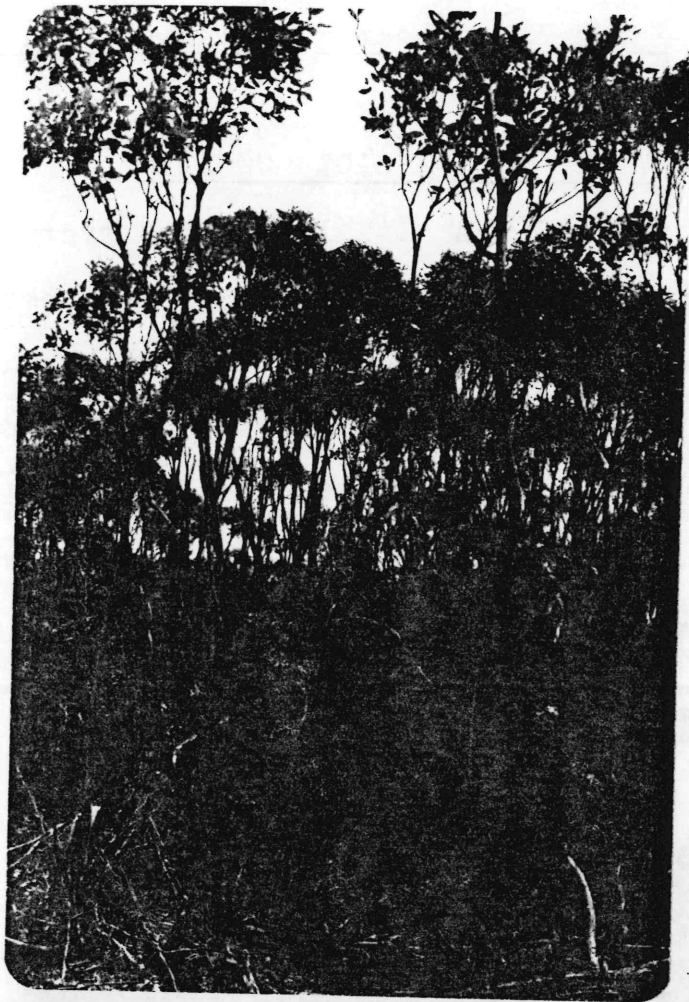
STRATUM 1: Eucalyptus annulata, E. conglobata, E. flocktoniae,
E. leptocalyx, E. longicornis, E. redunca, E. scyphocalyx,
E. transcontinentalis, E. uncinata.

STRATUM 2: Acacia sp., Daviesia affin incrassata, Dodonaea stenozygis,
Eremophila pachyphylla, Exocarpos aphyllus, Grevillea plurijuga,
Halaleuca cardiophylla, M. cucullata, M. cymbifolia, M. laxiflora,
M. lateriflora, M. pauperiflora, M. pentagona, A. cusdrifera,
A. uncinata, Ferrosia teretifolia.

STRATUM 3: Acacia brachyclada, A. affin dermatophylla, A. hakeoides,
A. ingrata, A. pritzeliana, A. sorophylla, Baeckea latens, Boronia
inornata, Carpobrotus virescens, Cassia nereophylla, Cooperhookeya
strophiolata, Dodonaea bursarifolia, Goodenia concinna, Grevillea
hueselii, G. pauciflora, Halcaenia lavenderacea, Helichrysum
lepidophyllum, Hibbertia stricta, Microcorys globosa, Microcybe
multiflora var multiflora, A. pauciflora, Micromyrtus elobata,
Muehlenbeckia adpressa, Olearia affin axillaris, O. muellei,
Pultenaea conferta, Westringia risida.

14. KUMAIL SANDY LOAM AND BEBEI SANDY LOAM COMPLEX

This soil type supported a tree mallee formation with a
predominant halaleuca layer at 2.5m. A low amount of litter
from bark, limbs and leaves was abundant on the ground. At 10m 2;
mallee trees were then 8m tall, varying from dense to open: stratum
2: 1-2.5m tall (occasionally 3m), mainly Halaleuca species,
typically fairly dense but with some open areas: stratum 3: plants
0.5m or less, very scattered.



Photograph 25: Trees mallee formation. Several species of mallee with relatively dense Melaleuca layer. Large amount of litter build up on the ground.

Species List:

STRATUM 1: Eucalyptus annulata, E. conglobata, E. dielsii, E. eremophila, E. flocktoniae, E. goniantha, E. leptocalyx, E. longicornis, E. series oleosae "iron-bark", scyphocalyx, trans-continentalis, E. uncinata.

STRATUM 2: Acacia lasiocalyx, Daviesia affinis incrassata, Dillwynia uncinata, Dodonaea stenozyga, Exocarpos echyllum, Melaleuca cardiophylla, M. cucullata, M. cymbifolia, M. eleuterostachya, M. laxiflora, M. pauperiflora, M. pentagona, M. quadrifera, Persoonia teratifolia.

STRATUM 3: Acacia affinis dermatophylla, A. pritzeliana, A. sorophylla, A. unknown, Cooperhookea strophiolata, Goodenia concinna, Grevillea hueselii, G. pauciflora, G. plurijuga, Hakea commutata, Hibbertia stricta, Microcybe albiflora, M. multiflora var baccharoides, Microcorys alba, Mirbelia microphylla, Olearia muelleri, Pultenaea

Leptocarpus, Scaevola sp., Thyridium cordatum, Wilsonia humilis.

13. TUMULD SANDY LOAM N. DOWAR CLAY LOAM COMPLEX.

This soil was very undulating with 1m "lumps" every 20m. The vegetation was a tree mallee formation with a predominantly Melaleuca stratum at 2-3m. This Melaleuca layer was typically dense, but some open areas were found. There were very plants less than 0.5m. Stratum 1 consisted of mallees 8m or taller; stratum 2: Melaleucas 1.5-3m; stratum 3: less than 1m tall.



Photograph 13: Tree mallee formation with dense stratum 2.

Eucalyptus eremophila and E. transcontinentalis are the main mallees with dense Melaleuca stratum and E. confertiflora etc. For lower stratum plants



Photograph 27: Tree mallee. More open than previous photograph especially at stratum 2. Areas of bare ground visible.



Photograph 28: After a burn over a year old. The density of the previous canopy is very apparent from the old stems and dense Melaleuca twigs now intermingled with Eucalyptus regrowth.

Species List:

STRATUM 1: Cassytha melantha, Eucalyptus annulata, E. conglobata,
E. dielsii, E. eremophila, E. flocktoniae, E. leptocalyx, E. longicornis,
E. redunca, E. scyphocalyx, E. transcontinentalis, E. uncinata.

PLANT 2: Acacia lineolata complex, Alyogyne hakeifolia, Coccythra
clabellia, Cheiranthra filiformis, Codonocarpus cotinifolius,
Devriesia acanthoclona, D. affin. incrassata, DoDonaea stenozyga,
Fremophila dichroantha, Exocarpos sphyllus, E. cupressiformis,
E. sparteus, Grevillea plurijuga, Hakea commutata, Halimnia
lavandulacea, Leptospermum erubescens, Melaleuca cardiophylla,
M. cucullata, M. cymbifolia, M. lateriflora, M. pauperiflora,
M. pentagona, M. uncinata, M. undulata, Nematolepis phebaloides,
Persoonia teretifolia, Templetonia sp.

SPERMUM 3: Acacia sp., A. brachyclada, A. affin dermatophylla,
A. ingrata, A. pachypoda, A. pritzeliana, A. sorophylla, Astroloma
epacridis, Baeckea latens, Boronia inconspicua, Comesperma sp.,
Cooperhookea ingrata, DoDonaea bursarifolia, Goodenia concinna,
G. decursiva, G. laevis, Glischrocaryon aureum, Grevillea huegelii,
G. pauciflora, Helichrysum lepidophyllum, Hibbertia stricta,
Microcorys glabra, Microcybe albiflora, Oxylobium parviflorum.
Pimelea brevifolia, Fultensea affin adunca, F. affin. arida,
F. conferta, Scaevola sp., Spyridium cordatum, Trymalium myrtillus,
Westringia rigida, Wilsonia humilis.

There was an old drainage system at one location within this soil type which had a series of depressions along its length. One such depression within the proposed land release still had water present in January, with Marsilea. The water was much visited by animals as evidenced by their tracks. On the southern edge of the land release, bordering location 482 was a similar water hole.

A further depression along this drainage system had been burnt and although no water was present the regrowth had been extremely vigorous. The main plants regrowing here were: Alyogyne hakeifolia, Eucalyptus annulata, E. eremophila, Oxylobium parviflorum, Hakea commutata, and Fultensea affin redunca.



