BOLD PARK AND ADJACENT BUSHLAND, CITY BEACH

Boundary Definition: protected area/management/bushland boundary

SECTION 1: CADASTRAL INFORMATION

(Lots, locations and derived information to be updated in the public submission period)

Bushplan Site no. 312 **Map no.** 49, 55 **Map sheet series ref. no.** 2034–II SW

System 6 (1983): M47 part System area bushland and part scattered native plants (canopy), all vegetation described

Other Names: not known

Local Authorities (Suburb)
Town of Cambridge (City Beach, Floreat), City of Nedlands (Mt Claremont)

Ownership Categories
Local Government, State Government, Private (commercial organisation)

Area (ha): total 511.1 (includes open water); bushland 362.1

Zoning
MRS: Parks and Recreation, Urban, Important Regional Roads, Public Purposes-High School
TPS: Development, Landscape, Special Use

Lot/Location/Reserve numbers (Purpose), Street name
0, 1 Brockway Rd; 0 The Boulevard; 1, 8424 Kalinda Dr; 1 Elphin St; 1911 Stephenson Ave; 1 Yaringa Way; 1 Alderbury St; 1911 street not identified
Crown Reserve

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Spearwood Dunes
Sands derived from Tamala Limestone (Qts: S7)
Tamala Limestone (Qtl: LS1)
Quindalup Dunes (Holocene dunes)
Safety Bay Sands (Qhs: S2)
Wetlands (within the Quindalup/Spearwood Dunes)
Holocene Swamp Deposits (Qhw: Cps)

VEGETATION AND FLORA

Vegetation Complexes
Spearwood Dunes (near the interface with the Quindalup Complex)
Karrakatta Complex — Central and South
Cottesloe Complex — Central and South

Floristic Community Types
Supergroup 2: Seasonal Wetlands
S7 Northern woodlands to forests over tall sedgelands alongside permanent wetlands
Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes
24 Northern Spearwood shrublands and woodlands
25 Southern *Eucalyptus gomphocephala* — *Agonis flexuosa* woodlands
27 Species poor mallees and shrublands on limestone
29b *Acacia* shrublands on taller dunes
30a2 Woodlands and shrublands on Holocene dunes
S11 Northern *Acacia rostellifera* — *Melaleuca acerosa* shrublands

WETLANDS

Wetland Types: lake, sumpland
Natural Wetland Groups
Spearwood Dunes
Balcatta (S.2)
Wetland Management Objectives: Conservation (12ha)
Swan Coastal Plain Lakes EPP: 18.2ha

THREATENED ECOLOGICAL COMMUNITIES

Not assessed, Not determined

SECTION 3: SPECIFIC SITE DETAIL

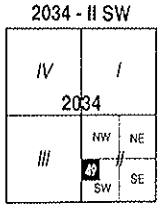
Landscape Features: coastal dunes, inland dunes, limestone ridge, open water, vegetated wetlands

Vegetation and Flora: detailed survey (part Bushplan Site – Keighery, GJ, *et al.* 1990, Keighery, GJ, and Keighery 1993c, Kinhill Engineers Pty Ltd 1987, Mitchell McCotter and Ecoscape 1993); limited survey (part Bushplan Site — Dames and Moore 1986, Griffin 1993, 1994 (plots SW 01–11), Gibson *et al.* 1994 (plots Bold 01–04), Keighery, GJ, 1996 D (plots M46 01–02))

LEGEND

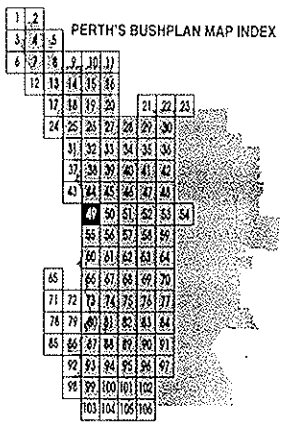
- 472 — Bushplan Sites With Regionally Significant Bushland
- Other Native Vegetation
- Conservation Category Wetlands
- Bushplan Sites With Some Existing Protection
- 696 — Lot Number, Location Number
- Channel Wetlands
- Local Government Boundary

2034 - II SW



1 : 25 000 AMG Reference Grid showing Perth's Bushplan Map Sheet Breakdown

PERTH'S BUSHPLAN MAP INDEX



N

SCALE

0 500 1000

Metres

Produced by Project Mapping Section
Land Information Branch, Ministry for Planning, Perth W.A. November 1998

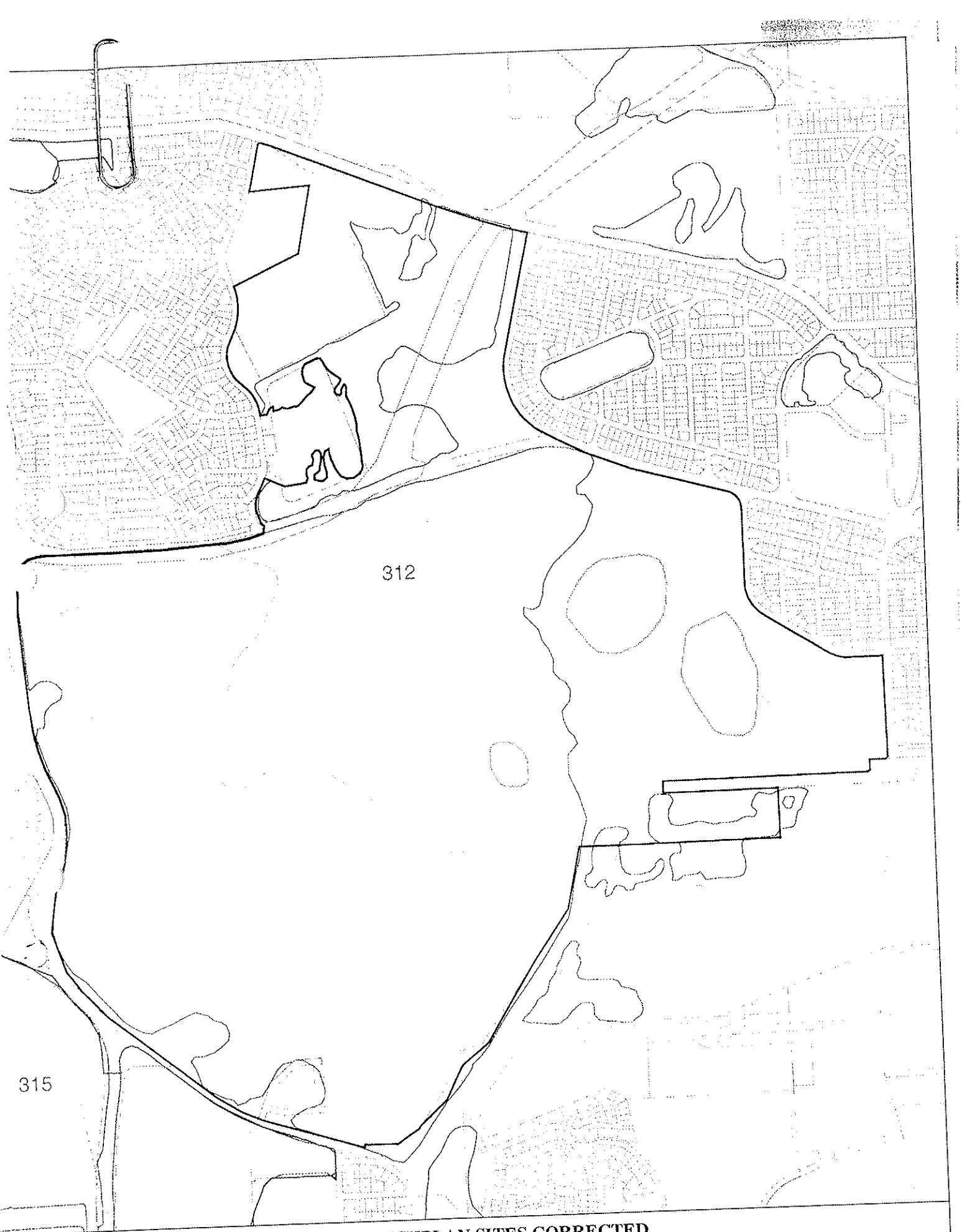
ntw-map18//environ/bushplan//bushv2_49.dgn

Cadastral Data supplied by Department of Land Administration, W.A.

Wetlands Data supplied by Water and Rivers Commission

Native Vegetation Extent for Study Area supplied by Agriculture Western Australia

Bushplan Site Map



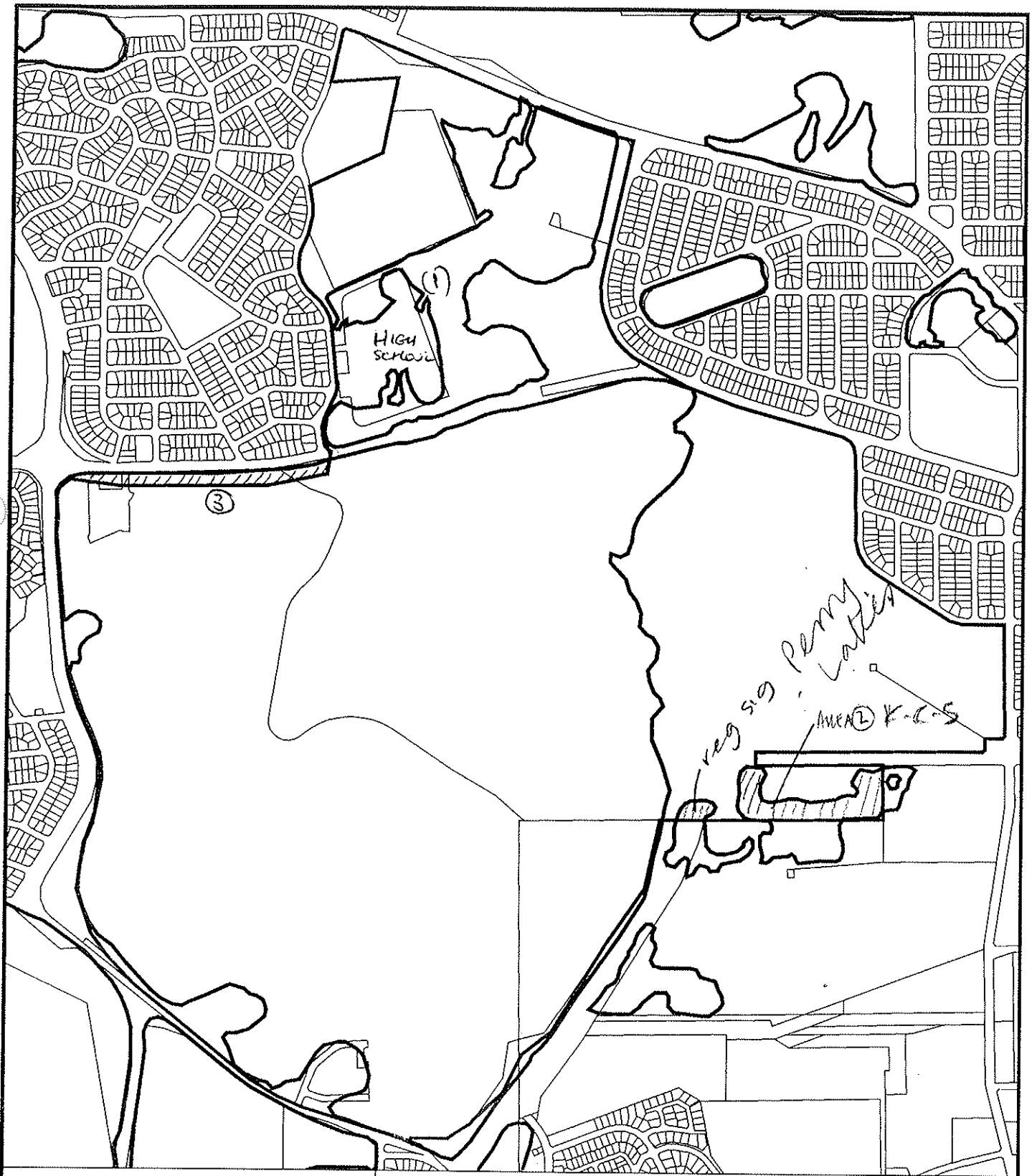
BUSHPLAN SITES CORRECTED

8 76 22/10/98

WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS

N



bp site 312

Bushplan sites refno 1-500 SCP BOUNDARY THEME

Cadastre

AG VEG 1998 - BOUNDARIES SCP

NK/DA 30/9

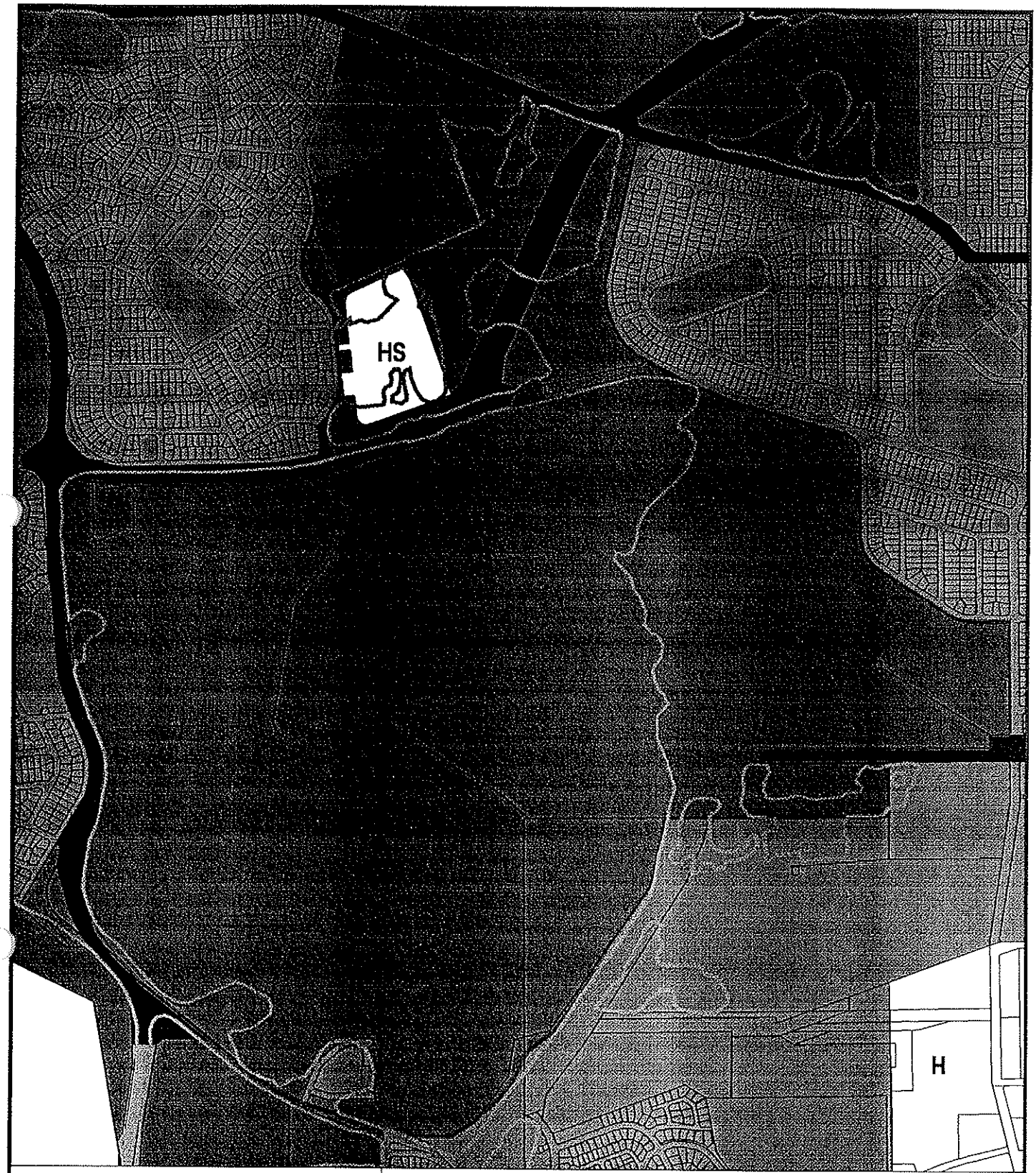
1) IS AREA REGEN BUSH IN HIGHSCHOOL SITE? ☒ B)K

☐ 2) IS BUSH IN AREA (2) REGEN. (PARK AREA) UNDERSTOREY AVF? UNKNOWN

3) IRR. at (3) INCLUDE? ☑

don't know irrelevant, have included all P.R everywhere else looks good aerial photo

MFP INTERNAL USE ONLY	
Prepared By: Andrea Zappacosta	
Prepared For:	
Map Ident: plot980907_1	
Date: 07 Sep 98	
Scale 1:16671	



bp site 312

MFP INTERNAL USE ONLY	
Prepared By: Andrea Zappacosta	
Prepared For:	
Map Ident: plot980907_1	
Date: 07 Sep 98	
Scale 1:16671	

- Bushplan sites refno 1-500 SCP BOUNDARY THEME
- PP - HOSPITAL
- Cadastre
- AG VEG 1998 - BOUNDARIES SCP
- URBAN
- PARKS & RECREATION
- OTHER MAJOR HIGHWAYS
- IMPORTANT REGIONAL ROADS

BOLD PARK

(3) OK to include road reserve on proviso identified on Mapping and generic recommendation re regional infrastructure to apply ie. to recognise future infrastructure and widening requirements

- OK to include High School ~~subject to~~ / to be recognised under regional infrastructure and public utilities recommendation, subject to clarification of Mapping and vegetation significance (Cobblestone Quarry and South) ie. your satisfaction it was included for a reason!! Similar Shenton Park where it included not PER

(2) Town Cambridge claim it is cleared. Need to confirm condition However, its PER and should still be shown as Bushplan Site because intention is to protect vegetation in PER not whole of Bushplan Site. We could carry out similar excercise to all PER but haven't got time. May be excercise in future to assess vegetation in PER.

Action: Confirmation of why High School was included because it seems contradictory to Bold Park / Shenton Park adjacent PRPurpose Reserves issues.

(1) High School veg appears very good on aerial photo. ?Limestone heath - not much in Bold Park.

(2) Veg understory degraded on 1997/8 photo
It is P+R so why do we include in other instances ~~the~~ grassed parkland in say eg. 314 Swan River foreshore
→ or a golf course eg. 32Φ Hartfield Park.

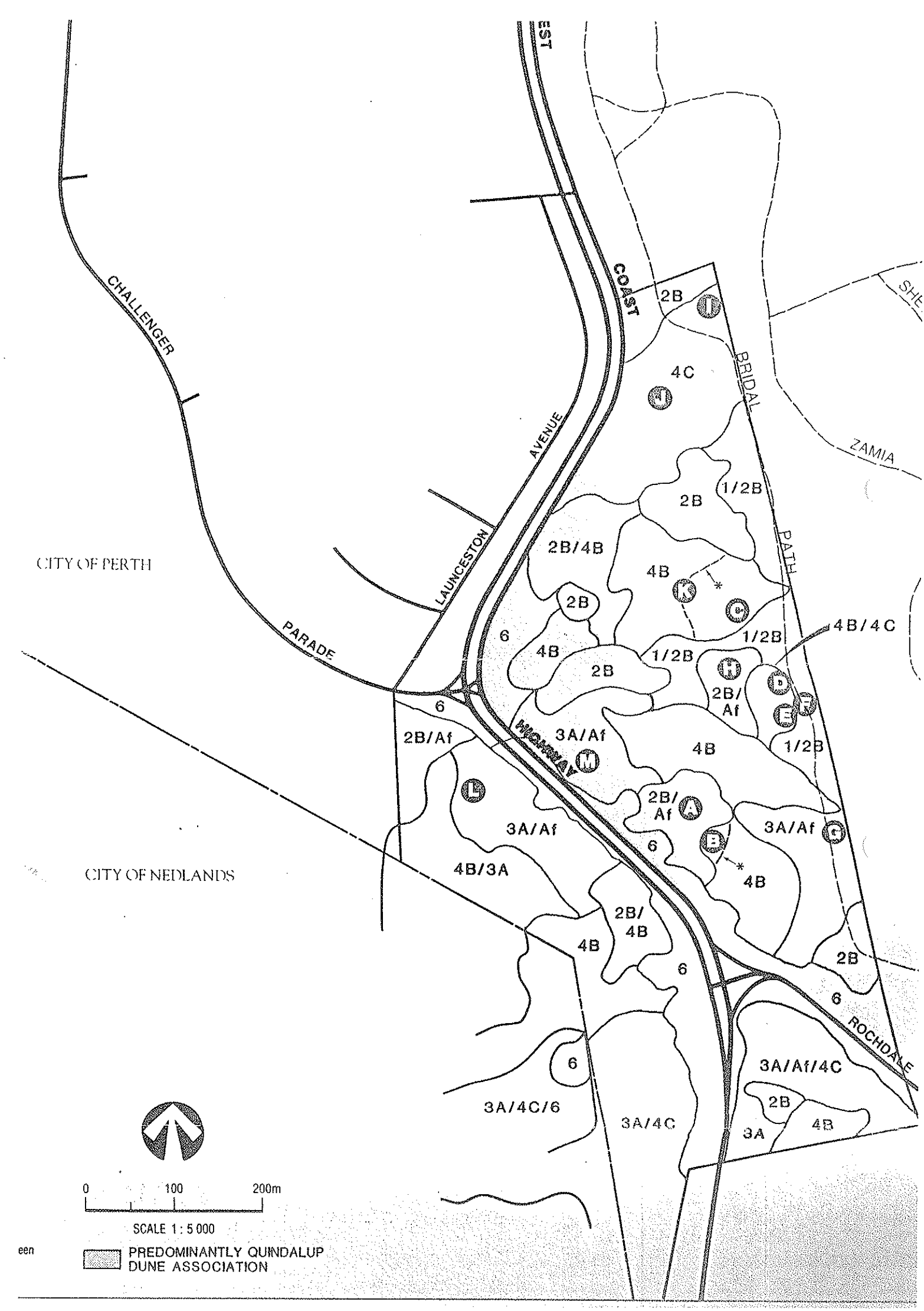
(3) Road reserve in ca. same condition as rest of Bold PK. ∴ reg sig.

→ This needs ground truthing to finally determine condition, that is leave as in. BJK/CK 5/9.

JJA/NCT
3Φ/9.

D

8	16
10	17
12	19
13	20
14	21
15	22
	23


EST
COAST
CHALLENGER
AVENUE
LAUNCESTON
PARADE
BRIDAL
PATH
ZAMIA
ROCHDALE
HIGHWAY
CITY OF PERTH
CITY OF NEDLANDS
2B
4C
2B
1/2B
2B/4B
4B
2B
6
4B
1/2B
4B/4C
2B
1/2B
2B/Af
6
2B/Af
3A/Af
4B
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6
3A/Af/4C
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200m
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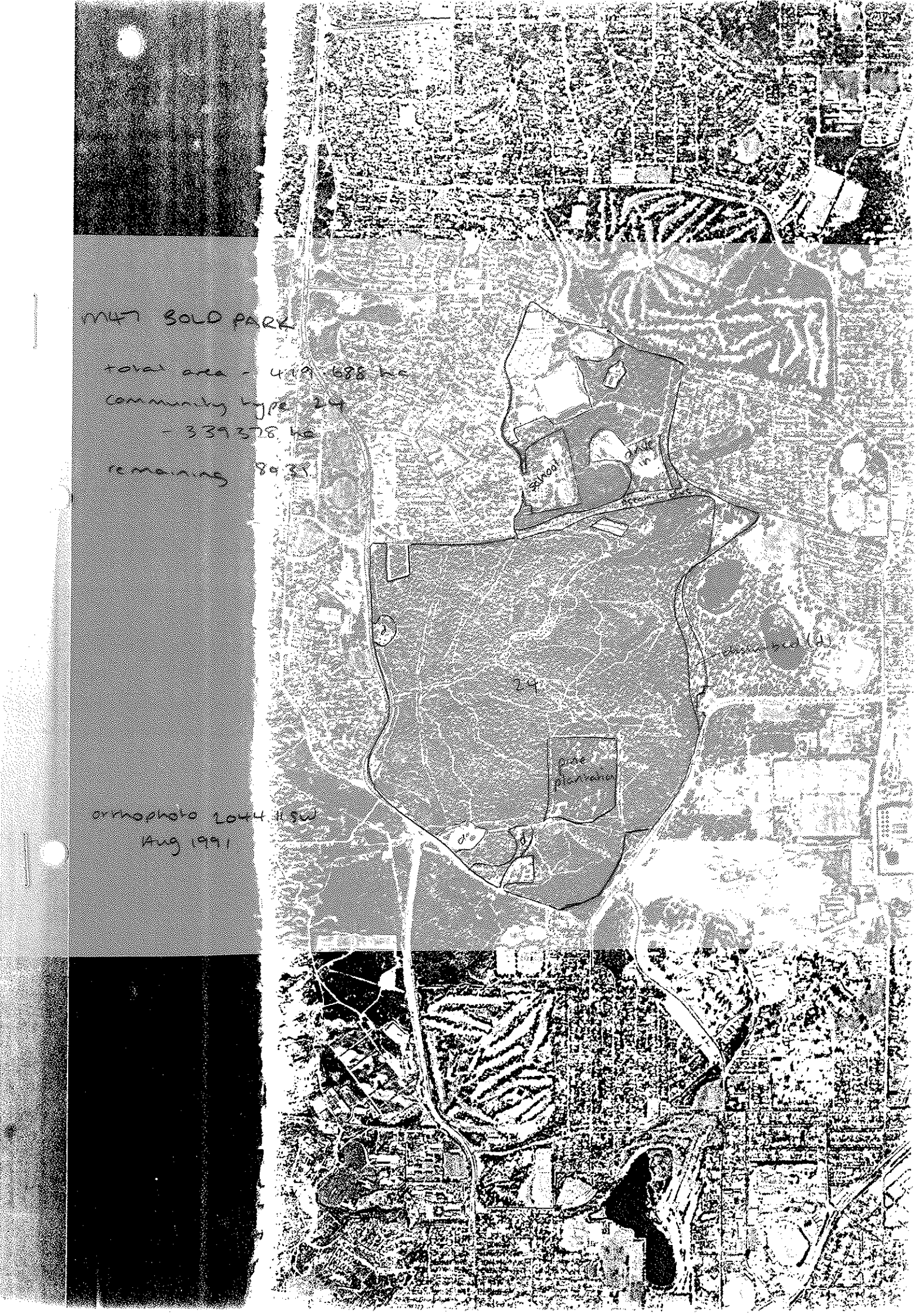
PREDOMINANTLY QUINDALUP DUNE ASSOCIATION


MT SOLO PARK
total area - 419.688 ha
community type 24
- 339378 ha
remaining 80.31
24
pine plantation
orthophoto 2004 11 SW
Aug 1991

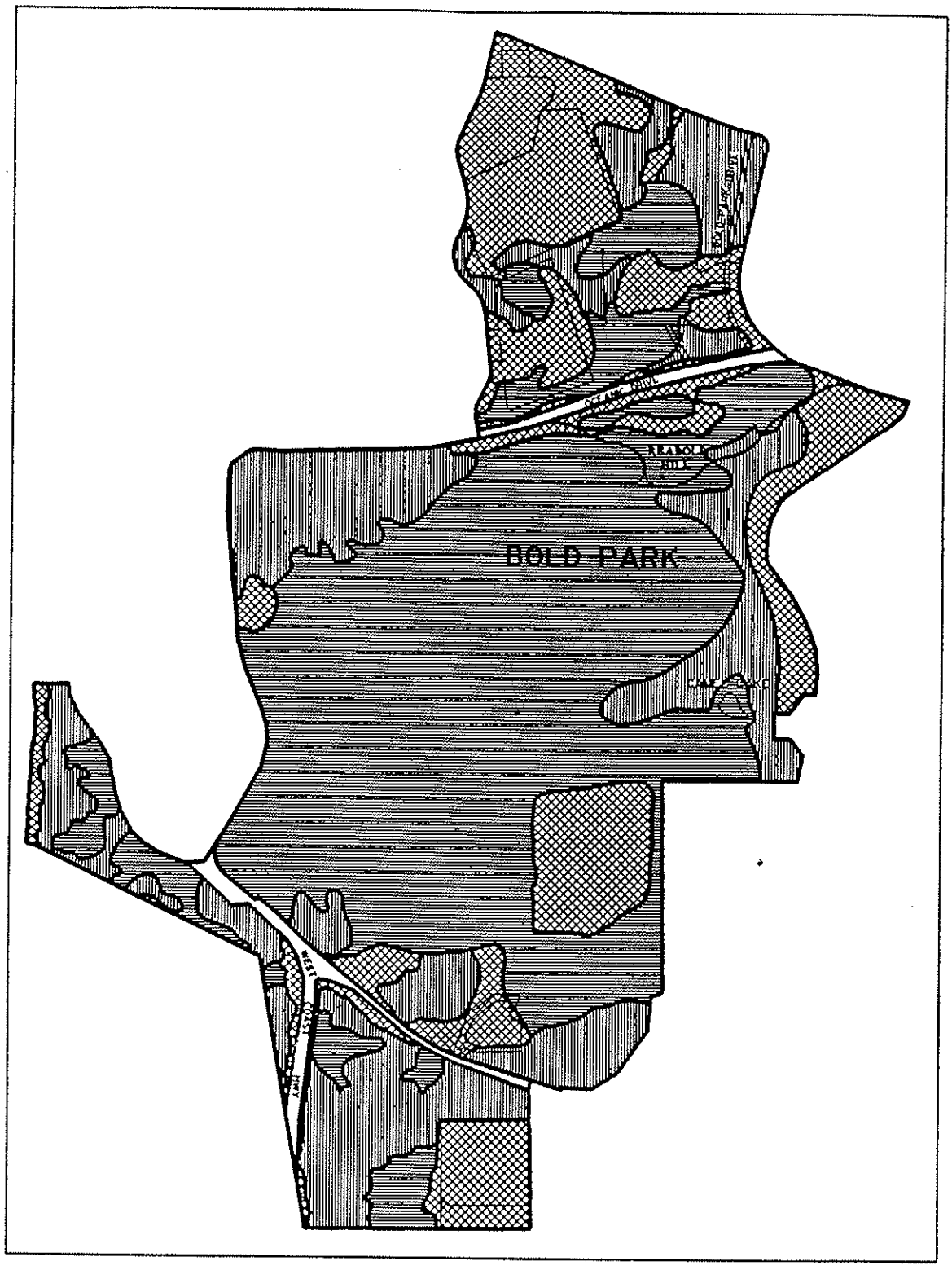
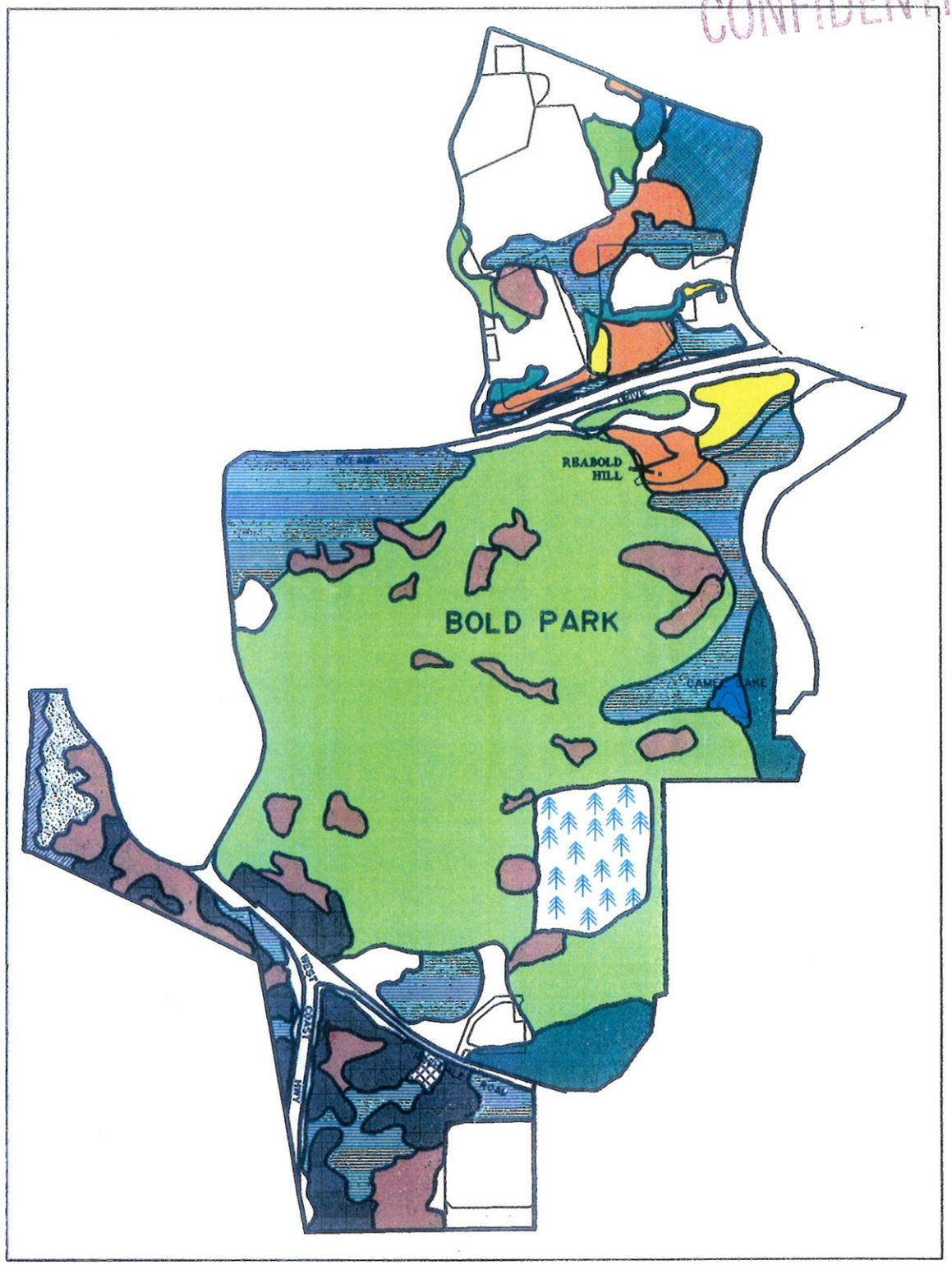


Figure 3.1 FLORA AND VEGETATION VALUES

1. FOREDUNE COMMUNITY
2. MOBILE DUNE COMMUNITY
3A. DUNE HEATH
3B. LIMESTONE HEATH
4A. ACACIA ROSTILLIFERA SHRUBLAND
4B. ACACIA XANTHINA SHRUBLAND
4C. ALLOCASUARINA LEHMANNIANA SHRUBLAND
5. AGONIS FLEXUOSA LOW WOODLAND
6. BANKSIA WOODLANDS
7A. EUCALYPTUS GOMPHOCEPHALA (TUART) WOODLANDS
7B. EUCALYPTUS CALOPHYLLA/MARGINATA WOODLANDS
7C. EUCALYPTUS GOMPHOCEPHALA/MARGINATA WOODLANDS
7D. EUCALYPTUS DECIPIENS WOODLANDS
8. WETLAND
9. PINE PLANTATION
10. DISTURBED

0 500m

Figure 2.2 VEGETATION MAP



1.FOREDUNE COMMUNITY
2.MOBILE DUNE COMMUNITY
3A.DUNE HEATH
3B.LIMESTONE HEATH
4A.ACACIA ROSTILLIFERA SHRUBLAND
4B.ACACIA XANTHINA SHRUBLAND
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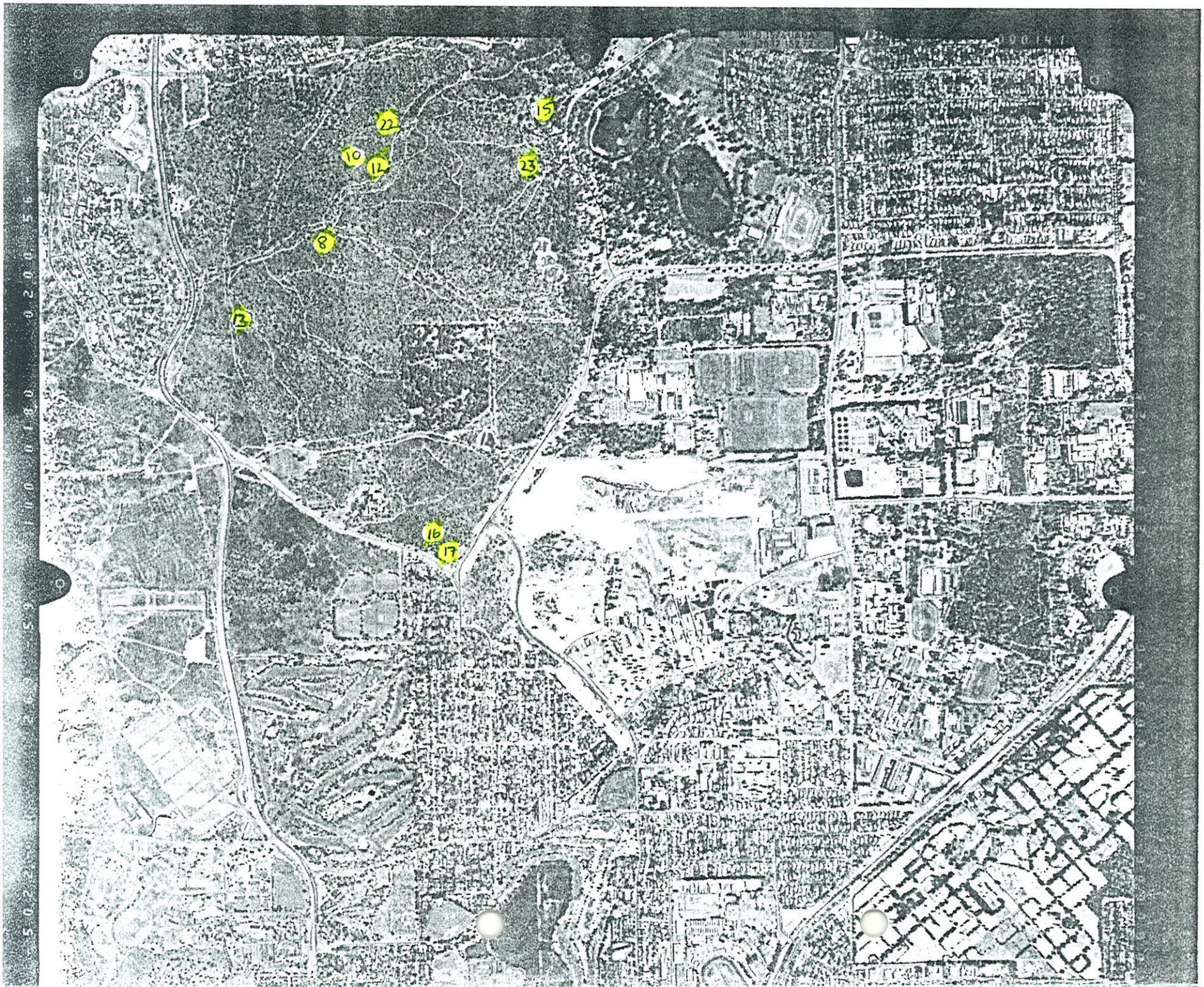
8.WETLAND
9.PINE PLANTATION
10.DISTURBED

0 500m

Figure 2.2 VEGETATION MAP


22
15
10
12
23
8
13
16
17

bold

Ø5	10
Ø6	11
Ø7	12
Ø8	13
Ø9	

M46

Legend:

- Bitumen road
- Gravel road
- Track
- Cleared line
- Oval
- Tank
- Building
- Swimming pool
- Fence
- Retaining wall
- Coastline
- Scrub boundary

Notes:

Horizontal Datum: AMG84
Vertical Datum: AHD

Topographical detail compiled by Whelans from digital photogrammetric methods.
(1:40,000 aerial photography dated 13.1.97 - Job No 45452A)

This map to be read in conjunction with Mattiske Consulting Pty Ltd report numbered FBP001/42/97

Bushland Condition Rating

- Very Poor
- Poor
- Moderate
- Good
- Very Good

Wembley Golf Complex
The Boulevard
Drive
Kalinda
Bold Park Drive
Floreat
City Beach
Oceanic Drive
Perry Lakes Drive
Perry
Lakes
West Coast Highway
Challenger Parade
Ocean
Underwood Ave
Challenge Stadium
Stephenson Avenue
Indian
Swanbourne
Mt Claremont
Rochdale Road
6466500mN
6466000mN
6465500mN
6465000mN
6464500mN
6464000mN
6463500mN
6463000mN
6462500mN
382000mE
382500mE
383000mE
383500mE
384000mE
384500mE
385000mE
0 100 200 300 400 500m
SCALE

Friends of Bold Park Bushland (Inc.)

BOLD PARK NATURAL BUSHLAND CONDITION RATING

MATTISKE CONSULTING PTY LTD
28 Central Road, Kalamunda ACN 063 507 175
Phone: +61 8 9257 1625 Fax: +61 8 9257 1640

Author: Dr E M Mattiske	Date: Feb 98	MCPL Ref: FBP001
Drawn: CAD Resources +61 9 246 3242	Scale: 1 : 5000	Figure: 4
CAD Ref: \emm\job33397\j333f204.dgn	B1 Rev: A	

Plant Communities mapped at Bold Park

1 Eucalypt Woodlands over Shrublands

1a Woodland of *Eucalyptus gomphocephala* over a variable understorey on grey sand.

1b Woodland of *Eucalyptus gomphocephala* over an understorey dominated by *Allocasuarina humilis* on grey sand

1c Open Woodland of *Eucalyptus gomphocephala* , *Allocasuarina fraseriana* and *Banksia* spp. over mixed low shrubs on grey sand.

1d Open Woodland of *Eucalyptus gomphocephala* , with occasional *Banksia attenuata* and *Banksia menziesii* , over shrubs dominated by *Macrozamia riedlei* , *Xanthorrhoea preissii* , *Acacia rostellifera* and *Jacksonia* spp. on grey sand.

1e Woodland of *Corymbia calophylla* , with *occasional Eucalyptus gomphocephala* and *Banksia* spp. over tall shrubs on grey sand.

1f Woodland of *Eucalyptus marginata* and *Corymbia calophylla* over a variable, often disturbed, understorey on grey sand.

1g Woodland to Open Woodland dominated by *Eucalyptus marginata* over a variable understorey on grey sand.

1h Woodland of *Eucalyptus decipiens* over *Melaleuca acerosa* , *Hardenbergia comptoniana* , *Xanthorrhoea preissii* and mixed low shrubs and herbs on pale grey sand.

1i Open Woodland of *Eucalyptus decipiens* , *Banksia attenuata* and *Banksia menziesii* over mixed shrubs dominated by *Calothamnus quadrifidus* and *Stirlingia latifolia* on grey sand.

2 Open Eucalypt Woodlands over Heath

2a Open Woodland of *Eucalyptus gomphocephala* over low to medium shrubs generally associated with heath communities, on grey sand.

3 *Agonis flexuosa* Woodlands

3a Woodland of *Agonis flexuosa* and *Eucalyptus gomphocephala* over mixed shrubs and *Lepidosperma gladiatum* on yellow-grey sand.

3b Low Woodland of *Agonis flexuosa* over *Acacia rostellifera* on grey sands on the lower slopes and valley floors.

4 Woodlands dominated by *Banksia* species

4a Woodland of *Banksia attenuata* and *Banksia menziesii* , with emergent *Eucalyptus gomphocephala* , over a variable understorey on grey sand.

4b Woodland of *Banksia prionotes* , *Banksia menziesii* and *Banksia attenuata* over a variable understorey on yellow-grey sand.

5 Shrublands

5a Closed Shrubland of *Acacia rostellifera* over mixed shrubs and herbs on pale grey sand.

5b Closed Shrubland of *Acacia xanthina* over mixed shrubs and herbs on pale grey sand, often underlain with limestone.

5c Open Shrubland dominated by *Allocasuarina lehmanniana* on grey sand

6 Heaths on sand

6a Tall Closed Heath dominated by *Dryandra sessilis* , with occasional emergent trees on grey sand.

6b Tall Heath dominated by *Chamelaucium uncinatum* on pale grey sand.

6c Closed Heath dominated by *Olearia axillaris* , *Acacia lasiocarpa* , *Calothamnus quadrifidus* and *Melaleuca acerosa* on grey sand.

6d Closed Heath of mixed, low shrubs with *Clematis pubescens* on grey sandy-loam.

7 Heaths on shallow sand underlain by Limestone

7a Low Heath dominated by *Acacia* spp. and *Melaleuca* spp. on shallow soils with limestone outcropping.

7b Low Heath under *Eucalyptus foecunda* on shallow soils over limestone.

7c Low woodland with *Eucalyptus petrensis* on shallow soils over limestone.

8 Coastal Dune Communities

8a Sparsely vegetated foredunes dominated by *Spinifex longifolius* and *Spinifex hirsutus* .

8b Sparsely vegetated foredunes dominated by low herbs and shrubs.

8c Mobile dunes of low shrub, sedge and grass species, with occasional dwarf *Agonis flexuosa* , on eastern side of foredunes.

9 Wetlands and Drainage Lines

9a Closed Shrubland of *Acacia* spp., *Templetonia retusa* and *Santalum acuminatum* over sedges in a drainage line on grey sandy-loam.

9b Woodland of *Eucalyptus rudis* on brown sandy-loam on fringes of Camel Lake.

9c Seasonally inundated area of Camel Lake, dominated by *Typa orientalis* .

Modified Areas

P Pine Plantation

D Disturbed Ground

Notes:

Horizontal Datum: AMG84
Vertical Datum: AHD

Topographical detail compiled by Whelans from digital photogrammetric methods.
(1:40,000 aerial photography dated 13.1.97 - Job No 45452A)

Legend:

Bitumen road
Gravel road
Track
Cleared line
Oval
Scrub boundary
Tank
Building
Swimming pool
Fence
Retaining wall
Coastline

6467000mN
6466500mN
6466000mN
6465500mN
6465000mN
6464500mN
6464000mN
6463500mN
6463000mN
382000mE
382500mE
383000mE
383500mE
384000mE
384500mE
385000mE

Wembley Golf Complex
The Boulevard
Drive
Kalinda
Bold Park Drive
Floreat
City Beach
Oceanic Drive
West Coast Highway
Perry Lakes Drive
Perry Lakes
Underwood Ave
Challenger Parade
Ocean
Indian
Challenge Stadium
Mt Claremont
Stephenson Avenue
Swanbourne
Rochdale Road

0 100 200 300 400 500 600 700m
SCALE

KINGS PARK & BOTANIC GARDEN

VEGETATION MAPPING BOLD PARK SPRING 1998

ecos CONSULTING (AUST) PTY LTD
Resource & Environmental Management
Suite 6, 3 Lawrence Avenue
West Perth, WA, 6005
Tel: +61 8 9481 5456 ~ Fax: +61 8 9481 5006

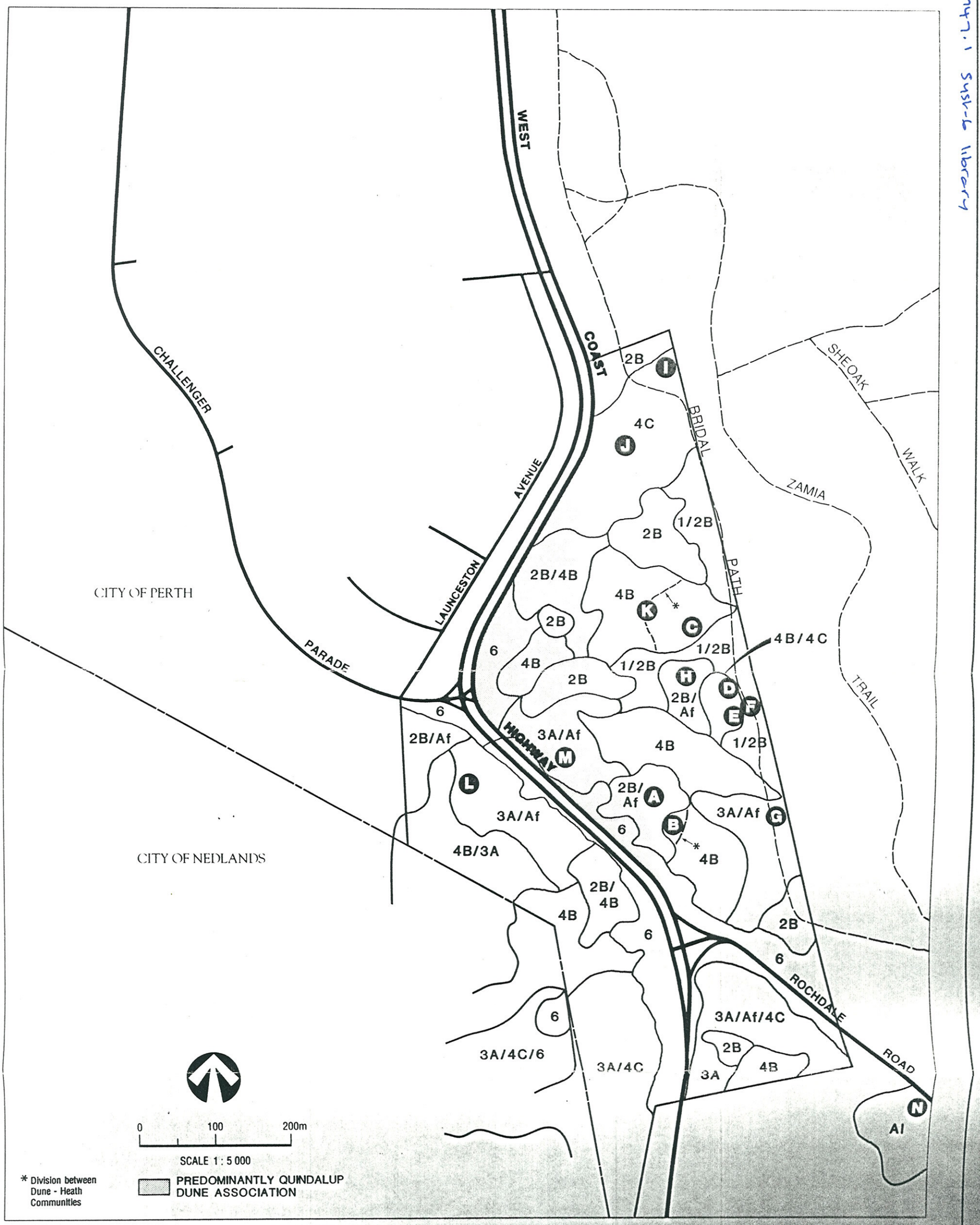
Author: D. Woodman	Date: Dec 98	ECOS Ref: ENV192
Drawn: CAD Resources ~ 9246 3242	Scale: 1 : 12,500	Figure: 1
CAD Ref: \ecos\job41698\j416vca3.dgn	A3 Rev: B	

(Ecos Consulting Pty Ltd 1999)

From: Dames & Moore 1992 PER Proposed re-alignment of the West Coast Highway, City Beach.

18/4/95

MAP 7.1 Shelf-6 Library



C PHOTOGRAPHIC SITES

NOTE: FOR DETAILED DESCRIPTION OF VEGETATION TYPES SEE TABLE 1. SLASHES INDICATE MOSAICS OR MIXTURES OF VEGETATION TYPES.

1 *BANKSIA* WOODLAND

2B *EUCALYPTUS GOMPHOCEPHALA* (TUART) WOODLAND

3A *ACACIA ROSTELLIFERA* SHRUBLAND

4B DUNE HEATH

4C *DRYANDRA SESSILIS* HEATH

6 HEAVILY DISTURBED AREA

Af *AGANIS FLEXUOSA* (PEPPERMINT)

Al ALLOCASUARINA LEHMANNIANA

FIGURE 7
DAMES & MOORE

VEGETATION OF STUDY AREA

KINGS PARK
& BOTANIC GARDEN

Forum

Research and Management Bold Park and Environs

Date: Friday 21 August 1998
Venue: Meeting Room at the Town of Cambridge Administration Centre
From: 8.45 AM

Background

Bold Park has had a long history. A new chapter began on August 15, 1998, when the land was handed to the State of Western Australia by the Town of Cambridge for management by Kings Park and Botanic Garden.

Bold Park was named after William Ernest Bold who served as the Town Clerk for the City of Perth from 1900 to 1944. His name, and that of the Mayor of Perth at the time, Mr Frank R. Rea, were combined to name "Reabold Hill"

At 436 ha, the creation of Bold Park forms the single largest reserve of urban bushland in the Perth Metropolitan area, larger even than Kings Park.

It is an important conservation reserve not only because of its size, but also because of the range of geology and soil formations that yield a diversity of habitats. These habitats extend inland from the ocean, and include: shrublands on the coastal dune systems; rich heathland areas, especially on the ancient limestone formations; banksia, eucalypt and peppermint woodlands on the deeper sands; and freshwater wetlands along the eastern edge of the Park. Bold Park reserve is home for more than 266 species of native plants, and 115 species of animals including 77 birds, 30 reptiles, 3 frogs and 3 mammals, as well as innumerable insect and other invertebrate animal species.

It is also a place that has a long aboriginal and colonial history, and remains a very important part of Western Australia in contemporary times, visited by over 200 000 people annually.

Kings Park & Botanic Garden is to manage Bold Park to conserve and enhance the flora, fauna, landscape, scientific, education and recreation values.

To do this, the Minister for the Environment has requested that Kings Park & Botanic Garden prepare an environmental management program that will include:

1. Management of recreational use of the bushland, including rationalisation of paths and tracks;
2. Fire and weed management and disease control;
3. Control of rubbish dumping and other impacts from any adjacent residential development
4. Ecological restoration, such as bush regeneration and habitat reconstruction
5. Protection of regionally significant flora
6. Protection of fauna habitats
7. Use of areas know as 'the turf farm', 'the quarry' on West Coast Highway, 'the pine plantation', Camel Lake and St Brendan's Drive
8. Public involvement, and
9. Monitoring programs

KINGS PARK
& BOTANIC GARDEN

Forum: Research and Management Bold Park and Environs

Date: Friday 21 August 1998
Venue: Meeting Room at the Town of Cambridge Administration Centre
From: 8.45 AM

This forum will

- introduce the Bold Park management team;
- review existing knowledge about Bold Park;
- tour Bold Park bushland; and
- discuss with participants interim management and research activities planned for Bold Park bushland for 1998/99 in the lead up to the development of a draft bushland management plan.