Photograph 29: Depression containing water: Marsilea drummondii on the surface. In the water Lepilaena australis was collected and Isolepis cernua from the wet mud at the side. Melaleuca cardiophylla was the common Melaleuca species present.

MOUNT BEAUMONT.

The area around Mt. Beaumont is not to be included within the land release but is to be kept as a Reserve, and will be considered separately. There were four soil types listed as occurring within the proposed reserve area. These are Kumarl Sandy Loam and Dowak Clay Loam; Circle Valley Sandy Loam; Extensive Granite Outcrops; Scattered Granite Outcrops with some arable land.

1. Kumarl Sandy Loam and Dowak Clay Loam.

This soil type had the same species as listed in the discussion of this soil type for the release. The vegetation was a tree mallee formation, stratum 1: mallee 8m or more tall; stratum 2: mainly Melaleucas 1.5-2.5m a few to 4m; stratum 3: less than 1m.

Major Species:

STRATUM 1: Eucalyptus conglobata, E. dielsii, E. longicornis, E. redunca, E. scyphocalyx.

STRATUM 2: Cassia cardiosperma, C. nematorhyla, Dodonaea stenozyga, Pterophila dichroantha, Exocarpos aphyllus, Grevillea plurijuga, Leptospermum roei, Melaleuca cardiophylla, M. cucullata, M. cymbifolia, M. lateriflora, Templetonia sulcata.

STRATUM 3: Acacia sp. (insufficient material), A. ingrata, Cooperhookea strophiolata, Halgania lavandulacea, Helichrysum lepidophyllum, Microcybe albiflora, Pultenaea affin. arida, P. conferta, Trymalium myrtillus, Wilsonia humilis.

2. Circle Valley Sandy Loam.

Generally this soil supported the same vegetation as given in the description for the proposed land release, but in some areas there were gravel pebbles on the surface. Some of the species included those previously found at the Fleming Gravel site. The vegetation was a shrub or tree-mallee formation with a few mallees reaching more than 8m. Stratum 1: mallees to 6m, often occurring in clumps with shrubs in between; stratum 2: shrubs 1-1.5m; stratum 3: shrubs less than 0.75m.

Species List:

STRATUM 1: Eucalyptus conglobata, E. incrassata, E. leptocalyx, E. redunca, E. tetragona, E. transcontinentalis, E. uncinata, Hakea laurina.

STRATUM 2: Allocasuarina cuneata, Cellitris roei, Colobanrus quadrifidus, Cassia glabella, Drummondita hassellii, Eucalyptus grossa, Grevillea plurijuga, Hakea lissocarpa, H. meioneriana, Melaleuca lateriflora, M. pentagona, M. uncinata, Oxylobium parviflorum, Pterophila fastigiata.

STRATUM 3: Acacia monophylla, A. nitidula, Astartea ambiguus, Baeckea latens, Coronia affin. fabianoides, P. inconspicua, Chorizanthe nervosum, Grevillea pauciflora, Hibbertia affin. stricta, Lepidosper

angustatum, L. striatum, Leucopogon minutifolius, Leucopogon ?
ovalifolius, Melsleuca glaberrima, M. subtrigona, Platysace effusa,
Pultenaea conferta, Verticordia affin. brownii.



Photograph 30: Shrub mallee to 6m. Eucalyptus tetragona, pale green leaf, white flower, Melsleuca uncinata on right hand side. Lepidosperma angustatum sedge in middle. Mallees occur in clumps with shrubs in between.



Photograph 31: Tree mallee. Eucalyptus species reaching 10m, Eucalyptus uncinata and E. conglobata in background. E. grossa

low matted with shining leaves in foreground. Melaleuca uncinata to 2.5m behind E. crossa.

3. Extensive Granite Outcrops.

Mt. Beaumont is an extensive granite tor rising out of the surrounding countryside. It had lower flatter areas of granite at the base which contained pockets of soil, but up the sides there were several overhanging rocks and pockets of deep soil. The vegetation will be discussed under two headings, i) Scrub in soil pockets and ii) Scrub at the base of the rock.

i) Scrub in the soil pockets. There were no Eucalyptus species found in the soil pockets. The vegetation would be described as a dense heath, the height of the shrub plants depending upon the depth of the soil and prevailing winds as wind clipping was very apparent on the exposed sides. Stratum 1: shrubs above 1m tall often up to 3m; stratum 2: plants below 1m, including sedges; stratum 3: ferns.



Photograph 32. Dense heath. Acacia lasiocalyx, Allocasuarina conopsea are the "tree-like" bushes reaching 2m.. Understory low Melaleuca fulgens plants and clumps of Juncus pallidus.

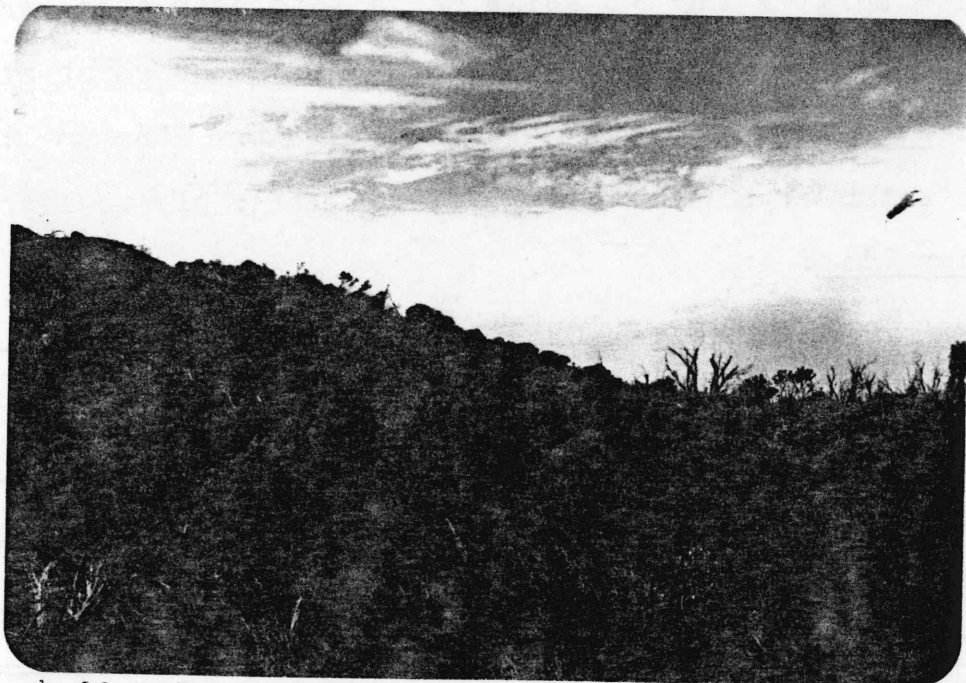
Species List:

STRATUM 1: Acacia lesiocalyx (often reaching 3m): Allocasuarina constricta, A. huegelliana (up to 2m), Callitris roei, Calothamnus quadrifidus, LeConcees pinifolia, Gastrolobium bilobum, Makea clavata, Kunzea baxteri (up to 2.5m, dense bushes), Lebichea lanceolata, Leptospermum roei, Melaleuca coccinea, M. fulgens, M. uncinata, Oxylobium perviflorum, Santalum acuminatum, Sollya heterophylla, Thrytomene australis.

STRATUM 2: Acacia sp. (insufficient material), Borya nitida, Carpobrotus modestus, Dianella revolute, Juncus pallidus, Lepidosperma angustatum, Lobelia heterophylla, Muehlenbeckia adpressa, Pelargonium australe, Platysace effusa.

STRATUM 3: Asplenium flabellifolia, Cheilanthes tenuifolia, Pleurosaurus rutifolius.

ii) Scrub at the base of the rock. At the base of the rock the vegetation was typically very thick and tall, caused by the extensive run-off from the rock face. The vegetation was tree mallee although often large areas of scrub occurred without any Eucalyptus species. Stratum 1: Eucalyptus species over 8m: stratum 2: shrubs 2-3m: stratum 3: shrubs 1-2m: stratum 4: plants below 1m.



Photograph 33: Dense scrub at the base of Mt. Beaumont. Sedges in

foreground, Melaleuca uncinata and Acacia triptycha in midground.

Species List:

STRATUM 1: Acacia lasiocalyx, A. saligna, A. triptycha,
Allocasuarina huerfaliana, Eucalyptus occidentalis, E. tetragona.