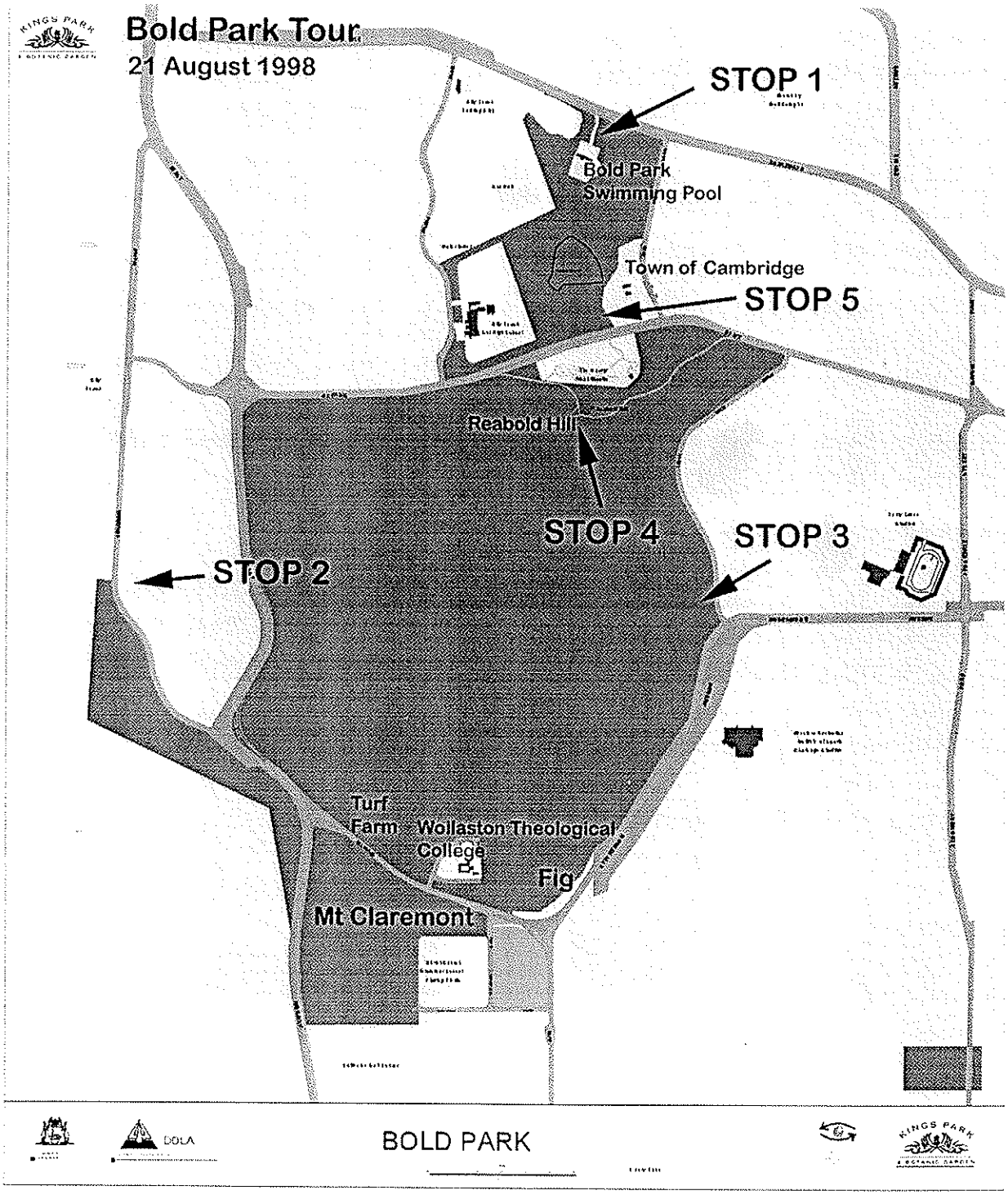
The forum will be held on Friday 21st August 1998 in the Town of Cambridge Meeting Room, and will run from 8.45 am to 4.00 pm. (Morning tea and lunch will be provided.)

Program

Time	Item	Speaker
8.45 - 9.00	Registration	
9.00 - 9.05	Muster	
9.05 - 9.20	Introduction – Bold Park and staff	Dr Stephen Hopper
9.20	Present knowledge	Dr Ray Wills (chair)
9.20 – 9.25	Town of Cambridge role	Ross Bowman
9.25 – 9.35	Geomorphology	Dr Ian Eliot
9.35 - 9.45	Fungi	Dr Neale Bougher
9.45 - 10.05	Plants – composition	Bronwen Keighery, Greg Keighery, Judith
	Plants - communities	Harvey, & Dr Neil Gibson
10.05 – 10.15	Native and weed seed banks	Judy Fisher & Dr Bill Loneragan
10.15 – 10.20	Weeds – bridal creeper	Chris Stansbury
10.20 – 10.50	Morning tea	
10.50 – 11.00	Animals – invertebrates	Dr Mark Harvey
11.00 – 11.10	Animals – invertebrates	Assoc Prof Jon Majer
11.10 – 11.20	Animals – vertebrates	Dr Ric How & John Dell
11.20 – 11.30	Animals – vertebrates	Dr Boyd Wykes & Prof Harry Recher
11.30 – 11.40	People – Colonial history	Joy Black
11.40 – 11.50	People – Friends	Norma Calcutt
11.50 – 12.00	People – Users	Stephanie Clegg
12.00 – 12.10	People – Education	Judy Fisher
12.10 – 13.00	Lunch and informal discussions.	
13.00 - 14.15	Tour Bold Park bushland	All participants
14.15 - 15.15	Forum on research and management.	All participants
15.15 - 15.25	Summary	Cath McChesney and Dr Ray Wills
15.25 - 15.30	Closing remarks	Dr Stephen Hopper

KINGS PARK
& BOTANIC GARDEN

Research and Management Bold Park and Environs Forum



Stops:

1. *Eucalyptus foecunda* stand; 2. Coastal dunes; 3. Camel Lake; 4. Reabold Hill; 5. Skyline drive-in

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Appendix 1: Flora of M 91, M 106 and M46

Records from opportunistic collecting, 1990-93. Families in alphabetical order and according to Marchant et al., (1987). An * indicates a non-native taxon.

TAXON	M 91	M 106	M46
FERNS			
DENNSTAEDIACEAE			
Pteridium esculentum		+	
GYMNOSPERMS			
ZAMIACEAE			
Macrozamia riedlei	+	+	+
CUPRESSACEAE			
Callitris preissii		+	
ANGIOSPERMSS			
AIZOACEAE			
*Carpobrotus edulis	+	+	+
C. edulis x virescens	+		
Carpobrotus virescens		+	+
*Tetragonia decumbens	+	+	+
Tetragonia implexicoma			+
Tetragonia tetragonioides		+	+
AMARANTHACEAE			
Ptilotus drummondii	+		
ANTHERICAEAE			
Arthropodium capillipes		+	
Caesia micrantha		+	
Corynotheca micrantha		+	
Sowerbaea laxiflora		+	
Thysanotus arenarius		+	+
Thysanotus manglesianus		+	
Thysanotus patersonii	+	+	
Thysanotus sparteus		+	
Tricoryne elatior	+	+	
APIACEAE			
Apium annuum	+	+	+
Apium prostratum		+	
Centella cordifolia		+	
Daucus glochidiatus	+	+	+
*Foeniculum vulgare	+		
Hydrocotyle diantha		+	
Hydrocotyle hispidula		+	
Trachymene coerulea			+
Trachymene pilosa		+	
APOCYNACEAE			
Alyxia buxifolia		+	

TAXON	M 91	M 106	M46
ASPHODELEACEAE			
*Asphodelus fistulosus	+	+	+
*Trachyandra divaricata	+	+	+
ASTERACEAE			
Angianthus cunninghamii		+	
Actites megalocarpa		+	
*Arctotheca calendula	+	+	+
*Arctotheca populifolia		+	+
*Arctotis stoechadifolia			+
*Aster subulatus		+	
Calocephalus brownii			+
*Carduus pycnocephalus		+	+
*Centaurium melitensis	+	+	
*Cirsium vulgare	+	+	+
*Conyza albida	+	+	+
*Conyza bonariensis	+		
Cotula australis		+	
Cotula cotuloides		+	
Cotula coronopiifolia		+	
*Dittrichia graveolens	+	+	
Helichrysum cordatum	+	+	+
Hyalospermum cotula	+		
*Hypochaeris glabra	+	+	+
Lagenifera huegelii		+	+
Leptorhynchos scabrus		+	
Millotia myosotidiifolia		+	
Olearia axillaris	+	+	+
Olearia rudis		+	
Podotheca angustifolia		+	
*Pseudognaphalium luteo-album		+	
Senecio lautus ssp. dissectifolius		+	
Senecio lautus ssp. maritimus	+	+	+
*Senecio tamoides			+
Siloxerus humifusus			+
*Sonchus asper	+		
Sonchus hydrophilus		+	
*Sonchus oleraceus	+	+	+
*Ursinia anthemoides		+	+
*Urospermum picroides	+		
*Vellerophyton dealbatum	+		
Waitzia aurea		+	
Waitzia suaveolens			+
BRASSICACEAE			
*Brassica tournefortii	+	+	+
*Cakile maritima		+	+
*Heliophila pusilla	+	+	+
Stenopetalum gracile		+	+
CAMPANULACEAE			
Wahlenbergia preissii		+	+

TAXON	M 91	M 106	M46
CARYOPHYLLACEAE			
*Cerastium glomeratum		+	
*Minuartia hybrida	+	+	+
*Petrorhagia velutina	+	+	+
*Sagina maritima	+	+	
*Silene gallica	+	+	+
*Spergula arvensis			+
*Stellaria media	+		
CASUARINACEAE			
Allocasuarina humilis	+		+
Allocasuarina lehmanniana			+
CHENOPODIACEAE			
Atriplex cinerea	+	+	+
Atriplex hypoleuca		+	
Atriplex isatidea			+
*Chenopodium murale	+	+	
Rhagodia baccata ssp baccata	+	+	+
Rhagodia baccata ssp dioica	+	+	+
Salsola kali		+	+
Sarcocornia quinqueflora	+		
Suaedea australis	+		
Threkeldia diffusa	+		+
COLCHICACEAE			
Wurmbaea monantha		+	
CONVOLVULACEAE			
Wilsonia backhousei	+		
Wilsonia humilis	+		
CRASSULACEAE			
Crassula colorata	+	+	+
Crassula exserta	+	+	+
*Crassula glomerata	+	+	+
*Crassula natans		+	
Crassula pedicellosa			+
CUSCUTACEAE			
*Cuscuta epithymum		+	
CYPERACEAE			
Baumea acuta		+	
Baumea articulata		+	
Baumea juncea		+	
Bulboschoenus caldwelli		+	
Carex preissii		+	+
Cyperus tenuiflorus		+	
Isolepis cernua	+	+	+
Isolepis nodosa	+	+	+
Lepidosperma angustatum	+	+	+
Lepidosperma effusum		+	
Lepidosperma gladiatum	+	+	+
Lepidosperma longitudinale	+	+	+

TAXON	M 91	M 106	M46
Lepidosperma scabrum			+
Lepidosperma ?tenue		+	
Mesomelaena pseudostygia		+	+
Schoenus clandestinus		+	
Schoenus grandiflora	+	+	+
Schoenus nitens		+	
Tetraria octandra		+	
DASYPOGONACEAE			
Acanthocarpus preissii	+	+	+
Lomandra hermaphrodita		+	
Lomandra maritima	+	+	+
DILLENIACEAE			
Hibbertia acerosa	+		
Hibbertia cuneiformis		+	
Hibbertia hypericoides	+		
Hibbertia racemosa	+		+
Hibbertia spicata ssp. leptotheca	+		
EPACRIDACEAE			
Acrotriche cordata	+	+	
Leucopogon australis	+		
Leucopogon parviflorus		+	+
EUPHORBIACEAE			
*Euphorbia peplus	+	+	+
*Euphorbia terracina	+	+	+
Phyllanthus calycinus	+	+	+
Poranthera microphylla		+	+
Ricinocarpus glaucus		+	
FABACEAE (PAPILIONACEAE)			
Daviesia decurrens			
Daviesia nudiflora			
Daviesia triflora			
Gompholobium tomentosum	+	+	+
Hardenbergia comptoniana	+	+	+
Jacksonia furcellata	+	+	
Kennedia coccinea	+		
Kennedia prostrata		+	+
*Lotus angustissimus		+	+
*Lupinus consentinii			+
*Medicago polymorpha		+	+
*Meliotis indica	+	+	+
Nemcia reticulata	+	+	+
*Trifolium angustifolium			+
*Trifolium campestre	+		+
*Trifolium cernuum	+	+	+
*Vicia sativa			+
FRANKENIACEAE			
Frankenia pauciflora	+		

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TAXON	M 91	M 106	M46
FUMARIACEAE			
*Fumaria capreolata			+
*Fumaria muralis			+
GENTIANACEAE			
*Centaurium erythraea		+	+
*Cicendia filiformis		+	
GERANIACEAE			
*Erodium botrys		+	
*Erodium cicutarium	+	+	+
*Geranium molle			+
Geranium solanderi		+	+
*Pelargonium capitatum	+	+	+
Pelargonium littorale		+	+
GOODENIACEAE			
Lechenaultia linearoides			+
Scaevola canescens			+
Scaevola crassifolia	+	+	+
Scaevola holosericea		+	
Scaevola nitida		+	
Scaevola thesioides			+
GYROSTEMONACEAE			
Tersonia cyathifolia			+
HAEMODORACEAE			
Anigozanthos humilis		+	
Anigozanthos manglesii		+	+
Conostylis aculeata	+	+	+
Conostylis candicans		+	+
Haemodorum laxum			+
Haemodorum spicatum		+	+
Haemodorum paniculatum			+
Phlebocarya ciliata		+	
HYACINTHACEAE			
*Ornithogalum ?caudatum			+
IRIDACEAE			
*Freesia leichtlinii		+	
*Gladiolus caryophyllaceus	+		
*Homeria flaccida		+	
*Homeria ?flaccida 'yellow'	+		
Patersonia occidentalis		+	
*Romulea rosea	+	+	+
JUNCACEAE			
Juncus bufonius		+	
Juncus krausii		+	
Juncus pallidus		+	
JUNCAGINACEAE			
Triglochin calcitrapa	+	+	+

TAXON	M 91	M 106	M46
Triglochin procera		+	
Triglochin striata		+	
Triglochin trichophora		+	+
LAMIACEAE			
Hemiandra pungens		+	+
*Stachys arvensis		+	
Westringia dampieri		+	
LAURACEAE			
Cassytha flava	+	+	+
Cassytha pubescens	+	+	+
Cassytha racemosa	+	+	
LOBELIACEAE			
Lobelia alata		+	
Lobelia gibbosa			+
Lobelia tenuior		+	+
LOGANIACEAE			
Logania vaginalis		+	
MALVACEAE			
Lavatera pleibia var tomentosa	+		
Lawrencia spicata	+		
MIMOSACEAE			
Acacia cochlearis		+	+
Acacia cyclops	+	+	+
Acacia lasiocarpa	+	+	+
Acacia pulchella	+		+
Acacia rostellifera	+	+	+
Acacia saligna	+	+	+
Acacia truncata	+		+
MYOPORACEAE			
Eremophila glabra	+	+	+
Myoporum insulare	+	+	+
MYRTACEAE			
Astarea fasicularis		+	
Agonis flexuosa			+
Calothamnus quadrifidus	+	+	+
Chamelaucium uncinatum			+
Eucalyptus decipiens	+		
Eucalyptus gomphocephala		+	+
Melaleuca acerosa	+	+	+
Melaleuca huegelii	+	+	
Melaleuca rhaphiophylla		+	
Melaleuca teretifolia		+	
OLACACEAE			
Olax benthamiana		+	+

TAXON	M 91	M 106	M46
ONAGRACEAE			
Epilobium billardierianum		+	
Epilobium hirtigerum		+	
*Oenothera drummondii		+	+
ORCHIDACEAE			
Acianthus reniformis		+	+
Caladenia flava		+	
Caladenia latifolia	+	+	+
Caladenia longicauda		+	
Microtis media		+	
*Monadenia bracteata	+		
Prasophyllum calcicola			+
Prasophyllum fimbria		+	
Pterostylis nana		+	
Pterostylis vittata		+	
OROBANCHACEAE			
*Orobanche minor	+	+	+
OXALIDACEAE			
Oxalis perennans		+	+
PHORMIACEAE			
Dianella divaricata	+	+	+
PHYTOLACCACEAE			
*Phytolacca octandra	+		
PLANTAGINACEAE			
Plantago ?exilis	+		
POACEAE			
+Agropyron racemosus			+
Agrostis avenacea		+	
*Aira caryophyllea	+	+	+
Amphipogon turbinatus		+	
*Avellina michelii		+	
*Avena barbata	+	+	+
*Briza maxima	+	+	+
Bromus arenarius		+	+
*Bromus diandrus	+	+	+
*Bromus hordeaceus	+	+	
*Bromus madritensis		+	
*Catapodium rigidum	+	+	+
*Cynodon dactylon		+	+
Danthonia occidentalis	+	+	+
*Ehrharta calycina	+		+
*Ehrharta longiflora		+	
*Eragrostis curvula		+	
*Holcus lanatus		+	
*Lagurus ovatus	+	+	+
*Lolium multiflorum	+	+	+
*Phalaris minor	+		
*Poa annua	+		

Spinifex x alkmifolius (hybrid) also

TAXON	M 91	M 106	M46
Poa drummondiana	+	+	+
Poa poiformis		+	+
Poa porphyroclados	+	+	+
Sporobolus virginicus	+	+	
Spinifex hirsutus		+	+
Spinifex longifolius	+	+	+
*Stenotraphum secundatum			+
Stipa compressa		+	
Stipa elegantissima		+	+
Stipa flavescens	+	+	+
Stipa semibarbata		+	
*Vulpia myuros	+		+
POLYGALACEAE			
Comesperma integerrimum		+	+
Comesperma confertum	+	+	+
POLYGONACEAE			
Muehlenbeckia adpressa		+	
*Rumex crispus		+	
PORTULACACEAE			
Calandrinia corrigioloides	+	+	+
Calandrina granulifera		+	+
Calandrinia liniflora		+	
PRIMULACEAE			
*Anagallis arvensis	+	+	+
Samolus junceus	+	+	
Samolus repens	+		
PROTEACEAE			
Banksia attenuata	+		+
Banksia menziesii	+		+
Dryandra nivea	+		
Dryandra sessilis	+		+
Grevillea thelemanniana	+		
Grevillea vestita	+		+
Hakea lissocarpha	+		
Hakea prostrata	+		+
Petrophile brevifolia			
Petrophile serruriae	+		
RANUNCULACEAE			
Clematis microphylla			+
RESTIONACEAE			
Loxocarya cinerea		+	+
Loxocarya flexuosa	+	+	+
Loxocarya pubescens		+	
RHAMNACEAE			
Cryptandra mutila	+	+	
Spyridium globulosum	+	+	+
Trymalium albicans		+	

WACENSUS No (####)
Check name (Y/N)
Species (Genus species)
Where? (BP, M46, MiMc)
BP Exotic? (Planted, WA Native, South Africa, etc)
At KP? (KP)
Foreign (*)

85	N	Macrozamia riedlei	BP	KP		
87	N	Pinus pinaster	BP		*	
88	N	Pinus radiata	BP	KP	*	
99	N	Typha orientalis	BP		*	
142	N	Triglochin calcitrapum	BP, M46			
143	N	Triglochin centrocarpum	BP	KP		
151	N	Triglochin striatum	BP			
176	N	Agrostis avenacea	BP			
181	N	Agrostis preissii	BP			
185	N	Aira cupaniana	BP		*	
200	N	Amphipogon turbinatus	BP	KP		
233	N	Avena barbata	BP, M46		KP	* Med
244	N	Briza maxima	BP, M46		KP	* Eurasia
245	N	Briza minor	BP		KP	* Eurasia
247	N	Bromus arenarius	BP, M46			
283	N	Cynodon dactylon	BP, M46		KP	* Europe
347	N	Ehrharta calycina	BP, M46		KP	* South Africa
349	N	Ehrharta longiflora	BP		KP	* South Africa
376	N	Eragrostis curvula	BP		KP	* South Africa
449	N	Hordeum leporinum	BP		KP	* Eurasia
452	N	Hyparrhenia hirta	BP			*
467	N	Lagurus ovatus	BP, M46		KP	* Med
478	N	Lolium rigidum	BP, M46		KP	* Eurasia
485	N	Microlaena stipoides	BP		KP	
492	N	Neurachne alopecuroidea	BP		KP	
527	N	Paspalum dilatatum	BP		KP	* Tropics
536	N	Pennisetum clandestinum	BP			*
542	N	Pennisetum villosum	BP		KP	* East Africa
550	N	Phalaris canariensis	BP			*
578	N	Poa porphyroclados	BP, M46		KP	
582	N	Polypogon monspeliensis	BP		KP	* Med
635	N	Sporobolus virginicus	BP			
636	N	Stenotaphrum secundatum	BP, M46		KP	* Tropics
644	N	Stipa elegantissima	BP, M46		KP	
647	N	Stipa flavescens	BP, M46		KP	
724	N	Vulpia myuros	BP, M46		KP	*
743	N	Baumea juncea	BP			
749	N	Bolboschoenus caldwellii	BP			
757	N	Carex preissii	BP, M46			
760	N	Caustis dioica	BP			
771	N	Cyperus alterniflorus	BP			
910	N	Isolepis cernua	BP, M46		KP	
918	N	Isolepis nodosa	BP, M46		KP	
925	N	Lepidosperma angustatum	BP, M46		KP	
933	N	Lepidosperma gladiatum	BP, M46		KP	
937	N	Lepidosperma longitudinale	BP, M46			

Lepid sp.	944	N	Lepidosperma scabrum	BP, M46		KP		
	956	N	Mesomelaena stygia	BP	KP	pseudostygia		
	957	N	Mesomelaena tetragona	BP	incorrect			
	992	N	Schoenus grandiflorus	BP, M46		KP		
	997	N	Schoenus lanatus	BP	Tetraria octandra.			
	1056	N	Alexgeorgea nitens	BP				
	1092	N	Loxocarya cinerea	BP, M46				
	1093	N	Loxocarya fasciculata	BP	KP			
	1125	N	Centrolepis drummondiana	BP	KP			
	1162	N	Cartonema philydroides	BP	KP			
	1178	N	Juncus bufonius	BP		*		
	1185	N	Juncus kraussii	BP				
	1188	N	Juncus pallidus	BP	KP			
	1208	N	Acanthocarpus preissii	BP, M46	KP			
	1231	N	Lomandra maritima	BP, M46	KP			
	1239	N	Lomandra preissii	BP	KP			
	1240	N	Lomandra purpurea	BP				
	1256	N	Xanthorrhoea preissii	BP	KP			
	1276	N	Caesia micrantha	BP				
	1285	N	Corynotheca micrantha	BP	KP			
	1312	N	Sowerbaea laxiflora	BP	KP			
	1343	N	Thysanotus patersonii	BP	KP			
	1351	N	Thysanotus sparteus	BP	KP			
	1361	N	Tricoryne elatior	BP	KP			
	1364	N	Asphodelus fistulosus	BP, M46			*	
	1368	N	Trachyandra divaricata	BP, M46			*	
	1387	N	Burchardia umbellata	BP	KP			
	1398	N	Wurmbea monantha	BP				
	1409	N	Anigozanthos humilis	BP	KP			
	1411	N	Anigozanthos manglesii	BP, M46		KP		
	1418	N	Conostylis aculeata	BP, M46		KP		
H. laxum	1427	N	Conostylis candicans	BP, M46		KP		
	1470	N	Haemodorum paniculatum	BP, M46		KP		
	1475	N	Haemodorum spicatum	BP, M46		KP		
Crinum sp.	1489	N	Amaryllis belladonna	BP,Planted BP		KP	*	
	1495	N	Narcissus tazetta	BP		KP	*	
	1505	N	Agave americana	BP		KP	*	
	1513	N	Chasmanthe floribunda	BP		KP	*	
	1515	N	Ferraria crispa	BP		KP	*	
	1516	N	Freesia leichtlinii	BP		KP	*	
	1520	N	Gladiolus caryophyllaceus	BP		KP	*	
	1524	N	Gladiolus undulatus	BP			*	
	1550	N	Patersonia occidentalis	BP	KP			
	1554	N	Romulea flava	BP		*		
	1556	N	Romulea rosea	BP, M46		*		
	1558	N	Sparaxis bulbifera	BP	KP	*		
	1563	N	Watsonia aletroides	BP	KP	*		
	1586	N	Caladenia discoidea	BP	KP			
	1592	N	Caladenia flava	BP	KP			
	1599	N	Caladenia latifolia	BP, M46	KP			
	1635	N	Diuris longifolia	BP	KP			
	1646	N	Eriochilus dilatatus	BP	KP			
	1664	N	Microtis unifolia	BP	KP			
	1665	N	Monadenia bracteata	BP	KP	*		

1671 N	Prasophyllum elatum	BP		
1690 N	Pterostylis nana	BP	KP	
1697 N	Pterostylis scabra	BP	KP	
1698 N	Pterostylis vittata	BP	KP	
1728 N	Allocasuarina fraseriana	BP	KP	
1732 N	Allocasuarina humilis	BP, M46	KP	
1742 N	Casuarina obesa	BP	Planted BP	
1747 N	Ficus carica	BP		*
1762 N	Parietaria debilis	BP, M46		
1799 N	Banksia ashbyi	BP	Planted BP	
1800 N	Banksia attenuata	BP, M46	KP	
1803 N	Banksia baxteri	BP	Planted BP	
1807 N	Banksia burdettii	BP	Planted BP	
1808 N	Banksia caleyi	BP	Planted BP	
1819 N	Banksia grandis	BP	KP	
1821 N	Banksia hookeriana	BP	Planted BP	
1826 N	Banksia laricina	BP	Planted BP	
1830 N	Banksia littoralis	BP		
1834 N	Banksia menziesii	BP, M46	KP	
1836 N	Banksia nutans	BP	Planted BP	
1837 N	Banksia occidentalis	BP	Planted BP	
1842 N	Banksia prionotes	BP	+ Planted BP	KP
1844 N	Banksia quercifolia	BP	Planted BP	
1847 N	Banksia sceptrum	BP	Planted BP	
1850 N	Banksia speciosa	BP	Planted BP	
1851 N	Banksia sphaerocarpa	BP	Planted BP	
1855 N	Banksia victoriae	BP	Planted BP	
1885 N	Conospermum triplinervium	BP	KP	
1916 N	Dryandra nivea	BP	KP	
1932 N	Dryandra sessilis	BP, M46	KP	
1982 N	Grevillea crithmifolia	BP	KP	
2107 N	Grevillea ~~thelemanniana~~	BP	KP	
2119 N	Grevillea vestita	BP, M46	KP	
2135 N	Hakea bucculenta	BP	Planted BP	
2150 N	Hakea cucullata	BP	Planted BP	
2163 N	Hakea francisiana	BP	Planted BP	
2171 N	Hakea laurina	BP	Planted BP	
2184 N	Hakea multilineata	BP	Planted BP	
2194 N	Hakea petiolaris	BP	Planted BP	
2197 N	Hakea prostrata	BP, M46	KP	
2203 N	Hakea ruscifolia	BP		
2273 N	Persoonia saccata	BP	KP	
2299 N	Petrophile linearis	BP	KP	
2301 N	Petrophile macrostachya	BP	KP	
2309 N	Petrophile serruriae	BP	KP	
2316 N	Stirlingia latifolia	BP	KP	
2356 N	Santalum acuminatum	BP, M46		
2365 N	Olax benthamiana	BP, M46		
2380 N	Amyema miquelii	BP	KP	
2409 N	Emex australis	BP	KP	*
2429 N	Rumex acetosella	BP		*
2432 N	Rumex conglomeratus	BP		*
2718 N	Ptilotus drummondii	BP	KP	
2751 N	Ptilotus polystachyus	BP	KP	

x lindleyii

x preissii

1916 N Dryandra nivea BP KP — update name = lindleyi

2107 N Grevillea ~~thelemanniana~~ BP KP preissi

2784 N	Gyrostemon ramulosus	BP			
2791 N	Tersonia cyathiflora	BP, M46	KP		
2795 N	Carpobrotus edulis	BP, M46	KP	*	
2798 N	Carpobrotus virescens	BP, M46			
2801 N	Galenia pubescens	BP		*	
2820 N	Tetragonia decumbens	BP, M46			*
2845 N	Calandrinia brevipedata	BP			
2848 N	Calandrinia corrigioloides	BP, M46		KP	
2854 N	Calandrinia granulifera	BP, M46			
2856 N	Calandrinia liniflora	BP	KP		
2889 N	Cerastium glomeratum	BP	Europe	KP	*
2894 N	Moenchia erecta	BP		*	
2895 N	Petrorhagia velutina	BP, M46	KP	* Med	
2906 N	Sagina apetala	BP	KP	* Europe	
2909 N	Silene gallica	BP, M46	KP	* Europe	
2918 N	Stellaria media	BP	KP	* Europe	
2927 N	Clematis microphylla	BP, M46		KP	
2932 N	Ranunculus colonorum	BP			
2951 N	Cassytha flava	BP, M46			
2957 N	Cassytha racemosa	BP	KP		
2969 N	Fumaria capreolata	BP, M46	Europe	KP	*
2971 N	Fumaria muralis	BP, M46			*
3000 N	Brassica tournefortii	BP, M46			*
3002 N	Cakile maritima	BP, M46			*
3011 N	Diplotaxis muralis	BP			*
3016 N	Heliophila pusilla	BP, M46		KP	*SA
3080 N	Stenopetalum robustum	BP, M46			
3095 N	Drosera erythrorhiza	BP	KP		
3098 N	Drosera glanduligera	BP	KP		
3106 N	Drosera macrantha	BP	KP		
3118 N	Drosera pallida	BP	KP		
3131 N	Drosera stolonifera	BP	KP		
3137 N	Crassula colorata	BP, M46	KP		
3138 N	Crassula decumbens	BP		*	
3139 N	Crassula exserta	BP, M46			
3140 N	Crassula glomerata	BP, M46			*
3143 N	Crassula pedicellosa	BP, M46			
3262 N	Acacia cochlearis	BP, M46		KP	
3282 N	Acacia cyclops	BP, M46		KP	
3374 N	Acacia huegelii	BP	KP		
3409 N	Acacia lasiocarpa	BP, M46		KP	
3442 N	Acacia microbotrya	BP	Planted BP	KP	
3502 N	Acacia pulchella	BP, M46		KP	
3525 N	Acacia rostellifera	BP, M46		KP	
3527 N	Acacia saligna	BP, M46		KP	
3584 N	Acacia truncata	BP, M46			
3602 N	Acacia willdenowiana	BP	KP		
3604 N	Acacia xanthina	BP			
3710 N	Bossiaea eriocarpa	BP	KP		
3789 N	Cytisus proliferus	BP		*	
3807 N	Daviesia divaricata	BP	KP		
3845 N	Daviesia triflora	BP	KP		
3957 N	Gompholobium tomentosum	BP, M46		KP	
3961 N	Hardenbergia comptoniana	BP, M46		KP	

3966 N	Hovea pungens	BP		KP		
3968 N	Hovea trisperma	BP		KP		
3992 N	Isotropis cuneifolia	BP		KP		
4008 N	Jacksonia densiflora	BP				
4027 N	Jacksonia sericea	BP		KP		
4029 N	Jacksonia sternbergiana	BP		KP		
4044 N	Kennedia prostrata	BP, M46			KP	
4065 N	Lupinus angustifolius	BP			*	
4066 N	Lupinus cosentinii	BP, M46		Europe	KP	*
4079 N	Medicago polymorpha	BP, M46		Mediterranean	KP	*
4085 N	Melilotus indicus	BP, M46		Mediterranean	KP	*
4132 N	Oxylobium reticulatum	BP, M46				
4205 N	Sphaerolobium linophyllum	BP				
4256 N	Templetonia retusa	BP		KP		
4292 N	Trifolium campestre	BP, M46		Europe	KP	*
4293 N	Trifolium cernuum	BP, M46				*
4297 N	Trifolium glomeratum	BP	Europe		KP	*
4313 N	Trifolium subterraneum	BP	Europe		KP	*
4320 N	Vicia hirsuta	BP			*	
4333 N	Erodium cicutarium	BP, M46				*
4336 N	Erodium moschatum	BP	Mediterranean		KP	*
4339 N	Geranium molle	BP, M46		Mediterranean	KP	*
4343 N	Pelargonium capitatum	BP, M46		East Africa	KP	*
4355 N	Oxalis perennans	BP, M46				
4356 N	Oxalis pes-caprae	BP	South Africa		KP	*
~~4516 N~~	~~Melia azedarach~~	~~BP~~	~~Planted BP~~			
4550 N	Comesperma calymega	BP		KP		
4552 N	Comesperma confertum	BP, M46				
4555 N	Comesperma integerrimum	BP, M46				
4594 N	Beyeria cinerea	BP				
4638 N	Euphorbia peplus	BP, M46		Eurasia	KP	*
4648 N	Euphorbia terracina	BP, M46				*
4675 N	Phyllanthus calycinus	BP, M46			KP	
4691 N	Poranthera microphylla	BP, M46			KP	
4705 N	Ricinus communis	BP		KP	*	
4737 N	Tripterococcus brunonis	BP		KP		
4746 N	Diplopeltis huegelii	BP, M46				
4754 N	Dodonaea aptera	BP				
4792 N	Cryptandra arbutiflora	BP		KP		
4828 N	Spyridium globulosum	BP, M46			KP	
4842 N	Trymalium ledifolium	BP		KP		
4947 N	Lavatera cretica	BP			*	
4961 N	Malva parviflora	BP		KP	*	
5105 N	Thomasia triphylla	BP				
5117 N	Hibbertia cuneiformis	BP	+ Planted BP			
5135 N	Hibbertia hypericoides	BP		KP		
5162 N	Hibbertia racemosa	BP, M46			KP	
5180 N	Hypericum gramineum	BP				
5216 N	Hybanthus calycinus	BP		KP		
5237 N	Pimelea calcicola	BP				
5261 N	Pimelea rosea	BP		KP		
5316 N	Agonis flexuosa	BP, M46			KP	
5426 N	Calothamnus quadrifidus	BP, M46			KP	
5498 N	Chamelaucium uncinatum	BP, M46		+ Planted BP		KP

5615 N	Eucalyptus decipiens	BP		KP		
5649 N	Eucalyptus foecunda	BP	+ Planted BP			
5659 N	Eucalyptus gomphocephala	BP, M46			KP	
5708 N	Eucalyptus marginata	BP		KP		
5763 N	Eucalyptus rudis	BP				
5825 N	Hypocalymma robustum	BP		KP		
5831 N	Kunzea baxteri	BP	Planted BP			
5850 N	Leptospermum laevigatum	BP			*	
5868 N	Melaleuca acerosa	BP, M46			KP	
5887 N	Melaleuca cardiophylla	BP	Planted BP			
5905 N	Melaleuca diosmifolia	BP	Planted BP			
5920 N	Melaleuca huegelii	BP		KP		
5921 N	Melaleuca incana	BP				
5922 N	Melaleuca lanceolata	BP	Planted BP		KP	
5959 N	Melaleuca rhaphiophylla	BP	Planted BP			
5988 N	Melaleuca violacea	BP	Planted BP			
6012 N	Regelia ciliata	BP				
6138 N	Oenothera drummondii	BP, M46		Europe	KP	*
6218 N	Daucus glochidiatus	BP, M46			KP	
6222 N	Homalosciadium homalocarpum	BP			KP	
6229 N	Hydrocotyle diantha	BP				
6266 N	Trachymene coerulea	BP, M46			KP	
6280 N	Trachymene pilosa	BP		KP		
6289 N	Xanthosia huegelii	BP		KP		
6295 N	Acrotriche cordata	BP				
6323 N	Astroloma ciliatum	BP		KP		
6331 N	Astroloma microcalyx	BP				
6334 N	Astroloma pallidum	BP		KP		
6348 N	Conostephium pendulum	BP		KP		
6349 N	Conostephium preissii	BP		KP		
6360 N	Leucopogon australis	BP				
6405 N	Leucopogon insularis	BP				
6434 N	Leucopogon polymorphus	BP				
6436 N	Leucopogon propinquus	BP		KP		
6456 N	Lysinema ciliatum	BP				
6480 N	Anagallis arvensis	BP, M46		Europe	KP	*
6503 N	Olea europaea	BP	Planted BP			*
6515 N	Logania vaginalis	BP				
6539 N	Centaurium erythraea	BP, M46				*
6734 N	Phyla nodiflora var. nodiflora	BP			*	
6839 N	Hemiandra pungens	BP, M46			KP	
6930 N	Stachys arvensis	BP	Europe		KP	*
6939 N	Westringia dampieri	BP	Planted BP			
6949 N	Anthocercis littorea	BP		KP		
6968 N	Lycium ferocissimum	BP, M46			KP	*
7022 N	Solanum nigrum	BP, M46			KP	*
7037 N	Solanum symonii	BP, M46				
7046 N	Bellardia trixago	BP			*	
7055 N	Dischisma capitatum	BP	South Africa		KP	*
7089 N	Parentucellia latifolia	BP			*	
7122 N	Orobanche minor	BP, M46		Europe	KP	*

~~7193 N~~	~~Eremophila decipiens~~	~~BP~~	~~Planted BP~~				
7215 N	Eremophila glabra	BP, M46			KP		
7289 N	Myoporum caprarioides	BP					
7291 N	Myoporum insulare	BP, M46			KP		
7348 N	Opercularia hispidula	BP		KP			
7353 N	Opercularia vaginata	BP, M46			KP		
7366 N	Centranthus macrosiphon	BP, M46			KP	*	
7384 N	Wahlenbergia capensis	BP, M46		South Africa		KP	*
7389 N	Wahlenbergia preissii	BP		KP			
7400 N	Lobelia alata	BP					
7402 N	Lobelia gibbosa	BP, M46			KP		
7408 N	Lobelia tenuior	BP, M46			KP		
7580 N	Lechenaultia linarioides	BP, M46					
7603 N	Scaevola canescens	BP, M46			KP		
7606 N	Scaevola crassifolia	BP, M46			KP		
7617 N	Scaevola holosericea	BP		KP			
7647 N	Scaevola thesioides	BP, M46			KP		
7681 N	~~Stylidium affine~~ maritimum	BP					
7693 N	Stylidium ~~b~~runonianum	BP		KP			
7745 N	Stylidium junceum	BP					
7759 N	Stylidium macrocarpum	BP					
7785 N	Stylidium repens	BP		KP			
7838 N	Arctotheca calendula	BP, M46			KP	*	
7840 N	Arctotis stoechadifolia	BP, M46				*	
7844 N	Aster subulatus	BP			*		
7851 N	Asteridea pulverulenta	BP		KP			
7878 N	Brachyscome iberidifolia	BP					
7909 N	Carduus pycnocephalus	BP, M46				*	
7939 N	Conyza bonariensis	BP		KP	*		
7940 N	Conyza canadensis	BP			*		
7947 N	Cotula turbinata	BP		KP	*		
7953 N	Crepis foetida	BP			*		
7961 N	Dittrichia graveolens	BP		KP	*		
7986 N	Gnaphalium sphaericum	BP					
8017 N	Helichrysum cordatum	BP, M46			KP		
8044 N	Helipterum cotula	BP					
8086 N	Hypochaeris glabra	BP, M46		Europe	KP	*	
8095 N	Lactuca saligna	BP	Europe		KP	*	
8096 N	Lactuca serriola	BP			*		
8097 N	Lagenifera huegelii	BP, M46			KP		
8105 N	Millotia myosotidifolia	BP					
8127 N	Olearia axillaris	BP, M46			KP		
8149 N	Olearia rudis	BP					
8156 N *	Osteospermum clandestinum		BP	South Africa		KP	
8172 N	Podolepis canescens	BP					
8182 N	Podotheca angustifolia	BP		KP			
8211 N	Senecio lautus	BP					
8220 N	Senecio vulgaris	BP			*		
8230 N	Sonchus ~~asper~~	BP hydrophyllus			*		
8231 N	Sonchus oleraceus	BP, M46		Eurasia	KP	*	
8254 N	Urospermum picroides	BP	South Africa		KP	*	
8255 N	Ursinia anthemoides	BP, M46		South Africa		KP	*
8276 N	Waitzia aurea	BP					

8282 N	Waitzia suaveolens	BP, M46		KP	
8596 N	Eryngium rostratum	BP	KP		
8603 N	Solanum sodomeum	BP			
8767 N	Tetrariopsis octandra	BP			
8779 N	Asparagus asparagoides	BP	South Africa	KP	
8782 N	Dianella divaricata	BP, M46		KP	
8786 N	Arthropodium capillipes	BP	KP		
8810 N	Caladenia patersonii	BP			
8857 N	Atriplex prostrata	BP			
9212 N	Centella cordifolia	BP			
10765 N	Exocarpos sparteus	BP, M46			
11341 N	Rhagodia baccata subsp. baccata	BP, M46			
11461 N	Hibbertia spicata subsp. leptotheca	BP			
11474 N	Vicia sativa subsp. nigra	BP		*	
12070 N	Vicia sativa subsp. sativa	BP, M46			*
13408 N	Minuartia hybrida	BP, M46			*
15775 N	Lepidosperma sp.A Perth Flora	BP			
~~16943 N~~	~~Asparagus declinatus~~	~~BP~~	~~Planted BP~~		
17104 N	Corymbia calophylla	BP	KP		
~~17348 N~~	~~Galium aparine~~	~~BP~~ = mund		*	
2823	Tetragonia implexicoma	M46			
2824	Tetragonia tetragonoides	M46			
1319 N	Thysanotus arenarius	BP	KP		
6210	Apium annuum	M46			
7839	Arctotheca populifolia	M46		*	
7889	Calocephalus brownii	M46			
7937	Cirsium vulgare	M46		*	
7938	Conyza albida	M46	KP	*	
11618 N	Senecio lautus subsp. maritimus	M46		KP	
16336 N	Senecio tamoides subsp. Tutanning(A.S.George 12867)				M46
8225	Siloxerus humifusus	M46	KP		
2912	Spergula arvensis	M46	KP	*	
1733	Allocasuarina lehmanniana	M46			
2452	Atriplex cinerea	M46	KP		
2463	Atriplex isatidea	M46			
11930	Rhagodia baccata subsp. dioica	M46	KP		
2590	Salsola kali	M46			
2644	Threlkeldia diffusa	M46			
~~955~~	~~Mesomelaena pseudostygia~~	M46	= (Meso. stygia BP = M. pseudo		
6427	Leucopogon parviflorus	M46	KP		
4341	Geranium solanderi	M46			
4346	Pelargonium littorale	M46			
1468	Haemodorum laxum	M46	KP	*	
152	Triglochin trichophorum	M46			
8558	Cassytha pubescens	M46			
1573	Acianthus reniformis	M46			
15425	Prasophyllum calcicola	M46			
4059	Lotus angustissimus	M46		*	
4289	Trifolium angustifolium	M46		*	
184	Aira caryophyllea	M46	KP	*	
249	Bromus diandrus BP	M46	KP	*	

13685	Catapodium rigidum	M46		
293	Danthonia occidentalis	M46		
573	Poa drummondiana	M46		
577	Poa poiformis	M46		
624	Spinifex hirsutus	M46		
625	Spinifex longifolius	M46		
1094	Loxocarya flexuosa	M46	KP	
7323	Galium murale	M46		*
7054	Dischisma arenarium	M46		*
6947	Anthocercis ilicifolia	M46	KP	
4390	Zygophyllum fruticulosum	M46		
192	Ammophila arenaria	MiMc46		*
10874	Thinopyrum distichum	MiMc46 = Agropyron		

Check Mark

TAXON	M 91	M 106	M46
VERBENACEAE			
*Phyla nodiflora		+	
VIOLACEAE			
Hybanthus calycinus	+		
XANTHORRHOEACEAE			
Xanthorrhoea preissii	+	+	
ZYGOPHYLLACEAE			
28 Zygophyllum fruticulosum	+	+	+

Stratum 2: Herbaceous perennials/Sedges. *Centella cordifolia*, **Cynodon dactylon*, *Lobelia alata*, *Juncus krausii*, **Sonchus* aff. *asper* (GK 11001)

(11) Limestone Heath

(A) *Acacia truncata* dominated

Stratum 1: Shrubs 70 cm — 1.5 m. *Acacia truncata*, *Templetonia retusa*, *Trymalium ledifolium*, *Dryandra sessilis*

Stratum 2: Shrubs 30 — 60 cm. *Melaleuca acerosa*, *Olax benthamiana*, *Grevillea thelemanniana*, *Melaleuca acerosa*, *Diplopeltis huegelii*, *Astroloma micracalyx*, *Stylidium* aff. *affine*, *Opercularia vaginata*

Stratum 3: Herbaceous perennials/Sedges. **Pelargonium capitatum*, *Lepidosperma angustatum*, *Loxocarya cinerea*, *Stipa flavescens*

Stratum 4: Herbs. **Euphorbia peplus*, **Anagallis arvensis*, *Daucus glochidiatus*, **Sonchus oleraceus*, **Petrorhagia velutina*, *Monotaxis grandiflora*, *Drosera macrantha*, *Calandrinia brevipedata*, **Galium aparine*

Number of species: 25, 6 aliens.

(B) *Eucalyptus foecunda* Mallee Shrubland

Stratum 1: Mallees 2 — 3 m (60% cover). *Eucalyptus foecunda*, *Olearia axillaris*, *Dryandra sessilis*, *Hardenbergia comptoniana* (vine), *Melaleuca acerosa*

Stratum 2: Shrubs to 1.5 m. *Allocasuarina humilis*, *Macrozamia riedlei*, *Olax benthamiana*

Stratum 3: Perennial Grasses/Sedges. **Ehrharta calycina*, *Conostylis aculeata*, *Loxocarya cinerea*, *Tetraria octandra*, *Acanthocarpus preissii*

Stratum 4: Herbs. **Ursinia anthemoides*, **Petrorhagia velutina*, *Triglochin calcitrapa*, *Crassula colorata*, *Isolepis cernua*, **Spergularia diandra*, **Anagallis arvensis*, **Cerastium glomeratum*, **Heliophila pusilla*

Number of species: 22, 7 aliens.

APPENDIX 2

VASCULAR PLANTS OF BOLD PARK

KEY: *INTRODUCED

Taxon	Vegetation Type: Swamp	Tuart	Jarrah	Banksia	Heath	Wattle	Limestone Heath	Disturbed Area
ZAMIACEAE								
Macrozamia riedlei (Fisher ex Gaudich.) C. Gardener			x	x	x			
PINACEAE								
**Pinus pinaster* Aiton			planta-tion					
**Pinus radiata* D. Don			planta-tion					
TYPHACEAE								
**Typha orientalis* C. Presl.	x							
JUNCAGINACEAE								
Triglochin calcitrapa Hook.				x	x	x	x	
Triglochin centrocarpa Hook.						x		
Triglochin striata Ruiz.	x							
POACEAE								
Agrostis avenacea J. Gmelin							x	
Agrostis preissiana (Nees) Vick.	x							
**Aira cupaniana* Guss	x	x						
Amphipogon turbinatus R. Br.				x				
Avena barbata Link			x	x	x	x		x
**Briza maxima* L.	x	x		x	x			
**Briza minor* L.	x		x	x				
Bromus arenarius Labill.				x	x			
**Bromus diandrus* Roth	x		x	x	x	x		
**Cynodon dactylon* (L.) Pers.	x							
**Ehrharta calycina* Smith		x	x	x	rare			x
**Ehrharta longiflora* Smith	x		x	x		x		
**Eragrostis curvula* (Schrader) Nees								x
**Hordeum leporinum* Link	x		x					
**Hyparrhenia hirta* (L.) Stapf.			x					
**Lagurus ovatus* L.	x		x	x		x	x	
**Lolium rigidum* Gaudin	x	x	x					
Microlaena stipoides (Labill.) R.Br.		x						
Neurachne alopecuroidea R.Br.				x				
**Pennisetum clandestinum* Hochst. ex Chiov.	x							
**Pennisetum villosum* R. Br. ex Fresen		x						
**Paspalum dilatatum* Poiret								x
**Phalaris canariensis* L.	x							x
Poa porphyroclados Nees			x				x	
**Polypogon monspeliensis* (L.) Desf.	x							
Sporobolus virginicus (L.) Kunth	x							
Stipa elegantissima Labill.		x			x		x	
Stipa flavescens Labill.				x	x	x	x	
**Stenotaphrum secundatum* (Walter) Kuntze								x
**Vulpia myuros* (L.) Gmelin	x			x				
CYPERACEAE								
Baumea juncea (R.Br.) Palla	x							
Bolboschoenus caldwellii (Cook) Sojak	x							
Carex preissii Nees		x						
Caustis dioica R.Br.				x				
Cyperus alterniflorus R.Br.	x							
Isolepis cernua (Vahl.) Rets				x	x		x	
Isolepis nodosa (Rottb.) R.Br.	x		x	x	x			
Lepidosperma angustatum R.Br.			x	x		x		
Lepidosperma gladiatum Labill.		x		x	x			
Lepidosperma longitudinale Benth.				x				
Lepidosperma scabrum Nees			x	x				

Taxon	Vegetation Type							
	Swamp	Tuart	Jarrah	Banksia Heath	Wattle	Limestone Heath	Disturbed Area
Lepidosperma sp. (GK 9258)	x		x				
Mesomelaena stygia (R.Br.) Nees				x			
Mesomelaena tetragona (R.Br.) Benth.				x			
Schoenus grandiflorus (Nees) F. Muell.				x			
Schoenus lanatus Labill.					x		
Tetraria octandra (Nees) Kuck.		x	x	x	x		
RESTIONACEAE							
Alexgeorgea nitens (Nees) Johnson et Briggs			x				
Loxocarya cinerea R.Br.				x	x	x	
Loxocarya fasicularis (R.Br.) Benth.						x	
CENTROLEPIDACEAE							
Centrolepis drummondiana (Nees) Walp.				x			
JUNCACEAE							
Juncus bufonius L.						x	
Juncus krausii Hochst.	x						
Juncus pallidus R.Br.	x						
COMMELINACEAE							
Cartonema philydroides F. Muell.				x			
ASPARAGACEAE							
Myrsiphyllum asparagoides (L.) Willd.		x		x	x	x	x
DASYPOGONACEAE							
Acanthocarpus preissii Lehm.		x		x	x	x	x
Lomandra maritima Choo				x	x	x	x
Lomandra preissii (Endl.) Ewart			x				
Lomandra purpurea (Endl.) Ewart			x				
XANTHORRHOEACEAE							
Xanthorrhoea preissii Endl.			x				
PHORMIACEAE							
Dianella divaricata R.Br.		x	x	x	x	x	
ANTHERICACEAE							
Arthropodium capillipes Endl.	x	x	x	x			
Caesia micrantha Lindl.			x	x			
Corynotheca micrantha (Lindl.) MacBride		x	x	x	x		
Sowerbaea laxiflora Lindl.			x	x	x		
Thysanotus patersonii R.Br.				x	x	x	x
Thysanotus sparteus R.Br.			x	x	x		
Tricoryne elatior R.Br.		x	x	x	x	x	
ASPHODELACEAE							
Asphodelus fistulosus L.		x	x				x
Trachyandra divaricata (Jacq.) Kunth		x			x		x
COLCHICACEAE							
Burchardia umbellata R.Br.			x	x	x		
Wurmbaea monantha (Endl.) T.D. MacFarlane					x	x	x
HAEMODORACEAE							
Anigozanthos humilis Lindl.				x			
Anigozanthos manglesii D. Don				x	x		

Taxon	Vegetation Type							
	Swamp	Tuart	Jarrah	Banksia Heath	Wattle	Limestone Heath	Disturbed Area
Conostylis aculeata R.Br.		x	x	x	x		
Conostylis candicans Endl.				x	x	x	
Haemodorum spicatum R.Br.			x	x	x		
Haemodorum paniculatum Lindl.			x				
AMARYLLIDACEAE							
*Crinum sp. (?powellii)							x
*Narcissus tazetta L.							x
AGAVACEAE							
*Agave americana L.		x					
IRIDACEAE							
*Chasmanthe floribunda (Salsb.)							x
*Freesia leichtlinii Klatt		x	x				
*Ferraria crispa Burm.							x
*Gladiolus caryophyllaceus (Burm.f.) Poir.				x	x		
*Gladiolus undulatus L.			x				
*Lapeirousia sp. (GK 10080)							x
Patersonia occidentalis R.Br.			x	x			
*Romulea flava (Lam.) De Vos			x				
*Romulea rosea (L.) Ecklon			x				
*Sparaxis bulbifera (L.) Ker Gawler	x		x				
*Watsonia sp.		x					x
ORCHIDACEAE							
Caladenia discoidea Lindl.	x						
Caladenia flava R.Br.			x				
Caladenia latifolia R.Br.	x						
Caladenia patersonii R.Br.				x	x	x	
Diuris longifolia R.Br.				x			
Eriochilus dilatatus Lindl.			x				
Microtis unifolia (G. Forst.) Reich.	x				x		
*Monadenia bracteata (SW.) T. Durande et Schinz			x				
Prasophyllum elatum R.Br.				x	x	x	
Pterostylis scaber Lindl. var. *robusta*						x	x
Pterostylis nana R.Br.					x		
Pterostylis vittata Lindl.		x		x			
CASUARINACEAE							
Allocasuarina fraseriana (Miq.) L.A.S. Johnson			x				
Allocasuarina humilis (Otto et Dietr.) L.A.S. Johnson				x	x		x
MORACEAE							
*Ficus carica L.		(persis-ting)	x				
URTICACEAE							
Parietaria debilis G. Forst.						x	x
PROTEACEAE							
Banksia attenuata R.Br.			x	x			
Banksia littoralis R.Br.	x						