STRATUM 2: Callitris roei, Calothamnus quadrifidus, Gastrolobium
bilobum, Goodenia lotifolia, Hakea laurina, Labichea lanceolata,
Melaleuca uncinata, Oxylobium parviflorum, Ricinocarpos trichophorus,
Sollya heterophylla.

STRATUM 3: Astartea ambigua, Dodonaea pinifolia, Melaleuca coccinea,
M. fulgens, M. glaberrima, Muehlenbeckia adpressa, Thryptomene
australis.

STRATUM 4: Acacia sp. (insufficient material), A. gonophylla,
A. nitidula complex, A. sorophylla, Astroloma epacridis, Baeckea
latens, Chorizema nervosum, Cooperhookea strophiolata, Hibbertia
affinis stricta, Juncus pallidus, Lepidosperma angustatum, L. striatus,
Leucopogon minutifolius, Platysace effusa, Styphandra imbricata.

4. Scattered Granite Outcrops with Some Arable Land.

This soil type will also include species found in the weathered granite soil as the two soils merge into each other and include many of the same species. The vegetation was shrub mallee as most of the Eucalyptus species were not over 6m. Stratum 1: mallees to 6m; stratum 2: shrubs 0.5-1.5m; stratum 3: plants less than 0.5m

Species List:

STRATUM 1: Eucalyptus leptocalyx, E. rudecta, E. uncinata, Hakea
laurina.

STRATUM 2: Acacia gonophylla, Allocasuarina campestris, Calothamnus
quadrifidus, Dodonaea pinifolia, Eucalyptus grossa, Grevillea
pauciflora, G. plurijuga, Hakea lissocarpa, H. meisneriana, Isopogon
huxifolius, Melaleuca calycina, M. coccinea, M. glaberrima, M.
pentagona, M. uncinata, Oxylobium parviflorum.

STRATUM 3: Acacia gonophylla, A. nitidula complex, Astartea ambigua

-10-

Brecher latens, Dorys nitida, Chorizanthe nervosa, Hibbertia sp.,
H. affin. stricta, Lepidosperma angustatum, L. striatum, Leucopogon
nightifolius, Melaleuca subtrigona, Platysace effusa.

There were several species collected within the Mt. Beaumont Reserve which had not been collected within the proposed land release. Some of these species were not found within the existing reserves e.g. Melaleuca coccinea, Kunzea baxteri, Ricinocarpus trichorhorus and the three fern species. It is certainly a very valuable area botanically to set aside as a reserve.

VEGETATION OF NEARBY RESERVES

The vegetation of the four existing nearby reserves 32129, 32130, 32131, 32783, will be discussed under soil types. See map 1 for location of these reserves in relation to Mt. Beaumont. Three soil types are listed as occurring within these reserves which did not occur in the land release area; gilgai (Reserves 32131 and 32783), Scadden loamy sand and Scadden sand (in all four reserves). In all thirteen soil types have been listed for the reserves.

Referring to map 1 it can be seen that Reserve 32783 adjoins the south-west corner of Mt. Beaumont and the proposed new land release. It also adjoins farm locations 434, 435, 437, 438, 439. There were twelve different soil types listed for this reserve.

Reserve 32130 is opposite Reserve 32783 on Haywood Road, and adjoins farm locations 323, 324, 325, 326, 327, 333. This reserve had only two soil types present.

Reserve 32129 was opposite another side of Reserve 32783 on Karl Berg Road, and adjoins farm locations 338, 343, 344, 345, 336. There were four soil types present in this Reserve.

Reserve 32121 is on Parmango Road and adjoins farm locations 340, 431, 343, and had all four soil types present.

A large area of all the reserves had been burnt recently, which made the identification of some of the plants very difficult. Also the mature vegetation type was not known but was often assumed from the dead remains of the previous plants.

The soil types present within the proposed land release will be discussed in the order used previously. The three different soil types will be discussed at the end.

i) Gibson Sand. Grey sand to pale yellow sand on clay at depth 12-30 inches. (Reserve 32129).

Reserve 32129 was the only one with this soil type present and the area had been burnt. Presently the mallees were 3m with an understorey of 0.5m, but before burning would have been a tree mallee formation. Stratum 1: mallees presumably up to 8m tall, not very dense; stratum 2: heath species 1-1.5m; stratum 3: plants less than 1m tall.

Species List:

STRATUM 1: Banksia media, Eucalyptus goniantha, E. halophila, E. incrassata, E. tetragona, E. uncinata.

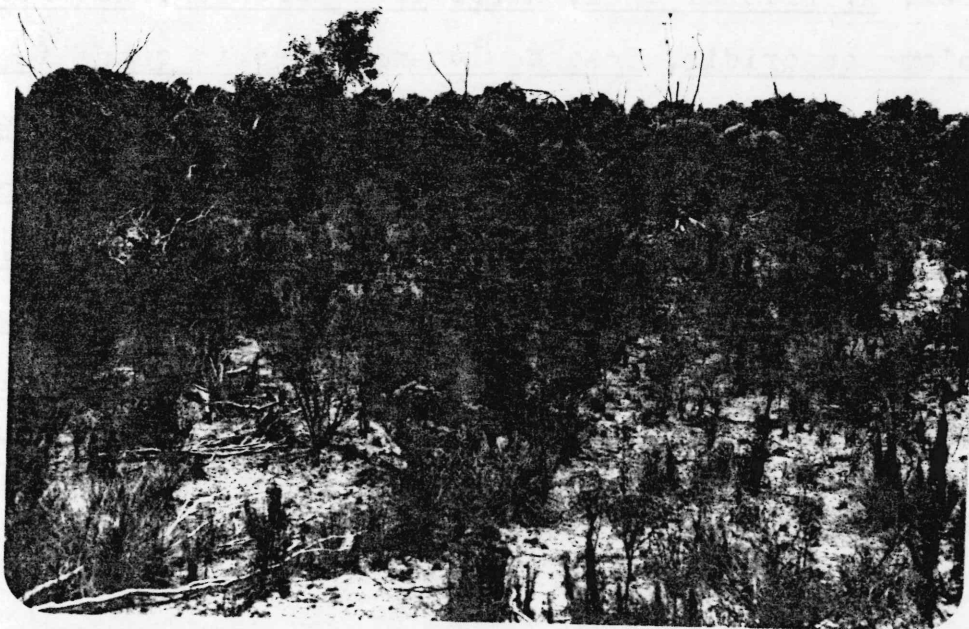
STRATUM 2: Allocasuarina thuyoides, Beaufortia micromera, Calothamnus cilesii, Cassytha alabella, Grevillea plurijuga, Hakea cinerea, H. corymbosa, H. laurina, H. nitida, Leopogon luxifolius, L. trilobus, Melaleuca lateriflora, M. pulchella, Personia scabra, P. teretifolia, Perpetoria sulcata.

STRATUM 3: Acacia sp. (insufficient material), A. nitidula complex, A. platypoda, A. pritzeliana, Aotus sp., Baeckea latens, Boronia inconspicua, Boronia nitida, Chorizema ericifolium, Cooperhookea polysalacea, Daviesia brevifolia, Dryandra obtusa, Grevillea pauciflora, Lehmanna affinis sessiliflora, Leucopogon affinis conostephoideus, Lepidosperma angustatum, L. striatus, L. tenue, Loxocarya flexuosa, Lysinema ciliatum, Melaleuca subtrigona, Mesomelaena stygia, Microcorys glabra, Micromyrtus elobata, Nyctea

unknown, Oxylobium aff. obtusifolium, Petrophile squarata,
Pultanea cymbifolia, Verticordia aff. brownii, Wilsonia humilis.

ii) Flexing Gravel - Shallow Phase. Grey sand on gravel at 0-12 inches. (Reserve 32783).

This area had been burnt a few years previously and many plants had not reached their mature height. The strata were assessed from the dead remains. The mature vegetation would be a tree mallee formation: Stratum 1: mallee and trees 8m or more, very open occurring in clumps; stratum 2: shrubs 1-2m of varying density; stratum 3: shrubs 1m or less.



Photograph 34: Open area amongst mallees. Most of the plants in the foreground are Verticordia aff. brownii. Allocasuarina campestris, Melaleuca uncinata and Calothamnus quadrifidus are also present. This photograph clearly shows how the height of the present regrowth vegetation compares with the dead stems of Melaleuca uncinata on the ground on the left hand side, and the dead trunks of the tree mallees in the background.

Species List:

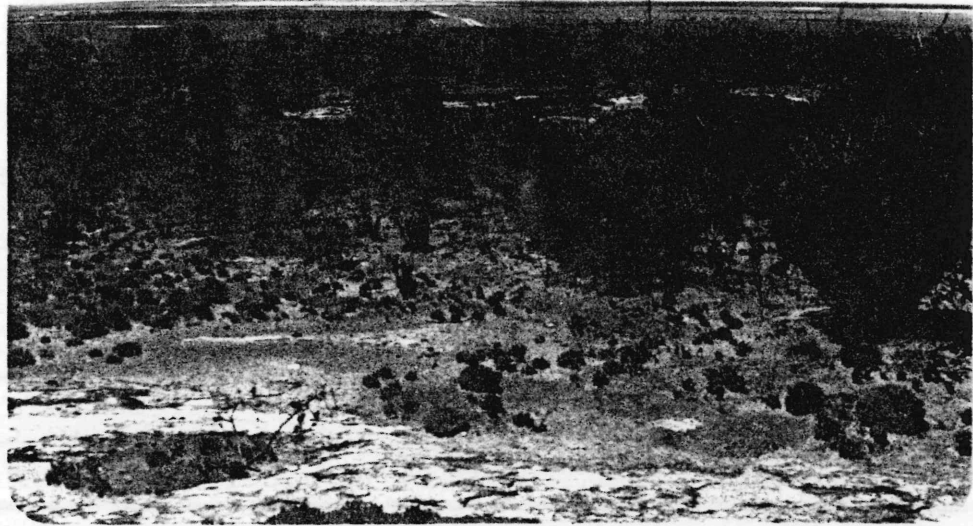
STRATUM 1: Banksia medea, Callitris roei, C. preissii ssp. verrucosa,
Eucalyptus leptocalyx, E. redunca, E. uncinata, Exocarpos compressifolius,
Hakea laurina.

STRATUM 2: Allocasuarina campestris, Alyogyne huegelii var
grossulariaefolius, Calothamnus quadrifidus, Cassytha glabella,
Daviesia affinis incrassata, Exocarpos unphyllus, Grevillea plurijuga,
Hakea cinerea, H. lissocarpha, Isopogon buxifolius, Leptospermum
roei, Melaleuca calycina, M. lateriflora, M. pauperiflora, M. pentagona,
M. subtriflora, M. uncinata, Oxylobium parviflorum, Petrophile
fastigiata,

STRATUM 3: Acacia affinis dermatophylla, A. gonophylla, A. nitidula
complex, A. pritzeliana, Acrotriche cordatum, Aster tea ambigua,
Astroloma eperidias, Baeckea latens, Boronia crassifolia,
Brachyloma concinna, Calothamnus villosus, Chorizema nervosum,
Cooperhookea strophiolata, Cryptandra affinis glaberrima, Daviesia sp.
lobonocarpa, D. pinifolia, Goodenia concinna, G. laevis, Grevillea
pauciflora, Lesionetalum rosmarinifolium, Lepidosperma striatum,
Leucopogon minutifolius, L. ? ovalifolius, Lysinema ciliatum,
Melaleuca glaberrima, Microcybe multiflora, Microcorys glabra,
Oxylobium sp. sm1 lf. 1, Peucephyia filifolia, Verticordia affinis
Brownii, Wilsonia humilis.

iii) TRANSITIVE GRANITE CUMBERS. (Reserves 327-3, 3 181)

These granite outcrops were extensive, with small amounts of
arenite outcropping, separated by pockets of soil containing shrubs.
The vegetation of the rocks is a Heath formation. Stratum 1: shrubs
1-2m; stratum 2: 0.5-1m shrubs; stratum 3: less than 0.5m, including
grasses and sedges.



Photograph 35: Massive granite outcrops with soil build up between granite surfaces. Borya nitida (low growing orange plant), Thryptomene australis, Allocasuarina campestris are the main shrubs.

Species List:

STRATUM 1: Acacia lasiocalyx, Allocasuarina campestris, Callitris roei, Calothamnus quadrifidus, Hakea clavata, H. meisneriana, Lesiopetalum rosmarinifolia, Leptospermum roei, Melaleuca elliptica, M. fulgens, M. uncinata, Cyrtolobium parviflorum, Santalum acuminatum, Thryptomene australis.

STRATUM 2: Acacia nitidula complex, Cooperhooikia strobilata, Podocarpus bursariifolia, Microcorythus globata.

STRATUM 3: Borya nitida, Carpobrotus modestus, Danthonia setacea, Leptocarpus gracile, L. strictus, Juncus pallidus, Liriodendron microphylla, Cleome phyllanthi, Platysaceo effusa, Styphandra imbricata,

The main Eucalyptus species edging the rock are E. occidentalis (32131), E. redunca and E. uncinata (32783).

iv) CIRCLE VALLEY SANDY LOAM. Grey to brown sand on domed clay at 0-4 inches (Reserve 32783)

This soil supported a tree mallee vegetation, often open with

clumps of mallee between large areas of stratum. Sometimes the mallee stratum is dense. Stratum 1: mallee up to 10m; stratum 2: mainly Melaleuca species 1-2m; stratum 3: below 1m.

Species List:

STRATUM 1: Acrotrichus conglobatus, A. dielsii, A. reflexus,
A. tetraconus, A. transcontinentalis, A. uncinata, Hakea laurina.

STRATUM 2: Abutilon roei, Dasycyathus glabella, Pyrochloa affinis
incrassata, Eucalyptus grosse, Exocarpos sparteus, Hakea
conmutata, M. lissocarpa, Melaleuca cucullata, M. cymbifolia,
M. lateriflora, M. propariflora, M. pentagona, M. uncinata, Dalmanella
laxifolia, Petrophile fastigiata.

STRATUM 3: Acacia affinis dermatophylla, A. nitidula complex,
Blackia latens, Boronia inaequalis, B. incana, Chorizanthe nervosa,
Goodenia concinna, Grevillea pauciflora, Lepidosperma angustatum,
L. strictus, L. tenuis, Leucopogon micutifolius, L. ovalifolius,
Microcorvus alba, Platyaceae effusa, Pultenaea conferta, Westringia
risida.

v) CIRCLE VALLEY SAND. Grey sand yellowing with depth on clay at 4-12 inches. (Reserves 32783 and 32189).

In Reserve 32783 there were several claypans associated with this soil type. The vegetation immediately around them was mostly very open shrub mallee.

Clay/ salt-pan vegetation: see Section and p. 53

At edge of clay/ salt-pan: Frankenia pauciflora, Melaleuca thymoides
Just above salt flat and up edges: Acacia pritzeliana, Conostegia
roei, Cooperhooia strophiolata, Darwinia affinis polyccephala,
Eucalyptus halophila, Exocarpos aphyllus, E. sparteus, Frankenia
pauciflora, Microcybe multiflorus, Melaleuca pentagona, M. affinis
cymbifolia, M. spathulata.

Further away from the salt/clay pans the vegetation changes to

to a tree mallee formation. This is the formation at Reserve 32189.

Stratum 1: mallees 8m or more; stratum 2: shrubs 1-2m; stratum 3: shrubs less than 1m.

Species List:

STRATUM 1: Banksia media, Cassythia melantha, Eucalyptus conglobata,
E. goniantha, E. leptocalyx, E. incrassata, E. uncinata.

STRATUM 2: Acacia sp. (insufficient material), Cassythia glabella,
Daviesia affin. incrassata, Exocarpos aphyllus, E. sparteus,
Grevillea plurijuga, Hakea adnata, H. cinerea, H. meisneriana,
H. nitida, Melaleuca affin. cymbifolia, M. lateriflora, M. pauperiflora,
M. pentagona, M. pulchella, Nematolepis phebalicoides, Templetonia
sulcata.

STRATUM 3: Acacia gonophylla, A. nitidula complex, A. pritzeliana,
Baeckea latens, Boronia crassifolia, B. inornata, Corostrophium
roei, Cooperhookea strophiolata, Epacridaceae unknown, Glischrocaryon
roei, Grevillea pauciflora, Halgania lavandulacea, Hibbertia exasperata,
H. affin. stricta, Leucopogon minutifolius, Microcorys glabra,
Micromyrtus elobata, Phebalium lepidotum, Pultenaea conferta,
Spyridium cordatum, Stylidium sp., Verticordia affin. brownii,

vi). KUMARL SANDY LOAM. Brown sandy loam on clay at 0-4 inches:
lime. (Reserve 32783).

All of this soil type had been burnt recently, a seemingly
common problem when the reserve adjoins farming property. The
vegetation would have been an open tree mallee. Stratum 1:
mallees 8m or more; stratum 2: shrubs 1-2m; stratum 3: shrubs
less than 1m.