Taxon	Swamp	Tuart	Jarrah	Banksia Heath	Wattle	Limestone Heath	Disturbed Area
Banksia grandis Willd.		x	x				
Banksia menziesii R.Br.				x			
Banksia prionotes Lindl.				x			
Conospermum triplinervium R.Br.				x			
Dryandra nivea (Labill.) R.Br.		x	x	x	x		
Dryandra sessilis (Knight) Domin.					x	x	
Grevillea crithmifolia R.Br.				x	x		
Grevillea thelemanniana Hueg. ex Endl.					x	x	x
Grevillea vestita (Endl.) Meisn.				x			
Hakea prostrata R.Br.				x	x	x	
Hakea rostrifolia Labill.		x		x			
Persoonia saccata R.Br.			x	x			
Petrophile linearis R.Br.			x	x			
Petrophile macrostachya R.Br.				x	x		
Petrophile serruriae R.Br.						x	
Stirlingia latifolia (R.Br.) Steudel			x	x	x		
SANTALACEAE							
Exocarpos sparteus R.Br.					x		
Santalum acuminatum (R.Br.) A.DC.					x		
OLACACEAE							
Olax benthamiana Miq.					x	x	
LORANTHACEAE							
Amyema miquellii (Lehm. ex Miq.) Tieg.							
POLYGONACEAE							
**Emex australis* Steinh.							x
**Rumex conglomeratus* Murray	x						
**Rumex acetosella* L.			x				
CHENOPODIACEAE							
**Atriplex prostrata* M. Bouch. ex DC.	x						
Rhagodia baccata (Labill.) Moq. ssp. *baccata*			x	x	x	x	
AMARANTHACEAE							
Ptilotus polystachyus (Gaud.) F. Muell.			x	x			
Ptilotus drummondii (Moq.) F. Muell.			x				
GYROSTEMONACEAE							
Gyrostemon ramulosus Desf.				x			
Tersonia cyathiflora (Fenzl.) George				x	x	x	
AIZOACEAE							
Carpobrotus virescens (Haw.) Schwantes					x		
**Carpobrotus edulis* (L.) L. Bolus		x	x	x			x
**Galenia pubescens* (Ecklon et Zeyher) Druce		x					
**Tetragonia decumbens* Miller		x					

Taxon	Swamp	Tuart	Jarrah	Banksia Heath	Wattle	Limestone Heath	Disturbed Area
PO[illegible]LACACEAE							
Calandrinia brevipedata F. Muell.				x	x		
Calandrinia corrigioloides F. Muell.			x	x	x		
Calandrinia laxiflora Fenzl.						x	
Calandrinia granulifera Benth.				x	x		
CARYOPHYLLACEAE							
**Cerastium glomeratum* Thuill.				x	x		
**Minuartia hybrida* (Vill.) Schischkin					x		
**Moenchia erecta* (L.) P. Gaert. Meyer et Scherb.						x	
**Petrorhagia velutina* (Guss.) P. Ball et Hayw.	x		x			x	x
**Silene gallica* L.				x		x	x
**Sagina apetala* Ard.				x	x		
**Stellaria media* (L.) Villars				x	x	x	x
RANUNCULACEAE							
Clematis microphylla DC.		x	x	x	x		
Ranunculus colonorum Endl.	x	x	x				
LAURACEAE							
Cassytha flava Nees.					x	x	
Cassytha racemosa Nees.			x	x			
FUMARIACEAE							
**Fumaria capreolata* L.		x			x		x
Fumaria muralis Sonder ex Koch		x	x		x		
BRASSICACEAE							
**Brassica tournefortii* Gouan					x	x	x
**Cakile maritima* Scop.							
**Diplotaxis muralis* (L.) DC.					x		
**Heliophila pusilla* L.f.	x			x	x		x
Stenopetalum robustum Endl.						x	x
DROSERACEAE						x	
Drosera erythrorhiza Lindl.			x	x			
Drosera glanduligera Lehm.						x	
Drosera macrantha Endl.			x	x	x		
Drosera sp. *?pallida* Lindl.					x		
Drosera stolonifera Endl.			x				
CRASSULACEAE							
Crassula colorata (Nees.) Ostenf.			x	x	x	x	
Crassula decumbens Thumb.		x					x
Crassula exserta (Reader) Ostenf.		x				x	
**Crassula glomerata* P. Bergius				x	x		
Crassula pedicellosa (F. Muell.) Ostenf.				x	x	x	
MIMOSACEAE							
Acacia cochlearis (Labill.) Wendl.				x			
Acacia cyclops A. Cunn. ex Don				x	x		x

Taxon	Swamp	Tuart	Jarrah	Banksia	Heath	Wattle	Limestone Heath	Disturbed Area
Acacia huegelii Benth.			x					
Acacia lasiocarpa Benth.					x	x	x	
Acacia pulchella R.Br.		x	x	x	x			
Acacia rostellifera Benth.				x	x		x	
Acacia saligna (Labill.) Wendl.	x	x	x	x				
Acacia truncata (Burm.f.) Hart ex Hoffsgg.						x	x	
Acacia xanthina Benth.						x		
Acacia willdenowiana H.L. Wendl.			x	x				
FABACEAE								
Bossiaea eriocarpa Benth.				x				
Cytissus proliferus L.f.								x
Daviesia divaricata Benth.				x	x			
Daviesia triflora M.D. Crisp		x	x	x				
Gompholobium tomentosum Labill.			x	x	x			
Hardenbergia comptoniana (Andr.) Benth.		x	x	x	x	x		
Hovea pungens Benth.			x	x				
Hovea trisperma Benth.			x	x	x			
Isotropis cuneifolia (Smith) Benth. ex Jackson			x	x	x	x		
Jacksonia densiflora Benth.		x	x					
Jacksonia sericea Benth.				x	x			
Jacksonia sternbergiana Huegel.		x	x	x	x			
Kennedia prostrata R.Br.		x	x	x	x		x	
Lupinus angustifolius L.		x	x					x
Lupinus cosentinii Guss.		x	x	x				x
Medicago polymorpha L.	x	x						x
Meliotus indica (L.) All.	x						x	
Oxylobium reticulatum Meisn.					x			
Sphaerolobium linophyllum (Huegel.) Benth.			x					
Templetonia retusa (Vent.) R.Br.					x	x	x	
Trifolium campestre Schreber	x							x
Trifolium cernuum Brot						x		
Trifolium glomeratum L.				x				x
Trifolium subterraneum L.								x
Vicia sativa L. ssp *sativa*	x		x					x
Vicia sativa ssp *nigra* (L.) Ehrh.	x	x	x	x				x
Vicia hirsuta (L.) Ehrh.	x		x	x				
GERANIACEAE								
Erodium moschatum (L.) L'Her.								x
Erodium cicutarium (L.) L'Her.				x	x			
Geranium molle L.	x						x	x
Pelargonium capitatum (L.) L'Her.		x	x	x	x		x	x
OXALIDACEAE								
Oxalis pes-caprae L.		x	x			x		x
Oxalis perennans Haw.		x						
POLYGALACEAE								
Comesperma confertum Labill.							x	
Comesperma calymega Labill.					x			
Comesperma integerrimum Endl.		x						
EUPHORBIACEAE								
Euphorbia peplus L.		x	x			x	x	x
Euphorbia terracina L.					x			x
Beyeria cinerea (Muell. arg.) Baillon						x		
Phyllanthus calycinus Labill.			x	x	x	x	x	
Poranthera microphylla Brongn.						x	x	
Ricinus communis L.		x						
STACKHOUSIACEAE								
Tripterococcus brunonis Endl.				x				
SAPINDACEAE								
Diplopeltis huegelii Endl.				x	x	x	x	
Dodonaea aptera Miq.					x			
MALVACEAE								
Lavatera cretica L.								x
Malva parviflora L.								x
STERCULIACEAE								
Thomasia triphylla (Labill.) Gray		x						
RHAMNACEAE								
Cryptandra barbuiflora Fenzl.							x	
Spyridium globulosum (Labill.) Benth.					x	x	x	
Trymalium ledifolium Fenzl.						x	x	
DILLENIACEAE								
Hibbertia cuneiformis (Labill.) Smith		x						
Hibbertia hypericoides (DC.) Benth.		x	x	x				
Hibbertia spicata F. Muell. ssp *leptotheca* J. Wheeler						x	x	
Hibbertia racemosa (Endl.) Gilg. (GK 10061 green form)				x				
Hibbertia racemosa (Endl.) Gilg. (GK 10063 glaucous form)				x	x		x	
CLUSIACEAE								
Hypericum gramineum G. Forster	x							
VIOLACEAE								
Hybanthus calycinus (DC. ex Ging.) F. Muell.			x	x	x			
THYMELAEACEAE								
Pimelea calcicola B.L. Bye							x	
Pimelea rosea R.Br.			x	x				
MYRTACEAE								
Agonis flexuosa (Sprengel) Schau.	x		x	x	x	x		
Calothamnus quadrifidus R.Br.			x	x	x		x	
Chamelaucium uncinatum Schau. in Lehm.					x			
Eucalyptus calophylla R.Br.		x	x					
Eucalyptus decipiens Endl.					x			

Taxon	Swamp	Tuart	Jarrah	Banksia Heath	Wattle	Limestone Heath	Disturbed Area
Eucalyptus foecunda Schau.				x	x		
Eucalyptus gomphocephala DC.		x		x		x	
Eucalyptus marginata Donn ex Smith			x				
Eucalyptus rudis Endl.	x						
Hypocalymma robustum Endl.			x	x			
Leptospermum laevigatum (Gaertner) F. Muell.				x			
Melaleuca acerosa Schau.				x	x	x	x
Melaleuca huegelii Endl.						x	x
Melaleuca incana R.Br.	x	x					
Regelia ciliata Schau.	x						
ONAGRACEAE							
**Oenothera drummondii* Hook.							x
APIACEAE							
Centella cordifolia (Hook.) Nannf.	x						
Daucus glochidiatus (Labill.) Fisch., Meyer et Ave-hall.		x			x	x	x
Homalosciadium homalocarpum (F. Muell.) Eichler			x	x	x		
Hydrocotyle diantha DC				x			
Eryngium rostratum Cav.		x	x				x
Trachymene coerulea R.A. Graham						x	x
Trachymene pilosa Smith			x	x	x	x	x
Xanthosia huegelii (Benth.) Steudel			x	x	x		
EPACRIDACEAE							
Acrotriche cordata (Labill.) R.Br.							x
Astroloma ciliatum (Lindl.) Druce			x				
Astroloma microcalyx Sond.							x
Astroloma pallidum R.Br.			x				
Conostephium pendulum Benth.			x	x			
Conostephium preissii Sond.			x	x	x		
Leucopogon australis R.Br.			x				
Leucopogon insularis A. Cunn. ex. DC.				x	x		
Leucopogon propinquus R.Br.			x				
Leucopogon ?polymorphus Sond.		x					
Lysinema ciliatum R.Br.			x	x			
PRIMULACEAE							
**Anagallis arvensis* L. var. *arvensis*		x				x	x
**Anagallis arvensis* L. var. *caerulea* Gouan		x		x	x	x	x	x
OLEACEAE							
**Olea europea* L.		x					
LOGANIACEAE							
Logania vaginalis (Labill.) F. Muell.		x				x	x

Taxon	Swamp	Tuart	Jarrah	Banksia Heath	Wattle	Limestone Heath	Disturbed Area
GENTIANACEAE							
**Centaurea erythraea* Rafn.					x	x	
VERBENACEAE							
**Phyla nodiflora* (L.) E. Greene	x						
ASCLEPIDACEAE							
**Gomphocarpus fruticosus* (L.) W.T. Aiton		x					
LAMIACEAE							
Hemiandra pungens R.Br. erect		x		x	x	x	x
**Stachys arvensis* (L.) L. prostrate				x	x		
SOLANACEAE							
Anthocercis littorea Labill.						x	
**Lycium ferocissimum* Miers		x					
**Solanum nigrum* L.	x	x					
**Solanum sodomaeum* L.		x					
Solanum symonii H. Eichler							
SCROPHULARIACEAE							
**Bellardia trixago* (L.) All.							
**Dischisma arenarium* E. Meyer et Scherb.				x	x		
**Parentucellia latifolia* (L.) Caruel							
OROBANCHACEAE							
**Orobanche minor* Smith	x	x	x	x	x	x	x
MYOPORACEAE							
Eremophila glabra (R.Br.) Ostenf.		x			x		
Myoporum insulare R.Br.		x			x		
Myoporum caprariodes Benth.	x						
RUBIACEAE							
**Galium aparine* L.				x		x	x
Opercularia vaginata Labill.			x	x	x	x	x
Opercularia hispidula Endl.	x						
VALERIANACEAE							
**Centranthus macrosiphon* Boiss.						x	
CAMPANULACEAE							
**Wahlenbergia capensis* (L.) A.DC.			x	x			
Wahlenbergia preissii Vriese				x	x		
LOBELIACEAE							
Lobelia alata Labill.	x						
Lobelia gibbosa Labill.					x		
Lobelia tenuior R.Br.			x	x			
GOODENIACEAE							
Lechenaultia linarioides DC.				x	x	x	x
Scaevola canescens Benth.		x	x	x	x	x	x
Scaevola crassifolia Labill.				R	x		x
Scaevola holosericea Vriese							
Scaevola thesioides Benth.					x		x
STYLIDIACEAE							
Stylidium brunonianum							

Taxon	Vegetation Type: Swamp	Tuart	Jarrah	Banksia	Heath	Wattle	Limestone Heath	Disturbed Area
Benth.								
Stylidium junceum R.Br.					x			
Stylidium macrocarpum (Benth.) R. Erickson				x	x	x		
Stylidium repens R.Br.				x				
Stylidium aff. *affine* (GK 9266)						x	x	
ASTERACEAE								
**Arctotheca calendula* (L.) Levyns		x						x
**Arctotis stoechadifolia* P. Bergius								x
**Aster subulatus* Michaux	x						x	
Asteridea pulverulenta Lindl.			x	x				
Brachycome iberidifolia Benth.							x	
**Carduus pycnocephalus* L.						x		
Conyza bonariensis L.								x
**Conyza canadensis* (L.) Cronq.	x	x						x
**Crepis foetida* L.						x	x	
**Cotula turbinata* L.								x
**Dittrichia graveolens* (L.) Greuter								x
Gnaphalium sphaericum Willd.						x	x	
Helichrysum cordatum DC.				x	x			
Helipterum cotula (Benth.) DC.						x	x	
**Hypochaeris glabra* L.				x	x	x	x	
**Lactuca saligna* L.	x							
**Lactuca serriola* L.	x							
Lagenifera huegelii Benth.			x					
Millotia myosotiidifolia (Benth.) Steetz.				x				
Olearia axillaris (DC.) F. Muell.				x	x			
Olearia rudis (Benth.) F. Muell.							x	
**Osteospermum clandestinum* (Lees.) Norlindh					x		x	x
Podolepis ?canescens Cunn. ex DC.			x					
Podotheca angustifolia (Labill.) Less					x	x	x	
Senecio lautus G. Forster ex Willd.			x		x		x	
**Senecio vulgaris* L.					x	x		
**Sonchus oleraceus* L.				x	x	x	x	x
**Sonchus ?asper* Hill (GK 11001)	x							
**Ursinia anthemoides* (L.) Poir.				x	x		x	x
**Urospermum picroides* (L.) Scop							x	
Waitzia aurea (Benth.) Steetz			x					
Waitzia suaveolens (Benth.) Druce					x	x		

APPENDIX 3

SPECIES PLANTED IN BOLD PARK

* = introduced species (note this includes non-native species)

\+ = native Australian species not naturally occurring in Bold Park

+*Acacia microbotrya*
+*Acacia ?saneera*
**Amaryllis belladona*
+*Anigozanthos x flavidus*
+*Banksia ashbyi*
+*Banksia baxteri*
+*Banksia burdettiana*
+*Banksia caleyi*
+*Banksia hookeriana*
+*Banksia laricina*
+*Banksia nutans*
+*Banksia occidentalis*
+*Banksia quercifolia*
Banksia prionotes (not the native population)
+*Banksia septrum*
+*Banksia sphaerocarpa*
+*Banksia speciosa*
+*Banksia victoriae*
+*Callistemon* cv. "Captain Cook"
+*Calothamnus sp.*
+*Casuarina obesa*
Chamelaucium uncinatum (several cultivars — not the native population)
+*Eucalyptus aff. foecunda*
+*Grevillea trilentifera*
**Genista alba*
+*Hakea laccidenta*
+*Hakea pandanana*
+*Hakea undulata*
+*Hakea lasiana*
+*Hakea cucullata*
+*Hakea petiolaris*
Hibbertia cuneiformis (not the native population)
+*Kunzea baxteri*
+*Eremophila decipiens*
+*Melaleuca cardiophylla*
+*Melaleuca diosmifolia*
+*Melaleuca lanceolata*
+*Melaleuca quinquenervia*
+*Melaleuca rhaphiophylla*
+*Melaleuca violacea*
+*Melaleuca sp.*
**Melia azederach*
**Myrsiphyllum declinatum* cv.
**Nerium oleander*
**Olea europea*
**Washingtonia filifera*
**Westringia dampieri*

VERTEBRATE FAUNA OF BOLD PARK, PERTH

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ABSTRACT

Bold Park, situated 11 km west of Perth and occupying coastal dunes, has the richest vertebrate fauna of any area in the metropolitan region. Sixty one birds, 29 reptiles, 3 frogs and 6 mammals (including 3 introduced species) have been recorded in the 300+ ha of bushland. Many additional bird species are associated with the adjacent wetlands of Perry Lakes. The endangered Black-lined Snake (*Vermicella calonotos*) and the Painted Button-quail, White-winged and Splendid Fairy-wrens are now very rarely seen in metropolitan areas. The significance of the Park as a conservation area for fauna is discussed.

INTRODUCTION

In the last decade there has been a remarkable upsurge in interest and commitment to the role of nature conservation in urban areas worldwide (Dickman & Doncaster 1987, Goode 1989 and references therein). Fundamental to this focus is the need for a thorough documentation of the natural resources in urban areas for both conservation and educational purposes (Feinsinger 1987). This paper documents the present day vertebrate fauna of one of the largest and least altered areas of natural bushland remaining in the Perth metropolitan area.

Bold Park occupies an area of over 300 ha and is situated close to the coast, 11 km west of Perth. The area is not only relatively large, but encompasses several landform and soil types and has a rich and diverse vegetation assemblage consisting of over 350 plant species Keighery *et al.* (1990). Maps in Keighery *et al.* indicate the location of Bold Park and the boundaries of the different vegetation associations.

Flora, Vegetation and Wetland Information for BOLD PARK as defined in the Kings Park and Botanic Garden Management Area

REGIONAL INFORMATION

LANDFORMS AND SOILS (Gozzard 1987)
Spearwood Dunes
Sands derived from Tamala Limestone (Qts: S7)
Tamala Limestone (Qtl: LS1)
Quindalup Dunes (Holocene dunes)
Safety Bay Sands (Qhs: S2)
Wetlands (within the Quindalup/Spearwood Dunes)
Holocene Swamp Deposits (Qhw: Cps)

VEGETATION AND FLORA
Vegetation Complexes (Heddle *et al.* 1980)
Vegetation Complexes
Spearwood Dunes (includes interface with the Quindalup Complex)
Karrakatta Complex — Central and South
Cottesloe Complex — Central and South
Quindalup Dunes
Quindalup Complex

Floristic Community Types (Gibson *et al.* 1994, DEP 1996 - types preceded by S are supplementary groups after DEP 1996)
Supergroup 2: Seasonal Wetlands
S7 Northern woodlands to forests over tall sedgelands alongside permanent wetlands
Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes
24 Northern Spearwood shrublands and woodlands
25 Southern *Eucalyptus gomphocephala* — *Agonis flexuosa* woodlands
27 Species poor mallees and shrublands on limestone
29b *Acacia* shrublands on taller dunes
30a2 Woodlands and shrublands on Holocene dunes (re-allocated from 30c after Gibson *et al.* 1994)
S11 Northern *Acacia rostellifera* — *Melaleuca acerosa* shrublands
S13 Northern *Olearia axillaris* — *Scaevola crassifolia* shrublands
S14 *Spinifex longifolius* grassland and low shrubland

WETLANDS (Hill *et al.* 1996 a&b)
Wetland Types: sumpland
Natural Wetland Groups
Spearwood Dunes
Balcatta (S.2)
Wetland Management Objectives: not assessed

Swan Coastal Plain Lakes EPP: Camel Lake

THREATENED ECOLOGICAL COMMUNITIES (English and Blyth 1997)
Not assessed

SPECIFIC AREA DETAIL

Landscape Features: coastal dunes, inland dunes, vegetated wetlands, limestone ridge

Vegetation and Flora: detailed survey (GJ Keighery *et al.* 1990, GJ Keighery and Keighery 1993, Kinhill Engineers Pty Ltd 1987, Mitchell McCotter and Ecoscape 1993); limited survey

(Dames and Moore 1986, Griffin 1993, 1994 (plots SW 01–11), Gibson *et al.* 1994 (plots Bold 01–04), G J Keighery 1996 (plots M46 01–02))

Structural Units: mapping (GJ Keighery *et al.* 1990, Mitchell McCotter and Ecoscape 1993, Kinhill Engineers Pty Ltd 1987)

Spearwood Dunes
Sands derived from Tamala Limestone: *Eucalyptus gomphocephala* Open Forest to Woodland; *Banksia attenuata* and *Banksia menziesii* Low Woodland; *Eucalyptus decipiens* Low Woodland; *Eucalyptus gomphocephala* and *Eucalyptus marginata* Woodland; *Eucalyptus marginata* and *Eucalyptus calophylla* Woodland; Closed Low Heaths and Closed to Open Heaths dominated by *Acacia truncata, Melaleuca acerosa, Calothamnus quadrifidus, Allocasuarina humilis* and combinations of these
Tamala Limestone: Closed Low Heaths, Closed to Open Heaths and Tall Scrub dominated by *Acacia truncata, Melaleuca acerosa, Calothamnus quadrifidus, Dryandra sessilis, Grevillea crithmifolia, Acacia lasiocarpa; A. xanthina* and combinations of these; *Eucalyptus foecunda* Closed Shrub Mallee
Wetlands: *Eucalyptus rudis* Woodland

Quindalup Dunes
Safety Bay Sands - Oldest dunes and plains: Open Low Heaths dominated by *Melaleuca acerosa, Acacia rostellifera, A. lasiocarpa, Calothamnus quadrifidus* over Herblands dominated by *Lomandra maritima; Allocasuarina lehmanniana* subsp. *lehmanniana* Closed Tall Scrub; Open Heaths dominated by *Melaleuca acerosa, Acacia rostellifera, Chamelaucium uncinatum, Calothamnus quadrifidus, Olearia axillaris, Acacia xanthina* and combinations of these over Herblands dominated by *Lomandra maritima; Agonis flexuosa* Low Closed Forest, *Acacia rostellifera* Closed Tall Scrub; *Eucalyptus gomphocephala* Woodland
Safety Bay Sands - Youngest dunes: Open Low Heaths to Closed Tall Scrub dominated by *Myoporum insulare, Scaevola crassifolia, Acacia rostellifera, Olearia axillaris* and combinations of these
Safety Bay Sands - Strand: *Spinifex hirsutus* Grassland

Scattered Native Plants (non bushland areas)**:** *Eucalyptus gomphocephala* Woodland; *Eucalyptus marginata* and *Eucalyptus calophylla* Woodland

Vegetation Condition (bushland areas only, codes after BJ Keighery 1994)**:** >60% Very Good to Excellent with <40% Good to Degraded

Total Flora: 268 native taxa, 134 weeds (compilation Gibson *et al.* 1994, GJ Keighery *et al.* 1990, GJ Keighery and Keighery 1993, Mitchell McCotter and Ecoscape 1993) (estimated 90% expected flora)

DRF/Priority flora (codes after Atkins 1998): *Beyeria cygnorum* (2), *Jacksonia sericea* (3), *Hibbertia spicata* subsp. *leptotheca* (3), *Stylidium maritima* ms (3)

Significant flora:
most southern populations - *Chamelaucium uncinatum, Melaleuca cardiophylla, Allocasuarina lehmanniana, Gyrostemon ramulosus* (uncommon on the Plain, poorly reserved)
most northern population - *Agonis flexuosa*

Species typical of Tamala Limestones (after GJ Keighery 1990) *Astroloma microcalyx, Grevillea crithmifolia, Grevillea preissii, Beyeria cygnorum, Melaleuca cardiophylla, Trymalium ledifolium* subsp. *ledifolium, Diplopeltis huegelii* var *huegelii, Stylidium junceum* (limestone variant), *Pimelea calcicola*

Some species with subspecific taxa/forms showing ecological preferences: *Rhagodia baccata, Nemcia reticulatum, Hemiandra pungens, Petrophile serruriae , Dryandra sessilis, Diplopeltis huegelii, Stylidium junceum, Hibbertia racemosa*

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CONSERVATION BRANCH
DEPARTMENT of ENVIRONMENTAL PROTECTION

Memorandum

ATTENTION:	Sean Collingwood/ Kieron Beardmore
FROM:	Karen Clarke/ Bronwen Keighery/ Gary Whisson
DATE:	25 July 2000
SUBJECT:	Proposed International School, Student Accommodation, Theatre & Sports Pavilion, Reserve 29923 Kalinda Drive, City Beach
FILE NO:	PB 127 Vol. 1

Please find attached the Vegetation Assessment Report for Reserve 29923 Kalinda Drive, the former City Beach High School site.

With specific regard to the development application referred on 30 May 2000 our advice is that development may not occur within any of the boundaries as published in Draft's Perth Bushplan with the exception of the area of non-native plantings near the southern boundary (shown as P on Map 1 attached). The reasons for this advice are outlined in the Vegetation Assessment Report.

To assist your discussions with the Education Department and their consultants comment is provided below on Landvision's submission to the Ministry for Planning on Reserve 29923.

ISSUES RAISED BY LANDVISION SUBMISSION

On behalf of the Education Department of Western Australia Landvision made a submission to the Bushplan Office of the Ministry for Planning dated 23 July 1999 requesting that the vegetation on Reserve 29923 be deleted from Perth's Bushplan. The Education Department has also approached the WA Planning Commission to change the zoning of the site from Special Purposes – High School to Urban in the MRS to allow for "possible future urban development".

Landvision engaged Alan Tingay & Associates to "report on the extent and quality of the bush on the City Beach site and its value in a regional context as a vegetation corridor". Following a site visit conducted on the 17 May 1999, Alan Tingay & Associates described and mapped eight structural vegetation units within the boundaries of Perth's Bushplan on the City Beach site, in the following condition (see Map 2):

Southern boundary –

- *Acacia truncata/ Melaleuca huegelii/ Hakea trifurcata* Closed Heath (AtMh), Good
- *Melaleuca huegelii/ Templetonia retusa* Closed Heath (MhTr), Good

- *Acacia xanthina* High Shrubland (At), Good
- *Melaleuca acerosa* Low Shrubland (Ma), Fair
- *Eucalyptus decipiens* Woodland? (Ed), Poor

Northern boundary -

- *Eucalyptus gomphocephala* Woodland (Eg), Good in the north-west corner, Poor in the north-east corner.
- *Olearia axillaris/ Melaleuca acerosa/ Acacia rostellifera* Open Heath (OaMaAr) with emergent *Eucalyptus gomphocephala* and *Banksia menziesii*, Good
- *Dryandra sessilis* Closed Heath (Ds), Good

Alan Tingay & Associates predicted that floristic community types (FCTs) 26a and 26b were present on the City Beach site. A number of floristic plots (10 x 10 m) have been sampled in this Bushplan site previously (Griffin 1994: Gibson *et al.* 1994: Keighery, GJ 1996) and floristic community types determined by ordination analysis. FCTs 26a and 26b were not found to occur in the area and it is unlikely that these are the communities present on the City Beach High School Site. Identifying FCTs allows comparison of regional conservation status for remnant bushland on the Swan Coastal Plain. FCT 26a is now listed as a Threatened Ecological Community.