Species list:

STRATUM 1: Cassythia melantha, Eucalyptus conglobata, E. leptocalyx,
E. transcontinentalis, E. uncinata.

STRATUM 2: Cassythia glabellum, Dodonaea bursariifolia, D. pinifolia

Daviesia affin. incrassata, Exocarpos aphyllus, E. cupressiformis,
E. sparte, Grevillea plurijuga, Hakea comruata, Melaleuca adnata,
M. cardiophylla, M. pauperiflora, M. pentagona, Persoonia teretifolia
STRATUM 3: Acacia brachylobata, A. affin dactylophylla, A. delphina,
A. pachypoda, A. pritzeliana, Boronia inornata, Bossiaea stufa,
Chonizema ericifolium, Conostephium drummondii, C. roei,
Cooperhookia atrophiolata, Grevillea hugeliana, G. pauciflora,
Haleornis lavendulacea, Hibbertia sp., Microcorvus glabra, Olearia
muelleri, Spyridium cordatum, Pultenaea affin arida, P. cymbifolia,
Westringia risida.

vii) SCARPED GRANITE CULCOPES. (Reserves 3273 and 32131).

These areas had been burnt a few years previously so the mallees were still at the regrowth stage. The vegetation was a tree mallee formation. Stratum 1: mallees 8m or more, very dense; stratum 2: shrubs 1-1.5m tall; stratum 3: shrubs below 1m, very sparse, but dense in openings.



Photograph 36: Tree mallee formation regenerating after fire at Reserve 32131. Eucalyptus grossa has a dark shiny leaf, Melaleuca

globifera in foreground. Eucalyptus transcontinentalis and E. uncinata in background.

Species List:

STRATUM 1: Banksia media, Callitris roei, Eucalyptus conglobata, E. leptocalyx, E. redunca, E. transcontinentalis, E. uncinata, Hakea laurina.

STRATUM 2: Allocasuarina campestris, Callitris roei, Calothamnus quadrifidus, Daviesia affinis incrassata, Dodonaea bursariifolia, Eucalyptus grossa, Exocarpos cupressiformis, Grevillea plurijuga, Hakea lissocarpa, H. meisneriana, Lasiopetalum rosmarinifolia, Melaleuca globifera, M. lateriflora, M. pentagona, M. subtriangula, M. uncinata, Oxylobium parviflorum, Petrophile fastigiata, Santalum acuminatum, Thryptomene australis.

STRATUM 3: Acacia gonophylla, A. affinis nitidula, Astartea ambigua, Astroloma epacridis, Baeckea latens, Boronia inornata, Borya nitida, Brachyloma concinna, Chorizema nervosum, Grevillea pauciflora, Hibbertia affinis stricta, Isopogon buxifolius, Lepidosperma angustatum, L. gracile, L. striatum, L. viscidulum, Leucopogon affinis, corostephioides group, L. minutifolius, Lysinema ciliatum, Melaleuca glaberrima, Microcorys glabra, Micromyrtus elobata, Mirbelia microphylla, Olax phyllanthi, Pultenaea cyrbifolia, Verticordia affinis brownii.

viii) CIRCLE VALLEY SANDY LOAM AND KUMALI SANDY LOAM COMPLEX *

The vegetation of this soil is a tree mallee formation.

Stratum 1: mallee over 8m, fairly dense: stratum 2: mainly Melaleuca species reaching 2-5m where not burnt recently: stratum 3: shrubs less than 1m.

*Reserve 32783



Photograph 37: Tree mallee formation. Main mallees are Eucalyptus uncinata and E. redunca. Dense stratum 2 consisting mainly Melaleuca pentagona and M. uncinata.

Species List:

STRATUM 1: Banksia media, Caesyrthe melantha, Eucalyptus conglomerata, E. dielsii, E. leptocalyx, E. redunca, E. transcantabrigiae, E. uncinata.

STRATUM 2: Dryas affinis, Podocarpus aptera, E. husskniifolia, Exocarpos aphyllus, E. cupressiformis, Grevillea plumifera, Hakea commutata, Melaleuca cardiophylla, M. cymbifolia, M. lateriflora, M. superiflora, M. pentagona, M. pulchella, M. uncinata, Mushletbeckia adpressa, Personia tomentifolia.

STRATUM 3: Acacia acanthoclada, A. affinis, A. densistipula, A. inaequalis, A. mitchelliana, Asarites rubrus, Astroloma sp., Baeckhaea litorea, Foronit baecheseeae, B. inornata, Eosiclea distichya, E. rufa, Carrolnotus rodestus, Cassia cardiosperma, C. nemophila, Cooperhoochia strobilata, Lianella revoluta, Eremophila alba, Grevillea huegeliana, G. pauciflora, Halimolobos lavandulacea, Hibbertia recurvifolia, H. affinis, stricta, Lepidosperma gracile, L. striatum,

Leucopogon minutifolius, Microcorys alba, Micromyrtus elobata,
Olearia muelleri, Phebalium lepidotum, P. tuberculosum, Pultenaea
conferta, Spyridium cordatum.

ix) HEAVY SANDY LOAM AND DEWAK CLAY LOAM COMPLEX. (Reserve 32783)

The vegetation of this soil type is a tree mallee formation.
Stratum 1: mallee 8m or more; stratum 2: mainly Melaleuca species
1.5-2.5m; stratum 3: less than 1m.

Species List:

STRATUM 1: Eucalyptus conglobata, E. dielsii, E. longicornis,
E. redunca, E. scyphocalyx.

STRATUM 2: Cassia cardiosperma, C. nematophylla, Dodonaea stenozyga,
Eremophila dichroantha, Exocarpos aphyllus, Grevillea plurijuga,
Leptospermum roei, Melaleuca cardiophylla, M. cucullata, M. cymbifolia
M. lateriflora, Templetonia sulcata.

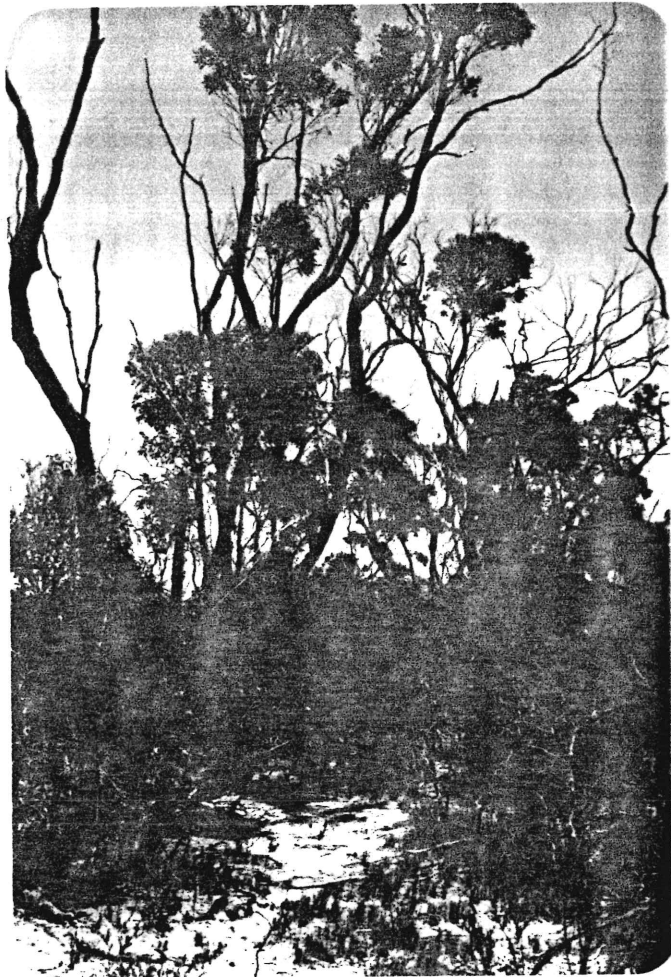
STRATUM 3: Acacia ingrata, A. sorophylla, Cooperhooikia strophiolata,
Halgenia lavandulacea, Helichrysum lepidophyllum, Microcybe albiflora
Pultenaea conferta, Trymalium myrtillus, Wilsonia humilis.

x) GILGAI. Dark grey and yellow brown fine sandy loam on shallow
clay (Reserves 32783 and 32131)

There were several depressions in this soil type, all
without visible water. The vegetation in this soil type had been
burnt and the regenerating plants had not reached their mature
height. In the few stands which had not been burnt, and from the
burnt remains, the vegetation is assumed to be a tree mallee
formation approaching a woodland formation. Stratum 1: mallees
over 8m fairly sparse; stratum 2: shrubs 1-2.5m; stratum 3: shrubs
under 1m tall.



Photograph 38: Regrowing mallees in depression. The mallees are Eucalyptus occidentalis, with Melaleuca species, forming a dense stratum beneath.



Photograph 39: Area not burnt showing woodland formation on the rises away from the depressions. The trees are E. series plebeia "iso-loba" with dense Melaleuca to S. in in background.

Species List.

STRATUM 1: Eucalyptus conglobata, E. leptocalyx, E. occidentalis,
E. series oleosae "iron-bark", E. reunca, E. transcontinentalis
E. uncinata, Hakea laurina.

STRATUM 2: Acacia merrallii, Daviesia affin incrassata, Eremophila
dichroantha, Exocarpos aphyllus, E. cypressiformis, Grevillea
plurijuga, Hakea commutata, Melaleuca calycina, M. cardiophylla,
M. cucullata, M. lateriflora, M. pauperiflora, M. pentagona,
M. uncinata, Nematolepis phebaloides, Persoonia teretifolia.

STRATUM 3: Acacia sp., A. brachyclada, A. gonophylla, A. merrallii,
A. nitidula complex, A. pritzeliana, A. sorophylla, Asteraea ambigu
Baeckea latens, Boronia affin fabinoides, B. inornata, Boschiaea
rufa, Cooperookia strophiolata, Dianella revoluta, Dodonaea
bursariifolia, D. microzyga, Goodenia concinna, G. laevis,
Grevillea huegeliana, Helichrysum lepidophyllum, Hibbertia stricta,
Lepidosperma angustatum, L. tenuis, Leucopogon rubicundus, Microcory
glabra, Pultenaea conferta, P. cymbifolia, Spyridium cordatum,
S. rotundifolium, Westringia rigida, Wilsonia humilis.

xi) SCADDAN LOAMY SAND. Grey brown sand on clay at 0-4 inches.

xii) SCADDAN SAND. Grey sand on clay at 4-12 inches.

xiii) LAYTON AND SALEYAN. Reserves 32129, 32130, 32131, 32763.

These three soil types will be considered together. In three of the four reserves both the Scaddan soils were associated with salt and clay pans. Although some areas were listed as being Scaddan Loamy Sand, the depth of sand was such, that the soil should have been considered Scaddan Sand, and will be so in this discussion. The species of plants present in soil types overlapped considerably.

The vegetation association will be dealt with in four parts:

a) plants of salt and clay flats, b) plants around edge of pans,

c) Seadden Sand, d) Seadden Loamy Sand.

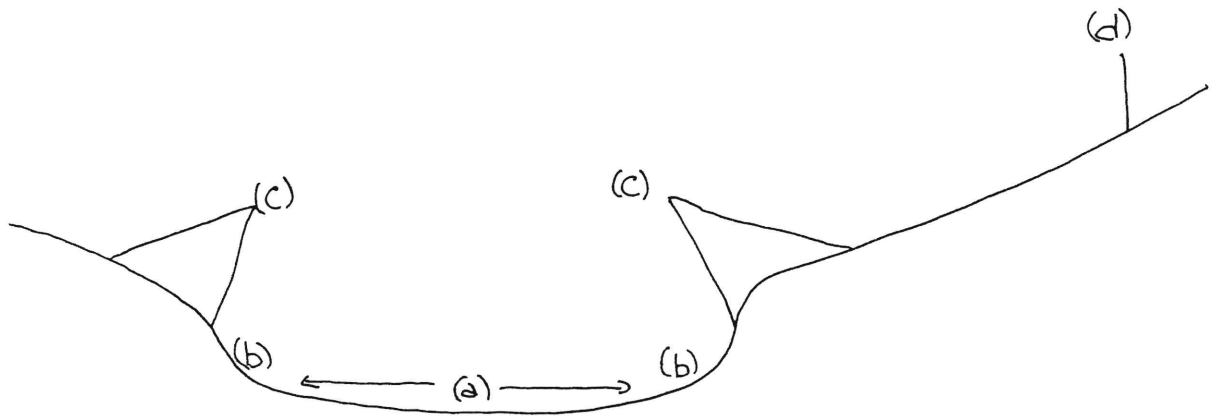


Diagram 3: Showing the position of the soils to the salt/clay pans.

a) Salt Pan, Clay Pan.

These are low plants of the salt complex mostly 20cm or less. The density and height of the samphires varied considerably at each of the salt-pans and was partly dependent upon saltiness and size of the pan. The vegetation is a salt complex formation.

Species List:

Ancienthus tenellus, Celandrinia sp. Disphyma clavellatum, Frankenia pauciflora, Haloscarica halocnemoides, H. lylei, H. pergranulata, H. syncarpa, Sarcocornia quinqueflora.

Occasionally some Melaleuca sp. grow in the mud-flats the two commonest being M. cuticularis, and M. brevifolia.



Photograph 40:
Showing samphires
in salt pan. On
the right hand
edge are
Melaleuca thyoidea
and Eucalyptus
halophilla.
(Reserve 32129)

b) Around edge of Claypan and Saltpan.

This area is regarded as the flat at the edge of the pan just before the sides rise up into the Scaddan sand.

Species List:

Acacia sp. (further material required), Atriplex pallidosa, Darwinia affin. polycephala, Eucalyptus halophila, Frankenia pauciflora, Juncus pallidus, Melaleuca brevifolia, M. cuticularis, M. quadrifaria, M. thymoides, Threlkeldia diffusa.



Photograph 41: Showing samphires and low growing plants around the edge of the salt pan. Tree mallees are in the background. Also it should be possible to see how the side of the pan rise up rapidly to the level of the surrounding countryside.

c) Scaddan Sand:

Generally this sand occurs at the bottom of rises, immediately above salt and clay pans and in islands created by the flow of the water. It supports an open scrub mallee or more rarely a tree mallee formation. Stratum 1: mallees ca. 7m or less, occasional plants to 10m: stratum 2: shrubs 1-2m occasionally up to 3m: stratum 3: shrubs less than 1m: stratum 4: low growing mat-like plants, sedges etc. Stratum 1 is open so the lower strata tend to be dense and rich in species.



Photograph 42: Tree mallees regenerating after fire. Banksia media is the plant with copper coloured leaves. Undergrowth dense. (Reserve 32130).

Species List:

STRATUM 1: Banksia media, Cassytha melantha, Eucalyptus conglobata, E. eremophila, E. goniantha, E. incrassata, E. leptocalyx, E. tetragona, E. uncinata, Hakea laurina.

STRATUM 2: Acacia pachypoda, A. sp. (insufficient material), Calothamnus gilesii, Conostephium drummondii, Darwinia polycephala, Daviesia affinis teretifolia, Dodonaea pinifolia, Eucalyptus halophila, Exocarpos anhyllus, E. sparteus, Eremophila caerulea, Grevillea plurijuga, Hakea adnata, H. cinerea, H. meisneriana, H. nitida, Isopogon buxifolius, I. trilobus, Lesiopetalum rosmarinifolia, Leucopogon rubicundus, Leleleucus breviflorus, M. cuticularis, M. globifera, M. lateriflora, M. laxiflora, M. pauciflora, M. pentagona, M. quadrifaria, M. thymoides, M. uncinata, Muehlenbeckia adpressa, Nematolepis pheballoides, Persoonia teretifolia, Templetonia sulcata, Peucedanum filifolium.