On the basis of their assessment Alan Tingay & Associates recommended revised boundaries for Perth's Bushplan as shown on Map 2. The vegetation on the southern boundary was recommended for retention and the area in the south-east corner expanded to include all of the *Melaleuca huegelii/ Templetonia retusa* Closed Heath, *Melaleuca acerosa* Low Shrubland and *Acacia xanthina* High Shrubland. All the remaining vegetation on the site was excluded from their proposed boundary.

Landvision acknowledged that the original Draft Perth's Bushplan boundaries were reasonably accurate and based on good quality vegetation. However, they concluded that all of the vegetation on Reserve 29923 should be deleted from Bushplan stating that none of the vegetation was regionally significant because:

1. the vegetation is well represented and protected in Bold Park adjacent to Reserve 29923, in particular the limestone heath occurs as scattered stands throughout Bold Park (Keighery *et al* 1990),
2. 15% of the Cottesloe – Central and South Vegetation Complex is already protected satisfying the Government's objective of protecting at least 10% or 400 ha of each Complex.

They also stated that the "adjacent Bold Park satisfies the objective in Bushplan of protecting the geomorphic range of this vegetation complex".

As discussed in the attached Vegetation Assessment Report the vegetation communities present at the school site are *not* well represented and protected in Bold Park. In addition, they are in very good condition and part of the high conservation value Spearwood vegetation identified in Bold Park. Therefore, the vegetation on the school site *is* regionally significant and an important part of a large consolidated area of regionally significant bushland.

The Government's objective is to protect *at least* 10% of each vegetation complex as a broad objective. There is a great deal of variation in the plant communities within each complex and selection of areas for inclusion in Perth's Bushplan is based on a number of detailed scientific criteria as explained in Volume 2A of Perth's Bushplan.

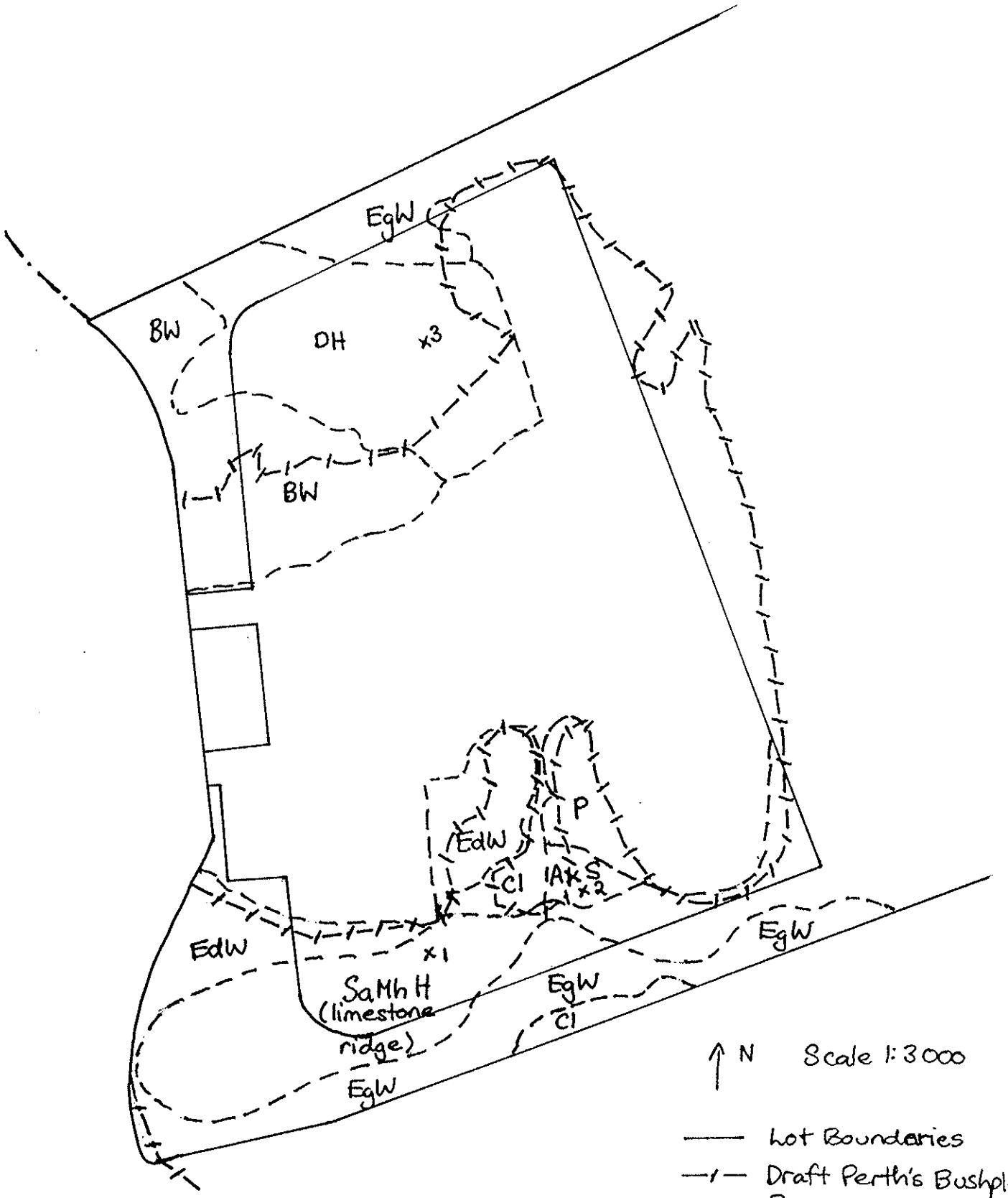
The previous advice by the DEP dated 30/3/00 (see Appendix 3 of the Vegetation Assessment Report) acknowledges Landvision's comment that several degraded areas occur within the boundaries published in Draft Perth's Bushplan. However, the only area that

could be removed from within the Bushplan boundary on the site is the area of non-native plantings (shown as P on Map 1).

To ensure the conservation values of the regionally significant vegetation on Reserve 29923 are maintained, any development of area will need to address the following:

- clear delineation of the boundary between Bold Park and Reserve 29923 (preferably by fencing) to control access to Bold Park
- fencing of the regionally significant bushland to minimise disturbance
- provision of a small number of access points and pathways in the bushland to allow controlled access
- encourage natural regeneration through control of access and management of invasive weeds, especially after fire
- restrict keeping of pets on site to control predation
- landscape (and if necessary revegetate) only with local native species using locally sourced propagation material (seeds/cuttings)

In the original development application, received by the Ministry for Planning on 15 February 2000, it was stated that "all existing natural vegetation outside the immediate building footprint will be retained and enhanced with compatible species to extend the bushland theme". Natural vegetation should not need *enhancing* unless major disturbance occurs during construction and areas are left bare or severely depleted of species. It is far better to allow natural regeneration to occur through, for example, the control of weeds. In severely degraded areas revegetation through planting may be necessary. A list of proposed revegetation species was provided indicating tube stock will be used. It must be checked that all these species actually occur on Reserve 29923 and if not, other species selected. Under no circumstances should *Chamelaucium uncinatum* be planted as it could contaminate the gene pool of the locally occurring variant of this species in Bold Park. *Chamelaucium uncinatum* does not appear to naturally occur on Reserve 29923. It must be ensured that all tube stock is grown from locally sourced seeds or cutting material using local variants of the native species. Propagation must be undertaken by a reliable supplier so that no weed or disease organisms are introduced that could spread to the natural bushland.



EdW Eucalyptus decipiens Woodland
EgW Eucalyptus gomphocephela Woodland
SaMhH Scaevola anchusifolia/Melaleuca huegelii Heath
AxS Acacia xanthina Shrubland
BW Banksia Woodland
DH Dune Heath
P Non-native plantings
Cl Cleared

Map1 : Vegetation Map (DEP 2000)

BUSHPLAN/SOURCE/WESTERN AUSTRALIAN PLANNING COMMISSION 11-98

CITY BEACH SENIOR HIGH SCHOOL SITE BUSHPLAN SUBMISSION

SITE PLAN

FIGURE 1

Alan Tingay & Associates

environmental scientists

Map 2 - Alan Tingay & Associates Vegn Map

Photo 1:
Looking towards the school from the top of the oval near Oceanic Drive.
Area in proposal to be cleared for residential purposes

Photo 2: One of the areas of veg'n near the school oval which is to be kept. All introduced species

Photo 3: area near tennis court to be cleared for residential under the proposal.

Photo 4: looking from tennis court into another area to be cleared. Burnt out on the day before the site visit (27/2/00)

Photo 5: back towards the oval from the end of the area to be developed

Photo 6: just outside the bushplan site. Area between the school buildings & the oval.

Photos 7 & 8. Area to be cleared under Proposal.
Between School car park & oceanic drive.

BOLD PARK

Natural Heritage

KINGS PARK & BOTANIC GARDEN

Importance:

- Bold Park, currently 436 ha, is the largest remaining bushland remnant in the urban area of the Swan Coastal Plain. Kings Park is only slightly smaller, covering 404 ha.
- The hilly terrain of woodland and heath supports a number of habitats for wildlife, including hundreds of species of insects. Together insects and plants provide the basis of a complex food chain involving all the amphibians, reptiles, birds and mammals in the bushland.
- The recreation value of Bold Park is high, attracting both regional and local patrons. Its network of walk trails gives easy access to more than 200,000 visitors each year. People come to enjoy the bushland's quiet beauty as well as the panoramic views over city and ocean. One of the unique features of Bold Park is Reabold Hill which, as the highest natural point on the Swan Coastal Plain (at 93m above sea level), provides a focal point for visitors.
- The educational value of Bold Park is highly rated because of the diverse flora and fauna, and its location in the metropolitan area.
- Bold Park provides important linkages to other bushland areas, including the coast and remnant vegetation within Commonwealth land (Army facilities and Rifle Range) to the south-west; Perry Lakes, Wembley Golf Course and Herdsman Lake to the north; Shenton Park Bushland and Kings Park to the east; and Cottesloe Golf Course and Lake Claremont to the south. These linkages provide corridors for fauna to move between these areas, particularly when seeking refuge from disturbance events.

Vegetation:

- Bold Park has a diverse range of plant communities, including coastal heaths not well represented elsewhere. Tuart and Banksia woodlands occupy most of the bushland. Plant species richness varies throughout the area from 8 to 42 species per $100m^2$.
- A total of 399 flora species have been recorded in Bold Park (266 native species and 133 exotic species).
- Eighteen plant species have been identified as regionally significant by CALM and four species are listed as Priority Species.
- Bold Park is home to a relatively rare variant of Geraldton Wax (*Chamelaucium uncinatum*) - dubbed "Wembley Wax".
- Park borders have been selected to incorporate a stand of Fremantle Mallee (*Eucalyptus foecunda*) which is poorly represented in the metropolitan area.

- A number of plant species, native to Australia, have been introduced into the Park, including 20 species of non-local Proteaceae.
- Major weed invasion occurs in parts of Bold Park, with perennial veld grass and bridal creeper being particularly prevalent.

Fauna:

- Three mammal species occur in the area: the Common Brushtail Possum (*Trichosurus vulpecula*) and two bat species, the White-striped Mastiff Bat (*Tadorida australis*) and Goulds Wattled Bat (*Chalinolobus gouldii*).
- A small number of Western Grey Kangaroos (*Macropus fuliginosus*) lived in the Park up until 1986, when they were probably killed by dogs or vehicles.
- Introduced mammal species found in the Park include cats, rabbits, foxes, house mice and the black rat. Horses and domestic dogs, though not resident, are regularly exercised.
- Three frog species have been recorded in the Park: the Banjo Frog (*Limnodynastes dorsalis*), Moaning Frog (*Heleioporus eyrei*) and Turtle Frog (*Myobatrachus gouldii*).
- There are at least 29 reptile species in the Park (22 lizards, one species of blind snake and six species of elapid snake). The bushland is unique in that it has all five species of burrowing snake known on the Swan Coastal Plain, one being the rare and endangered Black Striped Snake (*Vermicella colonotus*).
- The diversity within different reptile groups in the study area is high and suggests that the reptile fauna has been relatively unaffected by European settlement and the subsequent habitat alteration and fragmentation.
- Bold Park has a rich avifauna with 77 bird species recorded. There are three specific groups of birds which warrant special interest:
  - The Mount Claremont Bushland (the southerly portion of Bold Park) is the only area in Perth in which the Splendid Fairy-wren (*Malurus splendens*), Variegated Fairy-wren (*Malurus lamberti*) and White-winged Fairy-wren (*Malurus leucopterus*) all occur together.
  - The second group of birds in the area of special interest are honeyeaters, which are so numerous in parts of Bold Park, that the area has been termed "Honeyeater Hill".
  - There are nine species of birds of prey present in total, including the Peregrine Falcon (*Falco peregrinus*), which is relatively rare and classified as in need of special protection. The relatively large size of Bold Park bushland is particularly important for these birds, because they feed over large territories.
- While very little has been documented on the invertebrate communities at Bold Park, it is believed that the area is very rich in invertebrate species.

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BOLD PARK

Cultural Heritage

KINGS PARK & BOTANIC GARDEN

General History:

- Bold Park was named after William Ernest Bold, the Town Clerk of the City of Perth from 1900-1944 (the longest serving Town Clerk for the City of Perth). His name is also incorporated into "Reabold Hill" along with Mr Frank R. Rea, the Mayor of Perth at the time.
- *Endowment Lands*
  - In 1902, the City of Perth was granted 2,281 acres near the ocean (seafrontage, 3 miles), which became known as the Endowment Lands (In 1994, the Endowment Lands were transferred to the Town of Cambridge. Bold Park is located within the boundaries of the Town of Cambridge).
- *Perry House/Limekilns Estate*
  - In 1839, Henry Trigg was granted 500 acres of land around the current Perry House. He established quarrying and lime burning works on the land. The quarry has now become The Quarry Amphitheatre and the lime-kilns are hidden by bush in the hillside near Perry House.
  - In 1844, Walter Padbury bought Reabold Hill and the surrounding lands, an area consisting of 1,234 acres, which became known as the Limekilns Estate. He slaughtered there for many years in connection with his butchering business at the corner of St. Georges Tce and King St, now the site of Padbury House.
  - In 1869, the land was sold to the Birch brothers who reportedly planted a vineyard and also used the slaughter house.
  - Joseph Perry purchased the entire estate in 1879, established horse-breaking and stock dealing, and lived in a stone cottage further east of the present Perry House.
  - In 1917, Perth City Council bought the Limekilns Estate (then about 1,290 acres) for £18,000. At this time the Council recommended that a park, incorporating Reabold Hill and nearby land, be set aside, and pines were planted in the area as a park feature.
- In 1918, the Endowment Lands, Limekilns Estate and a Beach Reserve were included within the boundaries of the City of Perth.
- Perry House was built for the caretaker of the Endowment Lands in 1919.
- 1920 saw the beginning of development of the area (housing, etc).
- In 1936, the Perth City Council stated that "a park of 1,000 acres in extent be set apart for the people of Perth forever between Floreat Park and City Beach Estate."
- Bold Park has been surrounded by suburban housing since the 1960's, roughly 40 years.

Management/Handover History:

- The future of Bold Park has been a public issue since the mid-1980s.
- In 1983, the Environmental Protection Authority, in its comprehensive System 6 Study, recommended that Bold Park and adjacent bushland be preserved because of its high conservation, recreation and education value.
- In 1987, the Friends of Bold Park Bushland was formed as a community lobby group to oppose plans to urbanise some of the area and to have the parks boundaries extended to reflect the System 6 recommendations.
- In 1995, the Court Government, together with the Town of Cambridge, announced their intention to create Bold Regional Park. To create the new park, the Town of Cambridge would gift freehold land comprising the total area of Bold Park to the State Government, so it could be developed as a park for all Western Australians. The Town of Cambridge would also provide additional freehold land, to be sold to provide funding for the future management of the park. A further 19 ha was also included. This was known as the Knightsbridge Land and was purchased for $3.5 million by the State Government.
- At the time of the announcement, the Hon. Premier Richard Court said that Bold Regional Park would have a total area of 465 ha - bigger than Kings Park's 404 ha - and would be listed as an 'A' Class Reserve. It would be managed by the Kings Park Board.
- On March 5, 1998, the Premier announced that negotiations for placing Bold Park under the control of the Kings Park Board were complete.
- In return, His Worship The Mayor of the Town of Cambridge, Mr Ross Willcock JP, signed over the deeds of the former endowment land to the State on July 8, 1998.
- The launch, held on the 15th August 1998, celebrated the handover of Bold Park (currently 436 ha) from the Town of Cambridge to the State Government for management by Kings Park and Botanic Garden.
- The Government has announced that both Kings Park and Bold Park will, under new legislation currently before Parliament, be managed by a Botanic Gardens and Parks Authority, which will replace the Kings Park Board.

Historic Sites:

- **Camel Lake** owes its name to the fact that camels were quarantined at this site during the years of the gold-rush when they were imported for use on the goldfields. Distinct circular marks of tethering are evident on some of the trees. Ernest Giles rested and watered his camels here after his epic journey from Port Augusta to Perth in May 1875.
- As Perth developed, Aborigines who inhabited the area were forced to find new campsites, one of which was at the south-east corner of Bold Park. A **fig tree** planted here remains as a symbol of those times.
- As mentioned above, the present **Perry House** was built for the caretaker of the Endowment Lands in 1919.

(Sources: Battye Library,Perth,Western Australia; Black,J (unpubl.) *Perry House: its past and present.;* Friends of Bold Park Bushland (1989) *Bold Park and Adjacent Bushland.*Friends of Bold Park Bushland, Perth, Western Australia; Mitchell McCotter & Ecoscape (1993) *Bold Park and Environs Public Environmental Review.* Perth City Council, Western Australia; Ministry for Planning (1995) *Introducing Perth's Major New Park: Bold Regional Park.* Ministry for Planning, Perth, Western Australia; Town of Cambridge (1995) Bold Plan to double size of Bold Park,pp1-4. *Town of Cambridge News, March 1995.*Town of Cambridge, Perth, Western Australia). *Prepared by Kings Park & Botanic Garden in conjunction with the Town of Cambridge, August 1998. Edited by Jodi Mansell, Kings Park & Botanic Garden.*

MEDIA STATEMENT

PREMIER OF WESTERN AUSTRALIA

P98/144

15/8/98

Perth's reputation as one of the world's premier 'Green Cities' has been reinforced today with the transfer of more than 436ha of prime urban bushland to the people of Western Australia.

At a ceremony to mark the transfer of Bold Park from the Town of Cambridge to the State Government, Premier Richard Court said the people of WA would play an important role in the ongoing management of the bushland area.

Bold Park is a unique area of bushland which is larger than Kings Park and extends from the ocean through suburban City Beach and Floreat towards Perry Lakes and the city.

Mr Court said the transfer was a significant step in securing the future of the park and Perth's international reputation as a city of unique natural beauty.

"The inclusion of Bold Park in our city's urban bushland formalises an important link in the city's greenway stretching across Perth from east to west," he said.

"Bold Park and Kings Park make Perth truly one of the world's most beautiful green cities."

Bold Park contains an estimated 228 native plant species including some of priority and regional significance, a variety of landforms, spectacular views and the metropolitan area's richest array of vertebrate fauna including brushtail possums, reptiles and birds.

Mr Court congratulated the Town of Cambridge for its efforts in managing the park and in transferring the land to the State under the care of the Kings Park Board.

GOVERNMENT OF WESTERN AUSTRALIA
197 ST GEORGE'S TERRACE, PERTH, WESTERN AUSTRALIA, 6000.
MEDIA SECRETARY: TELEPHONE (09) 222 9475. FAX 322 1213

"I thank the Town of Cambridge for its past work in the management of Bold Park and commend the council's foresight in allowing a more specific conservation management to occur," he said.

A specialist Bold Park bushland team has been formed which will be part of the new Botanic Gardens and Parks Authority to be established through an Act of Parliament, replacing the Kings Park Board, later this year.

"Importantly, the people of WA will play an integral role in planning the park's future via a community consultation process which will eventually determine an overall management plan," the Premier said.

Mr Court also acknowledged the committed work of the Friends of Bold Park Bushland, who were involved over a number of years in helping to create and now preserve the park. Special tribute was also paid to the family of Mr William Bold, after whom the park was named.

"Many people have invested their time, energy and hearts in the preservation of Bold Park and today's transfer ceremony is in part a tribute to their dedication," he said.

****

Subm 1968

BS 312

Attachment N:
1 of 2

PERTH'S BUSHPLAN

PB127

185

Submission from the City of Nedlands

Bold Park **Bushplan Site 312**

The City of Nedlands has a small portion in the south eastern corner of Bold Park. This land is currently reserved for Parks and Recreation within the Metropolitan Region Scheme. The area has regional significance as a flora and fauna reserve. The City of Nedlands supports the inclusion of this area as a Bushplan site, and endorses the recommendations in Volume 2 Part B page 294 of Perth's Bushplan.

Shenton Bushland **Bushplan Site 218**

This area is currently zoned for light industrial use, however there is a proposal to amend the zoning to Parks and Recreational use. The City of Nedlands has actively encouraged a support group "The Friends of Shenton Bushland" in their efforts to ensure the conservation of this area. The City supports the inclusion of this area as a Bushplan site, and endorses the recommendations in Volume 2 Part B page 296 of Perth's Bushplan.

The City also supports the inclusion of bushland remnants adjoining the proposed Bushplan site. These comprise a strip of bushland down the eastern side of Shenton Bushland, part of the Lemnos hospital and Stubbs Terrace hospital grounds, and remnant bushland on the southern side, part of Irwin Barracks. Inclusion of these areas should be with the co-operation of the landowners.

Underwood Avenue Bushland **Bushplan Site 219**

This area is owned by UWA and is currently used for agricultural research. There are some pockets of localised severe degradation within this site, however the area has high conservation value due to the proximity of Shenton Bushland Site 218, and its potential as part of Greenway 20 a green corridor linking Bold Park, Lake Claremont and Allen Park bushland. The City is aware that the UWA have plans to develop this site, and endorses the recommendations on Volume 2 Part B page 294 of Perth's Bushplan that "the most appropriate mechanism for this Bushplan Site be considered through the public comment period in consultation with the land owner(s)".

Swanbourne Bushland **Bushplan Site 315**

This area within the City of Nedlands comes mainly within the jurisdiction of the Commonwealth Government and the Water Corporation, but also includes the majority of a small triangle of land (area 1, Map 55), owned in fee simple by the City and currently a Local Scheme Reserve. This is an important coastal section of Quindalup Dune and its conservation should be a high priority. In principle the City of Nedlands supports the inclusion of this area as a Bushplan site and endorses the recommendations in Volume 2 Part B page 346, although with some reservations (refer to general comments section below).

The City also supports the inclusion of bushland contained in Allen Park an area adjacent to this Bushland site. Its inclusion is warranted on the grounds that it is currently listed by the National Trust of Australia, contains a high level of bio-diversity and its potential as part of Greenway 20 linkage to the Lake Claremont wetland area.

BS 312 Subm 1945 42

Area [redacted] – Bold Park and Adjacent Bushland

It is pertinent to mention that the creation of Bold Regional Park was made possible by the Town of Cambridge gifting approximately 470 ha of freehold land. Bold Park is now secured as one of the most significant regional bushland areas in metropolitan Perth and, as such, the Town would expect it to be included in a Regional Bush Plan. The inclusion of Perry Lakes Stadium and the cleared area on the southern side of Underwood Avenue, known as AK Reserve, however, is queried. Again, these properties are owned freehold by the Town of Cambridge and in this case, have both been fully cleared.

The future of athletics at Perry Lakes Stadium is under question and should they be relocated, the land is viewed by the Town as having development potential. Similarly, AK Reserve, which is mostly used for overflow parking for major events at Perry Lakes Stadium at present, and lies between University development, CSIRO offices and the Superdrome, is seen being most suitable for future development.

It is submitted that these areas taken out of Area 312.

[redacted] – Swanbourne Bushland

This area, insofar as it is in the Town of Cambridge, is included in Bold Park and as with the remainder of the Park, is under the control and management of the Kings Park Board. The Town has no objection to its inclusion in the Bush Plan.

Other Native Vegetation

With regard to the areas identified as Other Native Vegetation, the Town would appreciate the opportunity to further discuss the implications of Perth Bush Plan on these areas.

Conclusion

In summary, the Town is fully supportive of the principle of a Metropolitan Region Bush Plan. As mentioned above, the Town has made a quite extraordinary contribution to the preservation of natural bushland through provision of the land for the creation of Bold Regional Park.

There are some aspects of the Plan, however, which are of some considerable concern to the Town concerning our freehold land holdings. In relation to these, we would seek the opportunity to make further submissions before the finalisation of the Bush Plan.

I would welcome the opportunity to further discuss the Town's position in regard to its freehold land assets prior to any final decision being made. The Town looks forward to your response on these matters.

Yours sincerely

GRAHAM D PARTRIDGE
CHIEF EXECUTIVE OFFICER

System 6 Update - Floristic Community Type Mapping Information DRAFT ONLY

AREA INFORMATION

System 6 Area (C or M) or Update Area (Update) M47

Conservation Area	Boyd Park
Nature Reserve	
Reserve No	
National Park	
Reserve No	
Local Government	
Reserve No	
Other	
Proposed Conservation Areas	
Local Government	
Reserve No	
Other	

Conservation Area	
Nature Reserve	
Reserve No	
National Park	
Reserve No	
Local Government	
Reserve No	
Other	

AREA

Total Area	hectares
Completely Degraded	hectares
comments:	

AREA MAPPED FLORISTIC UNITS Boundaries: System6 CALM

Units	Site (Condition) Code	Bound	Area (ha)	Area(ha)

Boundaries determined by use of

aerial photograph	MRA Run 8 580
orthophoto	Run 7 583 585 589
vegetation map	Run 6 6004
soil map	

BS 3,2

R. A. O. U. TRACKING DATABASE

23/06/96 PARK SIGHTINGS REPORT Page No. 1

Perry Lakes/Bold Park (M47)

ORDER:	REF:	BIRD NAME		NO. SIGHTINGS
0018	0216	Blue-billed Duck	3	2
0019	0217	Musk Duck	3	3
0022	0203	Black Swan		14
0025	0207	Australian Shelduck		10
0028	0202	Australian Wood Duck		1
0031	0948	Mallard		10
0032	0208	Pacific Black Duck		15
0033	0212	Australasian Shoveler	3	3
0035	0211	Grey Teal		9
0039	0213	Pink-eared Duck	3	2
0040	0215	Hardhead	3	1
0041	0061	Australasian Grebe		7
0042	0062	Hoary-headed Grebe		1
0128	0101	Darter		1
0129	0100	Little Pied Cormorant		3
0132	0097	Little Black Cormorant		5
0133	0096	Great Cormorant		1
0135	0106	Australian Pelican		7
0139	0188	White-faced Heron		4
0142	0189	White-necked Heron		1
0145	0187	Great Egret		4
0157	0179	Australian White Ibis		1
0160	0182	Yellow-billed Spoonbill		3
0165	0232	Black-shouldered Kite	4	8
0170	0228	Whistling Kite		1
0174	0219	Swamp Harrier		2
0175	0221	Brown Goshawk	4	7
0177	0222	Collared Sparrowhawk	4	1
0181	0225	Little Eagle	4	9
0182	0239	Brown Falcon		1
0183	0235	Australian Hobby		1
0186	0237	Peregrine Falcon		1
0187	0240	Nankeen Kestrel	1	2
0200	0051	Spotless Crake		2
0204	0058	Purple Swamphen		14
0205	0056	Dusky Moorhen		15
0208	0059	Eurasian Coot	3	15
0215	0014	Painted Button-quail	4	2
0231	0158	Common Greenshank	2	2
0233	0154	Wood Sandpiper	2	1
0244	0162	Red-necked Stint	2	1
0249	0163	Sharp-tailed Sandpiper	2	1
0251	0161	Curlew Sandpiper	2	1

0267	0146	Black-winged Stilt	7
0269	0148	Red-necked Avocet	4
0271	0136	Grey Plover 2	1
0275	0143	Red-capped Plover	1
0282	0144	Black-fronted Dotterel	5
0285	0135	Banded Lapwing	1
0286	0133	Masked Lapwing	1
0288	0173	Australian Pratincole	1
0297	0125	Silver Gull	12
0324	0957	Rock Dove	3
0326	0988	Laughing Turtle-Dove	13
0327	0989	Spotted Turtle-Dove	4
0356	0794	Short-billed Black-Cockatoo } 1	3
0356A	1266	White-tailed Black-Cockatoo }	6
0[illegible]9	0273	Galah	17
0360	0272	Long-billed Corella	1
0362	0271	Little Corella	12
0364	0269	Sulphur-crested Cockatoo	1
0366	0254	Rainbow Lorikeet	13
0366A	0255	Red-collared Lorikeet	1
0386	0294	Australian Ringneck	23
0387	0290	Red-capped Parrot	6
0405	0337	Pallid Cuckoo	1
0408	0338	Fan-tailed Cuckoo	3
0411	0344	Shining Bronze-Cuckoo	3
0429	0313	Tawny Frogmouth	1
0441	0335	Fork-tailed Swift	1
0446	0322	Laughing Kookaburra	18
0451	0326	Sacred Kingfisher	4
0453	0329	Rainbow Bee-eater	7
0489	0565	Spotted Pardalote	4
0492	0976	Striated Pardalote	18
0[illegible]12	0465	Weebill 3	18
0[illegible]17	0463	Western Gerygone	17
0524	0476	Inland Thornbill 3	6
0528	0472	~~Western Thornbill~~ 3	2
0531	0486	Yellow-rumped Thornbill 3	5
0537	0638	Red Wattlebird	23
0539	0637	Little Wattlebird 4	3
0561	0608	Singing Honeyeater	19
0580	0578	White-naped Honeyeater 4	2
0583	0597	Brown Honeyeater	18
0587	0631	New Holland Honeyeater 4	1
0588	0632	White-cheeked Honeyeater 4	19
0597	0592	Western Spinebill	12
0613	0380	Scarlet Robin 3	1
0644	0549	Varied Sittella 3	3
0650	0398	Golden Whistler 3	2
0653	0401	Rufous Whistler	16
0658	0408	Grey Shrike-thrush 3	1
0671	0415	Magpie-Lark	12

① 2
② 6
③ 13
④ 8

0673	0561	Grey Fantail	10
0676	0364	Willie Wagtail	12
0678	0424	Black-faced Cuckoo-shrike	14
0695	0702	Grey Butcherbird	17
0698	0705	Australian Magpie	23
0706	0930	Australian Raven	22
0761	0358	White-backed Swallow	1
0763	0357	Welcome Swallow	13
0765	0359	Tree Martin	12
0768	0524	Clamorous Reed-Warbler	5
0772	0522	Little Grassbird	1
0781	0474	Silvereye	18

)

*** END OF REPORT ***

)

SUMMARY REPORT

TOTAL BIRDS SIGHTED	:	106
TOTAL NUMBER OF CARDS	:	23

*** END OF SUMMARY ***

- SURVEY RECORDING SHEET Please use pencil

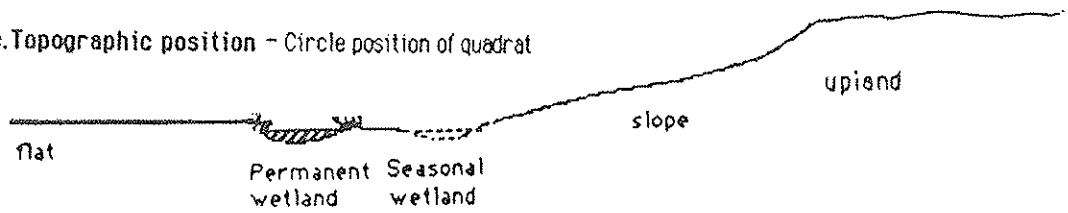
QUADRAT No. [illegible] VEGETATION TYPE [illegible]
DATE FIRST TRIP [illegible] VOLUNTEERS
DATE SECOND TRIP [illegible] VOLUNTEERS [illegible]
BOTANIST [illegible]

1. LOCATION of the QUADRAT

a. Mud Map Draw a sketch of the location of the quadrat the back of this sheet →

b. Photograph Photographer's name _____

c. Topographic position - Circle position of quadrat



Keighery and Keighery, 1990
Adapted from Griffin and Keighery, 1989
MOORE RIVER to JURIEN SANDPLAIN
SURVEY. WILDFLOWER SOCIETY of WA

2. SITE DATA - Circle the correct response

Slope flat gentle steep Aspect N NE E SE S SW W NW

% Bare ground____ Drainage well mod poor Wet All year winter/spring

Litter (% cover)____ Surface soil_____ Sub-surface soil _____

3. VEGETATION STRUCTURE AND COVER Record appropriate cover class

Cover Class - percentage classes: 0% | under 2% | 2-10% | 10-20% | 20-30% | 30-50% | 50-70% | over 70%

LIFE FORM				
TREES		MALLEES		15m
>15m or 5-15m	under 5m	MALLEE SHRUB less than 8m	MALLEE TREE 8m or more	10m / 5m
COVER CLASS (%)	>15m / 5-15m			

LIFE FORM						
SHRUBS						
	over 2m	2.0-1.5m	1.5-1.0m	1.0m - .5m	under .5m	3m / 2m / 1m
COVER CLASS (%)						

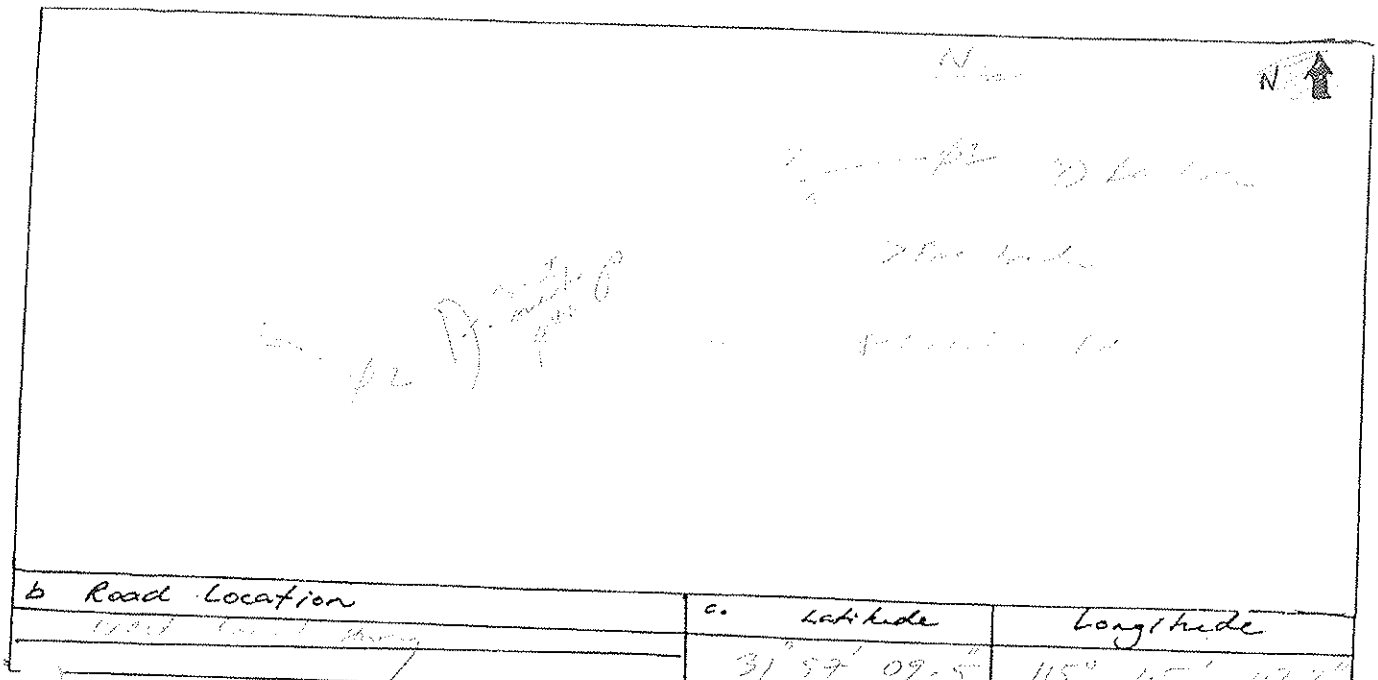
Height (metres)

LIFE FORM				
BUNCH GRASSES	HERBS	SEDGES		2.0m
under .5m	under .5m (except creepers)	over .5m	under .5m	1.5m / 1.0m / .5m
COVER				

LOCATION OF THE QUADRAT

a. **Mud Map** Draw a sketch of the location of the quadrat

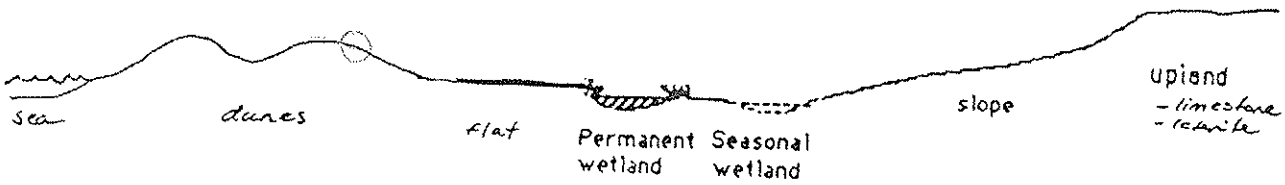
BOLD-1



b Road Location	c. Latitude	Longitude
	31° 57' 09.5"	115° 45' 42.3"

d. **Photograph** Photographer's name NG Photo No 200 Altitude 20m

e. **Topographic position** – Circle position of quadrat



2. SITE DATA – Circle the correct response

Slope flat (gentle) steep

Aspect (N) NE E SE S SW W NW

Surface soil

Sub-surface soil

Drainage (well) mod poor

Wet All year winter/spring

Litter (% cover)

% Bare ground

4. VEGETATION CONDITION

		Comments
EXCELLENT		
VERY GOOD		
GOOD	✓	
POOR		
VERY POOR		

SPECIES PRESENCE

QUADRAT No.
Lsco 02

- work systematically through the vegetation, start with the tallest stratum, i.e. trees
- within each stratum try to record the **most common species first** and the most uncommon last
- as each species is collected **label** it with a numbered tag and use this number on your recording sheet
- indicate if the species is in **flower**

Keighery and Keighery, 1990
Adapted from Griffin and Keighery, 1989
MOORE RIVER to JURIEN SANDPLAIN
SURVEY. WILDFLOWER SOCIETY of WA

Trees

	Trees	No	ID
X	P22 [illegible] [illegible]		

Mallees

SHRUBS

	SHRUBS	No	ID
X	Cham. uncinat.		
X	[illegible] humilis		
X	[illegible] [illegible]		
X	[illegible] [illegible] ([illegible])		
X	[illegible] cordatum		
X	Melaleuca [illegible]		
X	* [illegible] cap.		
X	[illegible] Crith.		
X	[illegible] ochus.		
X	Scaevola canescens		
X	[illegible] [illegible]		
X	Olearia axillaris		
X	[illegible] formosa 'gu'	SP	
	'pedicellata'		

SHRUBS

	SHRUBS	No	ID
	26/11/96		
	~~* [illegible] [illegible]~~		
X	Conostylis [illegible]		
X	[illegible] [illegible]		
/	Weed = Ø3 to [illegible]	✓	
	* Silene gallica 60T	[illegible]	
	Jewel beetle in Ø3 go [illegible]		
/	* Grass	✓SP	
X	* Lolium sp fine.	✓SP	
X	* Lolium rigidum	✓SP	

Bunch Grasses

	Bunch Grasses	No	ID
X	Stipa flav (no specimen)		
X	* Ehrharta calycina		
X	* [illegible] [illegible]		
X	* Lagurus ovatus		
X	* Bromus diandrus		
	~~[illegible]~~ 60T		

Herbs

	Herbs	No	ID
	~~[illegible] [illegible]~~		
X	[illegible] add		
X	[illegible] [illegible]		
X	[illegible] volubilis		
X	* Hypochaeris glabra		
X	[illegible] colorata	SP	
X	* [illegible] [illegible]		
X	[illegible] [illegible] [illegible]		
X	[illegible] linear.		
X	Diplopelt. hueg		
X	[illegible] elatior		
X	* Anagallis arv		
X	Calandrinia linifolia	SP	
X	* Dichisma capitatum		
X	* Sonchus olear		

Herbs

	Herbs	No	ID
X	* Silene [illegible]	[illegible]	
X	Trachymene pilosa		
X	[illegible] [illegible]		
X	* [illegible] [illegible]		
X	[illegible] [illegible] (blank)		
X	* [illegible] [illegible]		

Sedges

	Sedges	No	ID
X	[illegible] [illegible]		
X	[illegible] [illegible] '[illegible]' [illegible]		
X	[illegible] [illegible]		
X	[illegible] [illegible]		

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No [illegible]

Date 22/10/92

22/11/92

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
ADJ Banksia menziesii			
MALLEES			
SHRUBS			
Chamelaucium uncinatum			
Allocasuarina humilis			
Hakea lissocarpa			
Patchanneus quadrifidus			
Lechenaultia formosa			
Hardenbergia comptoniana			
* Pelargonium capitatum			
Eremaea ciliata/tetrapetala			
Scaevola pachyphylla			
Scaevola canescens			
Conostylis tomentosum			
Grevillea wilsonii			
Hibbertia racemosa			

SHRUBS (cont.)	No	Fl	ID
26/11/92			
Conostylis aculeata			
Scaevola thesioides			
GRASSES			
Stipa flavescens			
* Ehrharta calycina			
* Briza maxima			
* Lagurus ovatus			
* Bromus diandrus			
* Lolium sp fine			
* Lolium rigidum			
HERBS			
Conostylis candicans			
Acanthocarpus preissii			
* Petrorhagia velutina			
* Arctotheca calendula			
Opercularia echinocephala			
* Ursinia anthemoides			
Lomandra maritima			
Leschenaultia linearis			
Diplopeltis huegelii			
Tricoryne elatior			
* Arctotis arctotis			
Podotheca gnaphalioides			
* Dichondra repens			

HERBS (cont.)	No	Fl	ID
* Sonchus oleraceus			
* Senecio vulgaris			
* Heliophila pusilla			
* Crassula tetramera			
Calandrinia calyptrata			
Stackhousia monogyna			
SEDGES			
Isolepis marginata			
Lepidosperma angustatum			*
Lyginia barbata			
Schoenus grandiflorus			

- SURVEY RECORDING SHEET Please use pencil

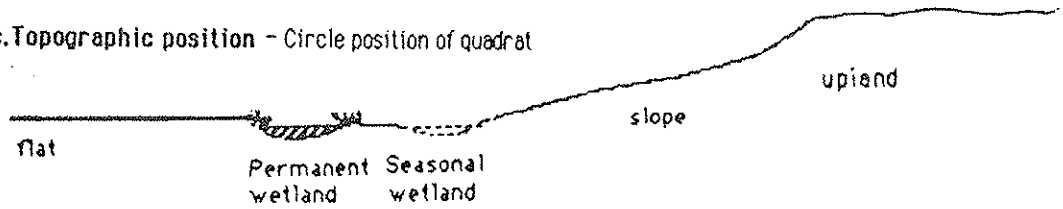
QUADRAT No. [illegible] VEGETATION TYPE [illegible]
DATE FIRST TRIP 22/10/92 VOLUNTEERS
DATE SECOND TRIP 26/1/93 VOLUNTEERS
BOTANIST CJK NG

1. LOCATION of the QUADRAT

a. Mud Map Draw a sketch of the location of the quadrat the back of this sheet

b. Photograph Photographer's name _____

c. Topographic position - Circle position of quadrat



Keighery and Keighery, 1990
Adapted from Griffin and Keighery, 1989
MOORE RIVER to JURIEN SANDPLAIN
SURVEY. WILDFLOWER SOCIETY of WA

2. SITE DATA - Circle the correct response

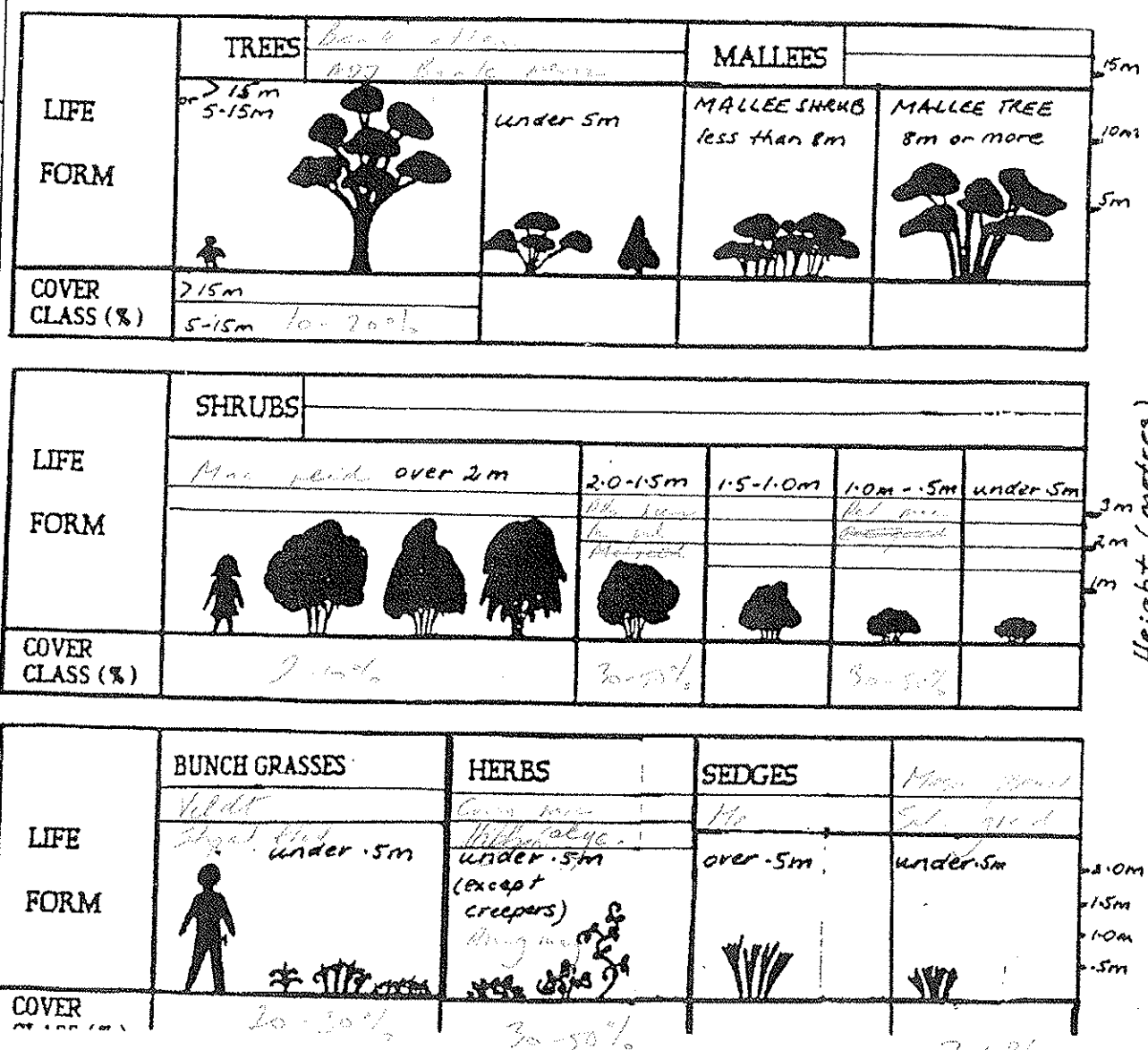
Slope flat gentle steep Aspect N NE E SE S SW W NW

% Bare ground____ Drainage well mod poor Wet All year winter/spring

Litter (% cover)____ Surface soil_____ Sub-surface soil _____

3. VEGETATION STRUCTURE AND COVER Record appropriate cover class

Cover Class - percentage classes: 0% | under 2% | 2-10% | 10-20% | 20-30% | 30-50% | 50-70% | over 70%



1. LOCATION OF THE QUADRAT

BOLD-2

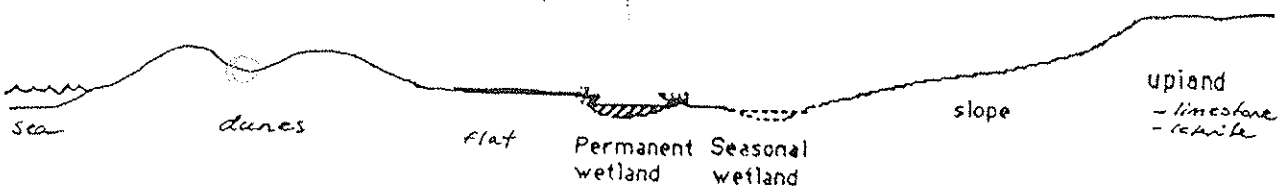
a. Mud Map Draw a sketch of the location of the quadrat

N

b Road Location	c. Latitude	Longitude
	31° 51' 11"	

d. Photograph Photographer's name _____ Photo No ± 100m Altitude 20 m

e. Topographic position – Circle position of quadrat



2. SITE DATA – Circle the correct response

Slope flat (gentle) steep

Aspect (N) NE E SE S SW W NW

Surface soil _____

Sub-surface soil _____

Drainage (well) mod poor

Wet All year winter/spring

Litter (% cover) _____

% Bare ground _____

4. VEGETATION CONDITION

		Comments
EXCELLANT		
VERY GOOD		
GOOD	0	
POOR		
VERY POOR		

SPECIES PRESENCE

- work systematically through the vegetation, starting with the tallest stratum, i.e. trees
- within each stratum try to record the **most common species first** and the most uncommon last
- as each species is collected **label** it with a numbered tag and use this number on your recording sheet
- indicate if the species is in **flower**

QUADRAT No. 1 of 2

Keighery and Keighery, 1990
Adapted from Griffin and Keighery, 1989
MOORE RIVER to JURIEN SANDPLAIN
SURVEY. WILDFLOWER SOCIETY of WA

Trees

	No	ID

Mallees

	No	ID

SHRUBS

	No	ID

SHRUBS

	No	ID

Bunch Grasses

	No	ID

Herbs

	No	ID

Herbs

	No	ID

Sedges

	No	ID

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bold 02
Date 22/10/92
26/11/92

Label each plant with plants number, site code, date and plant's name or working name if required
Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Banksia attenuata			
ADD			
Banksia menziesii			
Eucalyptus gomphocephala			
MALLEES			
SHRUBS			
Allocasuarina humilis			
Acrotriche macrostachya			
Acacia pulchella			
[illegible] ciliaris			
Melaleuca acerosa			
Phyllanthus calycinus			
Macrozamia riedlii			
* Pelargonium australis			
Hovea trisperma			
Leucopogon parviflorus			
Helichrysum cordatum			
Hibbertia racemosa			
Calothamnus quadrifidus			
Grevillea crithmifolia			
Jacksonia sericea			

SHRUBS (cont.)	No	Fl	ID
26/11/92			
Conostylis aculeata			
Lomandra maritima			
* Gladiolus caryophyllaceus			
Conostephium preissii			
Tricoryne elatior			
GRASSES			
* Briza maxima			
* Ehrharta calycina			
Stipa flavescens			
* Briza minor			
* Aira caryophyllea			
HERBS			
Scaevola anchusifolia			
Scaevola repens var angustifolia			
Hybanthus calycinus			
Anigozanthos manglesii			
* Gladiolus caryophyllaceus			
Lechenaultia linarioides			
* Heliophila pusilla			
* Anagallis arvensis			
Corynotheca micrantha			
Opercularia vaginata			
Conostylis candicans			
Dianella revoluta			
Isotropis cuneiformis			

HERBS (cont.)	No	Fl	ID
* Hypochaeris glabra			
* Ursinia anthemoides			
* Trifolium campestre			
Caladenia [illegible]			
Stylidium brunonianum			
[illegible] sp [illegible]			
Stylidium macrocarpum			
[illegible] huegelii			
Lomandra maritima			
Drosera menziesii ssp penicillaris			
* Sonchus oleraceus			
Conostylis aculeata X candicans			
SEDGES			
Schoenus grandiflorus			
Lepidosperma angustatum			
Mesomelaena pseudostygia			
Loxocarya flexuosa			

- SURVEY RECORDING SHEET **Please use pencil** 1 GPS

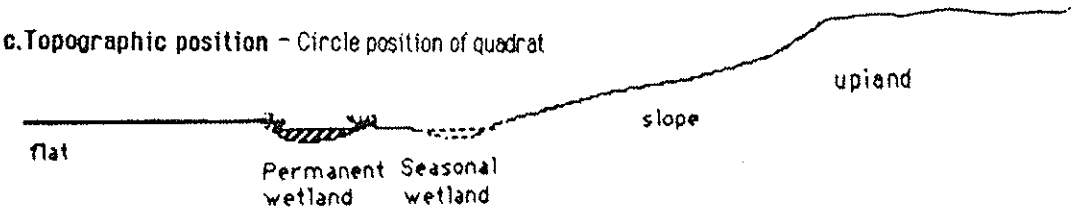
QUADRAT No. Rock 2 02 **VEGETATION TYPE** Granite Low Forest
DATE FIRST TRIP 21/5/02 **VOLUNTEERS**
DATE SECOND TRIP 26/5/02 **VOLUNTEERS** SJK
BOTANIST SJK, NG