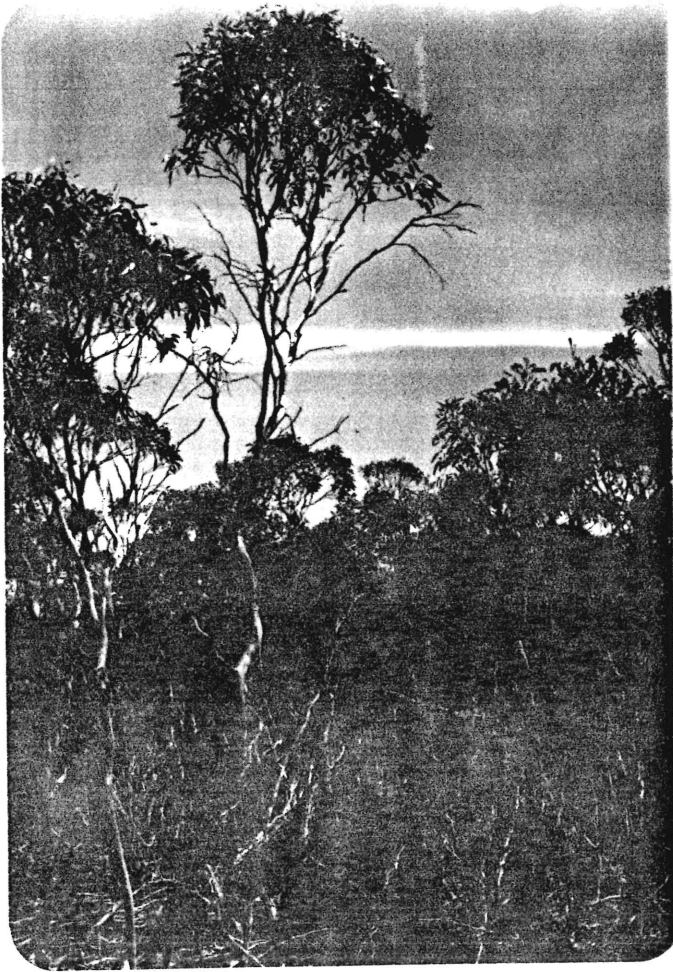
Stratum 3: Acacia delphina, A. affinis dermatophylla, A. gonophylla,

A. hakeoides, A. affin lineolata complex, A. merrallii, A. pritzeliana, Acrotriche ?cordata, Aotus sp., Astartea ambigua, Astroloma sp., Baeckea blackettii, Beaufortia micrantha, Boronia baeckesceae, B. inconspicua, B. inornata, horizema affin brownii, C. nervosum, Cooperhookea strophiolata, Cryptandra leucochroata, Dampiera sp., D. parvifolia, Dillwynia uncinata, Dodonaea bursariifolia, D. microzyga, Grevillea pauciflora, Goodenia affinis, G. concinna, Halgania lavandulacea, H. rigida, Hibbertia exasperata, H. affin stricta, Lechenaultia formosa, Leucopogon affin. dielsianus, L. minutifolia, Logania stenophylla, Lysinema ciliatum, Melaleuca globerrima, Microcorys glabra, Micromyrtus elobata, Phebalium lepidotum, P. tuberculosum, Platysace effusa, Pultenaea conferta, Spyridium cordatum, S. rotundifolium, Thryptomene latens, Trachymene anisocarpa, Verticordia fastigiata, Westringia rigida.

STRATUM 4: Atriplex paludosa, Carpobrotus modestus, Darwinia affin polycephala, Disphyma clavellatum, Lepidosperma angustatum, L. tenue, L. striatus, Loxocarya flexuosa, Microcybe pauciflora, Restio sp., Scirpus nodosus, Selenothamnus squaratus, Tricostularia sp., Threlkeldia diffusa, Wilsonia humilis.

d) Scaddan Loamy Sand.

This soil was distinguished from the previous soil type by more loam being present in the surface soil. Generally this soil was common on the rises. It supported a tree mallee formation and in some parts of the reserves the Melaleuca layer formed a dense thicket. Stratum 1: mallees often above 10m tall; Stratum 2: typically 1-1.5m tall but sometimes up to 2.5; stratum 3: less than 1m tall; stratum 4: ground covers and sedges.



Photograph 43: Tree mallee formation at Reserve 32131, showing dense Melaleuca stratum at 2.5m, mainly M. mentenone and M. lateriflora. Main mallee in photograph is Eucalyptus transcontinentalis.



Photograph 44: Tree mallee regrowth after fire, at Reserve 32131. The understorey can be seen to be dense at the 1m level.

Species List:

STRATUM 1: Banksia media, Cassytha melantha, Leucalyptus conglobata,
E. nodintha, E. incrassata, E. leptocalyx, E. rudecta, E. tetragona,
E. transcontinentalis, E. uncinata, Hakea laurina.

STRATUM 2: Allocasuarina scleroclada, Billardiera bicolor, Darwinia
sp. in e., Davisia affinis incrassata, Dodonaea pinifolia, Eremophila
caerulea, Exocarpos aphyllus, E. cypressiformis, E. sparteus,
Grevillea plurijuga, Hakea cinerea, H. commutata, H. nitida, Isopogon
triloba, Leucopetalum rosmarinifolia, Leucopogon rubicundus,
Melaleuca brevifolia, M. calycina, M. cardiophylla, M. cuticularis,
M. lateriflora, M. laxiflora, M. pauperiflora, M. pentagona, M.
pulchella, M. quadrifaria, M. spathulata, M. thymoides, M. uncinata,
Nematolepis phebaloides, Persoonia teretifolia, Templetonia sulcata,
T. retusa.

STRATUM 3: Acacia delphina, A. affinis dermatophylla, A. gonophylla,
A. platypoda, A. pritzeliana, Alyosyne hakeifolia, Aotus sp.,
Astartea ambigua, Astroloma sp., Baeckea latens, Beaufortia micrantha,
Boronia crassifolia, B. inornata, Bossiaea distichya, Calothamnus
gilesii, Chorizema ericifolia, Conostephium drummondii, Cooperhookia
strophiolata, Cryptandra leucophracta, Dampiera parvifolia, Dodonaea
aptera, D. bursariifolia, D. microzyga, Grevillea pauciflora, Goodenia
affinis, G. concinna, G. laevis, Halgonia levandulacea, Isopogon
buxifolius, Leucopogon minutifolia, L. ?ovalifolius, Logania
stenophylla, Lysinema ciliatum, Melaleuca gleberrima, M. subtrigona,
Microcybe albiflora, Microcorys glabra, Micromyrtus elobata, Pimelea
sp., Platysace effusa, Pultenaea affinis arida, P. conferta,
P. cymbifolia, Spyridium cordatum, S. rotundifolium, Teucrium
filifolium, Verticordia affinis fastigiata, Westringia rigida.

STRATUM 4: Atriplex paludosa, Frankenia pauciflora, Lechenaultia
formosa, Lepidosperma angustatum, L. gracile, L. striatus, Lepyrodia

sp., Loxocarya flexuosa, Wilsonia humilis.

COMPARISON OF THE VEGETATION OF THE VACANT CROWN LAND AND THE RESERVES.

There were some plants collected only in the vacant crown land and not in the reserves. Some of these could be named to species, some to the species they most resembled whilst some had to be left as species. Below are the names of these plants, reasons for difficulty in naming, and any need for conservation.

Some of the species are quite widespread and have no need for conservation. These species are:- Acacia lachnophylla, Beyeria brevifolia, Cheiranthera filifolia, Coleanthera virgata, Eremophila calorhabdos, E. pachyphylla, Goodenia decursiva, Isolepis carnea, Kennedia prostrata, Lawrenciacicuta (distribution extended), Marsilea drummondii, Microcybe albiflora, M. multiflora var. baccharoides, Olearia passerinoides, O. exiguifolia, Paterosonia fuscifolia, Phebalium cf. filifolium, Scaevola bursariifolia, Tricostularia sp.

Species which were listed as being similar to a species because of insufficient material for identification include: several Acacia species, Baeckea cf. fumans, Olearia affinis axillaris, Phebalium cf. filifolium, Stylidium affinis squarrellosum.

There were several reasons why some genera were left with no specific name. Acacia sp. and Antrodia sp. require further collection of flowering material; Colandrinia sp., flowering material required, but this plant is sure to be relatively common and probably will be more numerous when more moisture is present; Tricostularia sp. further collection required; Scaevola sp. unlike any species in the Herbarium.

Two plants Scaevola sp. and Leucopogon ? breviflorus I intend sending to researchers in the Eastern States for checking - time being a factor at present. The Herbarium has a fragment of the type of Leucopogon ? breviflorus making an accurate comparison difficult. There are no other collections of this plant having been made.

Presently the Herbarium specimens of *Scaevola* species are away on loan, leaving very little material for comparison.

Some researchers of specific plant groups did state that plants collected were new species. Both *Darwinia* species have been collected previously, and *D. affin polycephala* is well represented in the adjoining reserves. Both on current collections are geographically restricted. - *D. sp. in edit.* and *D. affin polycephala*.

Baeckea sp. nov. had not been seen previously by the researcher but collections earlier in the year (November) may locate it within a reserve.

An *Acacia* species collected only in foliage was unknown, but it was collected from a fire regrowth area and had no flowers or fruits. Further collections again are required.

All of the plants named above occurred in the Vacant Crown Land and not in any of the nearby reserves. It can be seen by this that no listed rare plants occur within the Vacant Crown Land unless *Leucopogon breviflorus* is confirmed. The two new *Darwinia* species are geographically restricted.

Within the Reserves, *Hakea clavata* and *Micinocarpus trichophorus* are geographically restricted plants. *Toronia affin salinoides* had only been collected from a few localities previously.

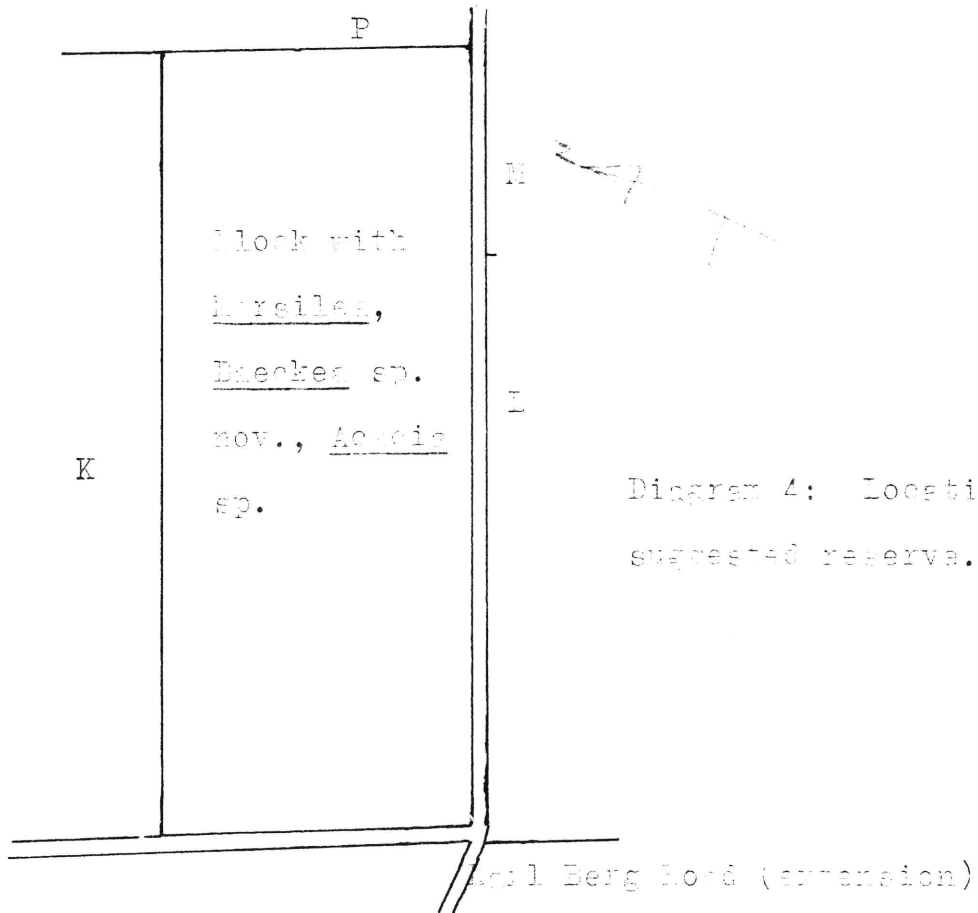
RECOMMENDATIONS

The Reserves do not adequately cover the species present in the Vacant Crown Land. Plants of concern are the unusual *Acacia* sp., *Baeckea* sp. nov., and Marsilea swamp. The *Marsilea* swamp was the only one seen except for one in a farmers property. It would seem desirable to keep the block containing all these. It is indicated on the extension of Earl Berg Road between blocks K and L.

The laterite within the Vacant Crown Land was interesting from the vegetation present but the same species were present at the

Flaming Gravel site at Reserve 38782 on the Inala Valley Road at Mt. Deamont. From the flora present it is not necessary to keep this as a reserve.

Therefore my only recommendation is that the block of land indicated on the sketch below be reserved for the reasons stated above.



PLANT SOCIETY DISTRICT

Some species were found only in areas recently burnt or on disturbed ground and accounts for these occurring in a few soils. These species are:- Alysicarpus hakeifolius, Codonocarpus cotinifolius, Cooperhookea strophiolata, Glischrocaryon aureum var. angustifolius, G. roei, Grevillea pauciflora, Goodenia decurrens, Oxylobium parviflorum, Trachymene anisocarpa.

OTHER CONSIDERATIONS WITH THE RELEASE OF THIS VACANT CROWN LAND FOR

FARMING

1. Sand blows. There were several signs that the area was subject to blowing sand. When Mt. Beaumont was climbed and the opened land overlooked, several paddocks were seen to be blowing. There was also sand built up against some of the boundary fences adjoining the reserves. This was seen along property 439 adjoining Reserve 32783, and property 334 adjoining Reserve 32129. I am in no position to comment on the blowing of sand but have included it as an observation.
2. Live / dead ratio. In several of the soils there were a large number of fallen branches on the ground suggesting it is an area with periodic very low rainfall seasons. When collecting several plants, especially the Eucalyptus species it was found very easy to snap off whole branches, suggesting the plants were under considerable stress. This may be the season of collection, or it may be that the region is marginal as far as rainfall is concerned.
3. Season of plant collection. Some species may have been overlooked as the vegetative forms may have appeared the same. In flower differences would have been apparent. A survey should preferably be undertaken over a year, but at least in the spring months - the main flowering period for Australian plant species. As an example, no orchid species were collected, and very few annuals.
4. Time allowed for the survey. This is covered by the above statement that a longer period should have been allowed to collect the plants over the major flowering period. This area has probably never had systematic botanical collecting take place and it seems disappointing it may go under the plough without a botanist being able to thoroughly collect.

Dr. J.S. Beard in 1973 published "The Vegetation of the Esperance and Malcolm Areas" which included the Vacant Crown Land. He

made two transects one to the east and the other to the west of the vacant crown land. His interpretation of this area was based on air photography.

FINAL CONCLUSIONS

The listed rare and endangered species found in the Vacant Crown Land Mt. Baurant Stage 2 are well represented in the reserves already set aside. Two new species of plants, an Acacia and a Baeckea have been identified from an area just north of where the Karl Berg Road presently ends, and until further collections are made in the area must be considered rare. There may be other species which are rare or endangered present in the area but not apparent during the month of January.

It is recommended that the block bounded by the extension of Karl Berg Road and lots K and L be set aside as a reserve for the retention of these two new species. This lot could also include the depression containing the Marsilea, an ecotype not present in any of the other reserves. This could be reviewed if these plants are identified in other reserves in the future.

The reserves examined adequately cover most of the plant species including those listed as rare and endangered, indicating that no further areas in addition to the one mentioned above need be set aside for the preservation of the flora.

ACKNOWLEDGMENTS.

Thanks must go to many of the botanists at the Western Australian Herbarium for naming plants. Dr. J. Green for the Myricaceae; Mr. P. Wilson for the Rutaceae; Dr. W. Marchant for Barwinia sp.; Mr. B. Maslin for Acacia sp.; Mr. I. Kenneally for Stylidium sp. The Eucalyptus species were checked by Mr. I. Brooker,

1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that proper record-keeping is essential for the integrity of the financial system and for the ability to detect and prevent fraud.

2. The second part of the document outlines the specific procedures that must be followed when recording transactions. This includes the requirement to use standardized forms and to ensure that all entries are supported by appropriate documentation.

3. The third part of the document discusses the role of internal controls in ensuring the accuracy and reliability of financial records. It highlights the need for a strong internal control system to minimize the risk of errors and misstatements.

4. The fourth part of the document addresses the importance of regular audits and reviews of financial records. It notes that audits are a critical component of the financial reporting process and are necessary to provide confidence in the accuracy of the information presented.

5. The fifth part of the document discusses the consequences of non-compliance with the requirements outlined in the document. It states that failure to adhere to these standards can result in severe penalties and damage to the organization's reputation.

6. The sixth part of the document provides a summary of the key points discussed and offers recommendations for how organizations can ensure that they are fully compliant with the requirements.

7. The seventh part of the document discusses the importance of ongoing education and training for all personnel involved in the financial reporting process. It emphasizes that staying up-to-date on the latest developments in the field is essential for maintaining the highest standards of accuracy and reliability.

8. The eighth part of the document concludes by reiterating the importance of the financial reporting process and the role of each individual in ensuring its success. It expresses confidence that the measures outlined in the document will help to improve the overall quality and integrity of financial reporting.

C.C.I.R.O., and the Beecher species by Mr. P. Brudgeon.

REFERENCES:

- Duir, B.G. (1977): Biological Survey of the Western Australian Wheatbelt. Records of W.A. Museum.
- Beard, J.S. (1973): The vegetation of the Esperance and Malcolm areas. Vegmap Publ. Perth.