1. LOCATION of the QUADRAT

a. Mud Map Draw a sketch of the location of the quadrat the back of this sheet →

b. Photograph Photographer's name _____

c. Topographic position – Circle position of quadrat



Keighery and Keighery, 1990
Adapted from Griffin and Keighery, 1989
MOORE RIVER to JURIEN SANDPLAIN SURVEY. WILDFLOWER SOCIETY of WA

2. SITE DATA – Circle the correct response

Slope flat gentle steep **Aspect** N NE E SE S SW W NW

% Bare ground____ **Drainage** well mod poor **Wet** All year winter/spring

Litter (% cover)____ **Surface soil**_____ **Sub-surface soil** _____

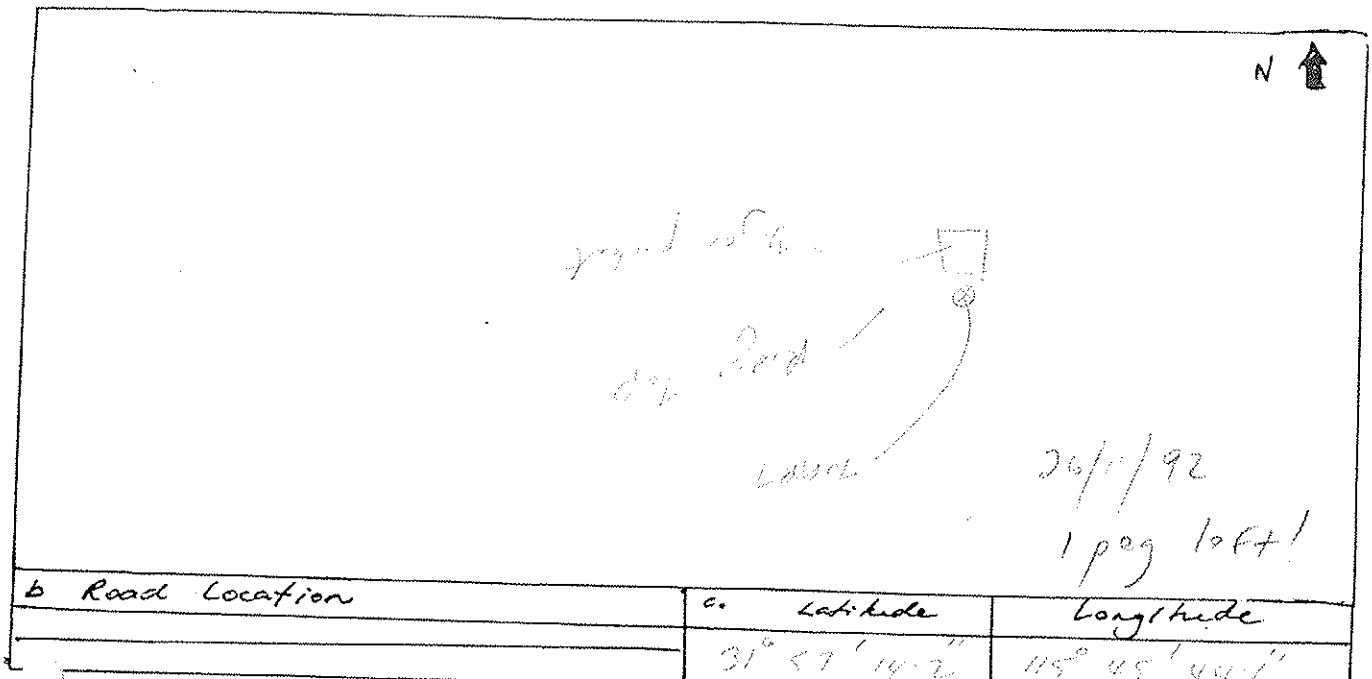
3. VEGETATION STRUCTURE AND COVER Record appropriate cover class

Cover Class – percentage classes: 0% | under 2% | 2-10% | 10-20% | 20-30% | 30-50% | 50-70% | over 70%

LIFE FORM					
TREES Canopy to >70% Rare			**MALLEES**		15m
>15m or 5-15m	under 5m		MALLEE SHRUB less than 8m	MALLEE TREE 8m or more	10m 5m
COVER CLASS (%) >15m 5-15m	>70%				
SHRUBS					
over 2m	2.0-1.5m	1.5-1.0m	1.0m-.5m Occasional	under .5m	3m 2m 1m
COVER CLASS (%)			2-10%		
BUNCH GRASSES Poa sp.	**HERBS** Hyal comp. Clematis	**SEDGES** Lepid gladiat	Lepid ang		
under .5m	under .5m (except creepers) Mix ord	over .5m	under .5m		1.0m 1.5m 1.0m .5m
COVER 30-50%	10-20%	30-50%	2 10%		

Height (metres)

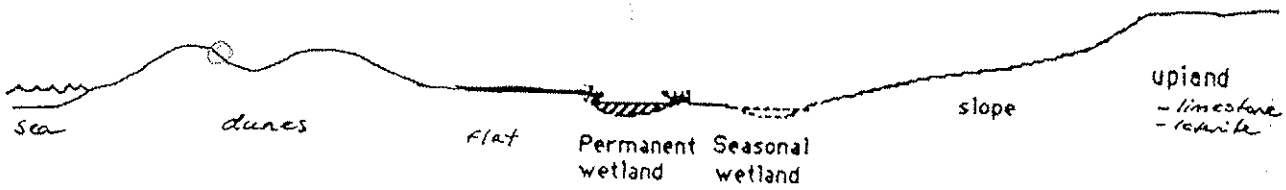
a. **Mud Map** Draw a sketch of the location of the quadrat : BOLD-3



b Road Location	c. Latitude	Longitude
	31° 53' 19.2"	115° 45' 44.1"

d. **Photograph** Photographer's name NG Photo No 1-100 Altitude

e. **Topographic position** – Circle position of quadrat



2. SITE DATA – Circle the correct response

Slope flat (gentle) steep

Aspect (N) NE E SE S SW W NW

Surface soil grey sand

Sub-surface soil grey sand

Drainage (well) mod poor

Wet All year winter/spring

Litter (% cover) 90%

% Bare ground 0%

4. VEGETATION CONDITION

EXCELLANT	
VERY GOOD	
GOOD	
POOR	
VERY POOR	

Comments

Woody thickened but not dense mixed species

Moss sand to mulch (dry)

Sandy soil

SPECIES PRESENCE

QUADRAT No.

- work systematically through the vegetation. Start with the tallest stratum, the trees
- within each stratum try to record the **most common species first** and the most uncommon last
- as each species is collected **label** it with a numbered tag and use this number on your recording sheet
- indicate if the species is in **flower**

Keighery and Keighery, 1990
Adapted from Griffin and Keighery, 1989
MOORE RIVER to JURIEN SANDPLAIN SURVEY. WILDFLOWER SOCIETY of WA

Trees	No	ID

Mallees	No	ID

SHRUBS	No	ID

Bunch Grasses	No	ID

Herbs	No	ID

Sedges	No	ID

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No	BOLD 93
Date	23/10/92
	26/11/92

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1990) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Agonis flexuosa			
ADS Eucalyptus gomphocephala			
MALLEES			
SHRUBS			
Olearia axillaris			
Acacia lasiocarpa			
Melaleuca acerosa			
* Pelargonium capitatum			
Baldingera teretifolia			
Trymalium ledifolium			
Eucalyptus parviflora			
Acacia cochlearis			

SHRUBS (cont.)	No	Fl	ID
26/11/92			
Trymalium ledifolium/integrifolium			
Olearia reticulata			
Conostylis aculeata			
Clematis pubescens			
* Ehrharta calycina			
GRASSES			
Poa poiphyroclados			
* Avena fatua			
* Lagurus Ovatus			
* Bromus rigidus			
* Bromus diandrus			
* Lolium rigidum			
* Lolium Sp 'fine'			
* Briza minor			
Stipa flavescens			
HERBS			
Hemiandra pungens			
Arctotheca prostrata			
* Petrorhagia velutina			
* Anagallis arvensis			
Stylidium repens			
Daucus glochidiatus			
Opercularia vaginata			
* Trifolium campestre			
* Euphorbia peplus			
* Atriplex spongiosa			
Calotheca inhibita (Lamk)			
Lomandra maritima			
* Orobanche minor			

HERBS (cont.)	No	Fl	ID
* Fumaria capreolata			
* Moraea flaccida			
Conostylis candicans			
* Chaetanthera glabra			
* Gnaphalium capitatum			
* Cerastium glomeratum			
SEDGES			
Lepidosperma gladiatum			
Lepidosperma squamatum			
Lepidosperma gladiatum			
Lepidosperma angustatum			
Caesia occidentalis			
Tetraria grandiflora			

- SURVEY RECORDING SHEET Please use pencil

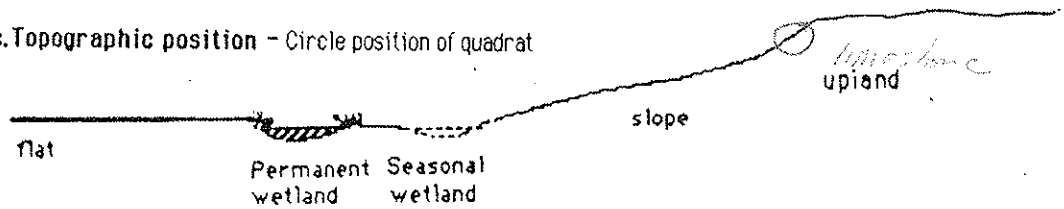
QUADRAT No. BOLD 04 VEGETATION TYPE Low forest to Mallee
DATE FIRST TRIP 2/10/92 VOLUNTEERS BJK
DATE SECOND TRIP 26/10/92 VOLUNTEERS BJK
BOTANIST BJK

1. LOCATION of the QUADRAT

a. Mud Map Draw a sketch of the location of the quadrat the back of this sheet →

b. Photograph Photographer's name _____

c. Topographic position – Circle position of quadrat



Keighery and Keighery, 1990
Adapted from Griffin and Keighery, 1989
MOORE RIVER to JURIEN SANDPLAIN SURVEY. WILDFLOWER SOCIETY of WA

2. SITE DATA – Circle the correct response

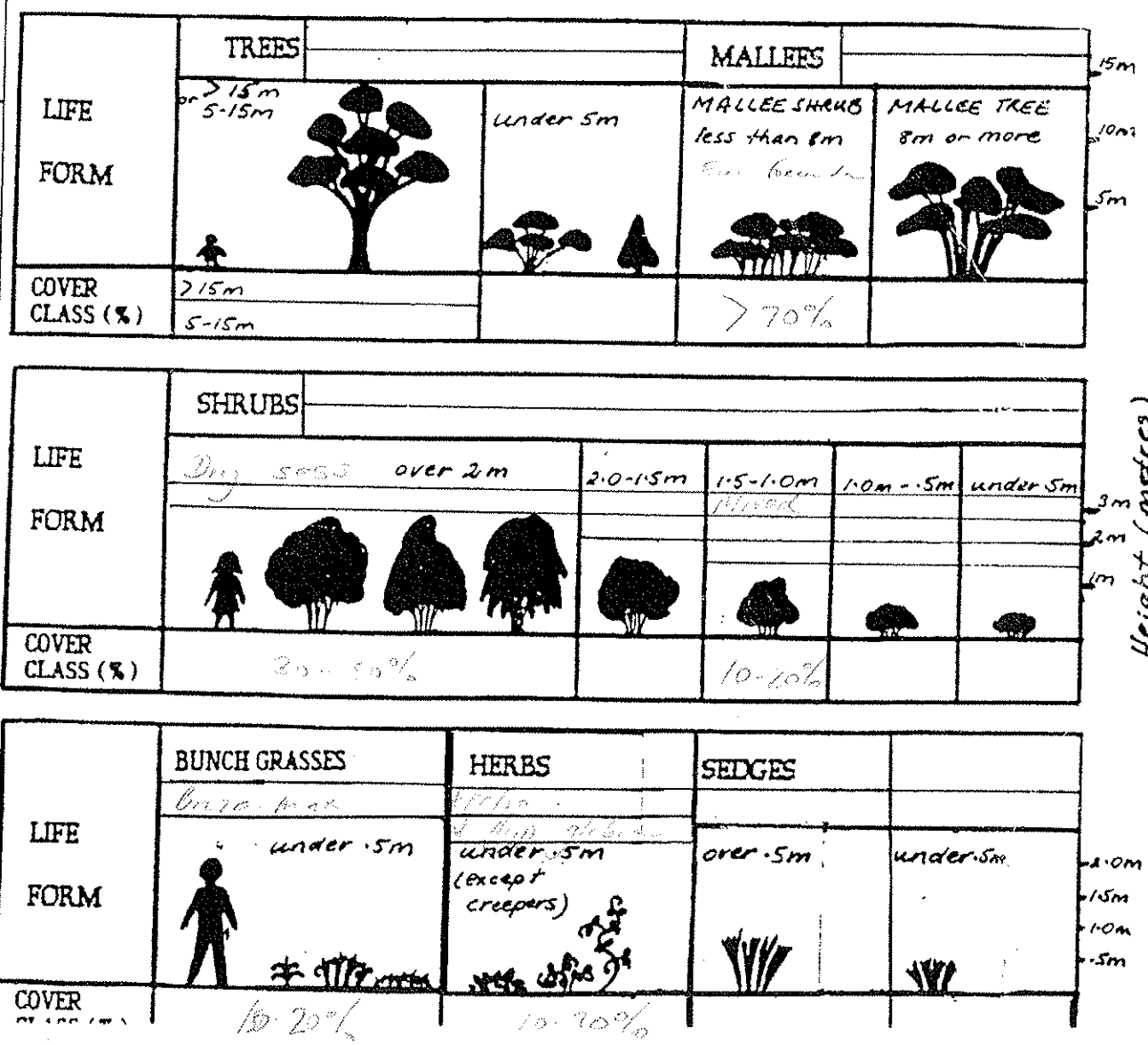
Slope flat (gentle — steep) Aspect N NE E SE S SW (W) NW

% Bare ground 2% Drainage (well) mod poor Wet All year winter/spring

Litter (% cover) 90% Surface soil dry sand Sub-surface soil limestone (for 10 cm)

3. VEGETATION STRUCTURE AND COVER Record appropriate cover class

Cover Class – percentage classes: 0% | under 2% | 2–10% | 10–20% | 20–30% | 30–50% | 50–70% | over 70%



4. SPECIES PRESENCE

- **work systematically through the vegetation**; start with the tallest stratum, i.e. trees
- within each stratum try to record the **most common species first** and the most uncommon last.
- as each species is collected **label** it with a numbered tag and use this number on your recording sheet
- indicate if the species is in **flower**

Keighery and Keighery, 1990
Adapted from Griffin and Keighery, 1989
MOORE RIVER to JURIEN SANDPLAIN SURVEY. WILDFLOWER SOCIETY of WA

QUADRAT No.
3012 ab

Trees	No	ID
X Euc. todtiana		
Mallees		
SHRUBS		
X Acacia sp.		
X Templetonia retusa		
X Leptospermum sp.		
X Banksia sessilis		
X Petrophile linearis		
X Conostylis setigera subsp. dasys		
X Allocasuarina fraseriana		
X Hakea prostrata		
X Xylomelum occidentale		
X Dryandra sessilis		

SHRUBS	No	ID
X Hibbertia hypericoides		
X Hibbertia racemosa		
X Hibbertia commutata		
X Hibbertia huegelii		
X Hibbertia subvaginata		
X Hibbertia glomerata		
X Hibbertia amplexicaulis		
X Hibbertia hypericoides		
X Hibbertia commutata		
X Hibbertia huegelii		
X Hibbertia subvaginata		
X Hibbertia glomerata		
X Hibbertia amplexicaulis		
Bunch Grasses		
X Lomandra sp.		
X Lomandra sp.		
X Lomandra sp.		
X Stipa flavescens		
X Schoenus sp.		
Herbs		
X Stylidium piliferum		
X Hypocalymma sp.		
X Hypocalymma sp.		
X Stylidium sp.		
X Hypocalymma sp.		
X Hypocalymma sp.		
X Calytrix sp.		
X Stylidium sp.		
X Dryandra sessilis		
X Hypocalymma sp.		
X Lomandra sp.		
X Leucopogon propinquus		
X Calytrix sp.		
X Stylidium sp.		
X Stylidium sp.		

Herbs	No	ID
26/11/92		
X + Utricularia sp.		
Brachycombe sp.		
X Leucopogon sp.		
X Microtis sp.		
X Tetratheca sp.		
X Wahlenbergia sp.		
ROT		
Sedges		
X Lepidosperma sp.		
X Lepidosperma sp.		
X Schoenus sp.		
X Schoenus sp.		

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No 2000 04
Date 23/10/92
26/11/92

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
Eucalyptus tetragona			
SHRUBS			
Dryandra sessilis			
Thryptomene retusa			
Melaleuca acerosa			
Beaufortia sulcata			
* Petrorhagia capitatum			
Conospermum tomentosum			
Grevillea preissii			
Hibbertia humilis			
Hovea pannosa nobilis			
ROS			
Melaleuca cardiophylla			
(most southerly locality)			

SHRUBS (cont.)	No	Fl	ID
Scholtzia			
* Hebespermum pinoides			
Leucopogon australis			
Microlaena stipoides			
Trymalium ledifolium/pulchrum			
Hibbertia calycina?			
GRASSES			
* Briza maxima			
* Briza minor			
Lomandra drummondii			
Stipa flavescens			
* Ehrharta calycina			
HERBS			
* Solanum nigrum			
* Hypochaeris glabra			
* Trachyandra divaricata			
* Sonchus oleraceus			
* Petrorhagia velutina			
Hemiandra pungens			
* Galium tricornutum			
Convolvulus erubescens			
Dichondra repens			
Daucus glochidiatus			
Lomandra maritima			
* Hakea pusilla			
* Euphorbia peplus			

HERBS (cont.)	No	Fl	ID
Calandrinia corrigioloides			
* Silene gallica			
* Cerastium glomeratum			
SEDGES			
Loxocarya flexuosa			
Lepidosperma angustatum			
Rhynchospora tenuifolia			
Isolepis marginata			

(10.9.90) Heath restoration Bushland site

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BCD 05

Date 1990

Coghlan et al 1990

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From 'Bushland Plant Survey' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Acacia saligna			
Acacia tetragonophylla			
Melaleuca acerosa			
Templetonia retusa			
Melaleuca cordata			
Casuarina obesa			
* Malvaceae capitatum			
Scaevola canescens			3
Tecomia cuthiflora			0
Dampiera vaginata			0
			0
			0
			0
			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa blancoana			0
* Avena sativa			0
HERBS			
Acacia hamulosa			0
Lawrencia squamata			0
Dampiera incana			0
Calotis hispidula			0
* Erodium cicutarium			0
* Emex australis			0
Podolepis lessonii			0
* Brassica tournefortii			0
* Sonchus oleraceus			0
* Hypochaeris glabra			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Lepidosperma sp.			0

Mandalay Open area Mixed with Eucalypt Peppermints

Site 2

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Rock 06

Date 1993

Recorder's Initials

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name.
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From 'Bushland Plant Survey' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
~~Acacia saligna~~			
MALLEES			
SHRUBS			
Acacia cochlearis			
Acacia flavescens			
Allocasuarina ulicifolia			
Calytrix glabrescens			
Calytrix sullivanii			
Melaleuca radula			
Pimelea ferruginea			
Verticordia compta ssp.			0
Conostylis candicans subsp. glaucescens			0
			0
			0
			0
			0 x
			0 x
			0 x
			0 x

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Poa sp.			0
Ehrharta longiflora			0
HERBS			
Lomandra sp.			0
Caladenia latifolia			0
Drosera sp.			0
Drosera pallida			0
Drosera macrantha			0
Hypocalymma robustum			0 x
Lyperanthus serratus			0 x
Stylidium sp.			0 x
Thysanotus patersonii			0 x

HERBS (cont.)	No	Fl	ID
SEDGES			
Lepidosperma gladiatum			0

Agonis flex low woodland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOLD 07
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Agonis flexuosa			
Hakea prostrata			
Allocasuarina humilis			
Acacia pulchella			
Hardenbergia comptoniana			
Helichrysum cordatum			
Jacksonia sericea			
Melaleuca acerosa			
Olearia ramulosa			
Gompholobium scabrum			
Leucopogon			
Lechenaultia linarioides			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
0 * Avena barbata			
0 * Ehrharta calycina			
0 * Lagurus ovatus			
0 * Avena barbata			
SEDGES			
0 Tetraria octandra			
0 Lepidosperma gracile			
HERBS			
0 * Polygonum capitatum			
0 Opercularia vaginata			
0 * Gladiolus caryophyllaceus			
0 Conostylis candicans			
0 * Trifolium campestre			
0 * Pelargonium			
0 Lomandra maritima			

HERBS (cont.)	No	Fl	ID

Dune heath (on heath on deep sand) dominated by mixed shrubs

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOLD 03
Date 1999
Kangaroo Island

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Olearia axillaris			
Chamelaucium uncinatum			
Organdra scholtzii			
Templetonia retusa			
Hakea cristata			
Calothamnus quadrifidus			
Leucopogon parviflorus			
Acacia varians			0
Melaleuca acuminata			0
Casuarina fraseriana			1
Hibbertia racemosa			0
Dryandra baxteri			1
Leucopogon [illegible]			1
Scaevola crassifolia			0
Hemiandra pungens			0
Verticordia comptoniana			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
1 * Lagurus ovatus			
HERBS			
Carpobrotus acinaciformis			
Daucus [illegible]			
Acanthocarpus preissii			
Thysanotus arenarius			
* Briza maxima			
Trachymene ?ssp			
Calandrinia brevipedata			
* Orchiurus arenarius			
Calandrinia corrigioloides			
Trigiachia calcitrapa			
* Helichrysum ?willd			
* Sonchus oleraceus			
Daucus glochidiatus			

HERBS (cont.)	No	Fl	ID
SEDGES			
2 Lepidosperma angustatum			
0 Tetraria octandra			

Western dune heath (yellow sand over limestone)

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOLO 02a
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.). PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Hovea pritzelii			
Allocasuarina humilis			
Calothamnus asper[illegible]			
Acacia [illegible]			
Melaleuca [illegible]			
Melaleuca acerosa			
Gompholobium [illegible]			
Acacia pulchella			0
Acacia rostellifolia			0
Leucopogon propinquus			0
Opercularia vaginata			0
Lasiopogon sp			0
Jacksonia sericea			0
Leucopogon [illegible]			0
			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
0 *Briza maxima			
0 *Lagurus ovatus			
HERBS			
Trachyscias glabra			0
Caladenia radicans			0
Schoenus laxiflora			0
Xanthosia huegelii			0
Stylidium macrocalyx			0
Gastrolobium = Oxylobium			0
Caladenia latifolia			0
Lomandra maritima			0
Hovea trisperma			0
Anigozanthus manglesii			0
Drosera macrantha			0
*Gladiolus caryophyllaceus			0
*Petrorhagia [illegible]			0

HERBS (cont.)	No	Fl	ID
Craspedia variabilis			0
*Carrichtera annua			0
*Ursinia anthemoides			0
*Anagallis arvensis			0
Homalosciadium homalocarpum			0
*Hedypnois cretica			0
*Petrorhagia [illegible]			0
SEDGES			
Mesomelaena pygmaea			0
Tetraria octandra			0
Lepidosperma [illegible]			0

Dune Heath

dominated by Organdra sessilis

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No	BOW 10
Date	1990
Keighery et al	

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name.
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
			0
			0
SHRUBS			
Organdra sessilis			
Melaleuca acerosa			
Olearia axillaris			
Grevillia synapheifolia			
Isopogon crithmifolius			
Leucopogon hakeoides			
Acacia lasiocarpa			
Grevillia huegelii			0
Conospermum scaberulum			1
Acanthocarpus preissii			0
Hemiandra pungens			0
Hibbertia racemosa			0
Helichrysum cordatum			1
Scaevola canescens			0
Hardenbergia comptoniana			0
			0
			6
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa flavescens			0
* Ehrharta calycina			0
HERBS			
Conostylis setigera			0
Lobelia racemosa			0
Trachymene cyanopetala			0
* Hypochaeris glabra			0
Lomandra maritima			0
Calandrinia liniflora			0
Trigoachia calcicola			0
* Heliophila pusilla			0
* Petrorhagia velutina			0
* Sonchus oleraceus			0
Trachymene pilosa			0
Crassula colorata			0
Wahlenbergia cuneata			0

HERBS (cont.)	No	Fl	ID
[illegible]			0
SEDGES			
Lomandra flexuosa			0
Lepidosperma tetraquetrum			0
Tetraria capillaris			0

Chamelaucium uncinatum Wreath grey sand dune

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOND 11

Date 1990

Kwongorra ed cal

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Chamelaucium uncinatum			
Calothamnus quadrifidus			
Olearia axillaris			
Hibbertia cordata			
Acacia acuminata			
Olax benthamiana			
Dryandra nivea			
Acacia heteroneura			0
Taxandria cuneiformis			0
Taxandria parviflora			0
Beaufortia /aquata			0
Beaufortia sparsa			0
Verticordia comptoniana			0
Verticordia grandiflora = fimbrisepala			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa flavescens			0
* Ehrharta calycina			0
* Lagurus ovatus			0
HERBS			
Conostylis candicans			0
Acacia acuminata prost			0
Trachymene chapmanii			0
Lomandra caespitosa			0
Thysanotus patersonii			0
* Petrorhagia prolifera			0
* Briza maxima			0
* Petrorhagia velutina			0
* Briza cathemoides			0
* Hypochaeris glabra			0
* Bromus diandrus			0
Calandrinia pumila			0
Lomandra hastilis ssp Rodwayana			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Lepidosperma persea			0

Banksia Low Woodland 'normal'

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOLD 12
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet
- Column 1 plant name·
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID	SHRUBS (cont.)	No	Fl	ID	HERBS (cont.)	No	Fl	ID
0 Banksia attenuata											
0 Banksia menziesii											
MALLEES											
				GRASSES							
			0	* Ehrharta calycina							
SHRUBS											
0 Calothamnus quadrifidus											
0 Allocasuarina humilis											
0 Leucopogon australis								SEDGES			
0 Acacia cyclops							0	Tetraria octandra			
0 Grevillea crithmifolia							0	Lepidosperma ~~[illegible]~~ [illegible]			
Cassytha flava											
0 Hardenbergia comptoniana				HERBS							
0 Acacia pulchella			0	* Pelargonium capitatum							
0 Scaevola canescens			0	Lomandra maritima							
0 Lechenaultia linarioides			0	* Gladiolus caryophyllaceus							
0 Melaleuca acerosa			0	Conostylis aculeata							
0 Tersonia cyathiflora			0	Crassula colorata							
			0	Isolepis cernua							
			0	* Ursinia anthemoides							
			0	Calandrinia granulifera							
			0	Cal. brevipedata							
			0	* [illegible]							
			0	* Hypochaeris glabra							
			0	* [illegible]							

Banksia menziesii woodland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bound 13
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Banksia menziesii			
Agonis flexuosa			
MALLEES			
SHRUBS			
Hakea prostrata			
Hardenbergia comptoniana			
Olearia axillaris			
Calothamnus quadrifidus			
Allocasuarina humilis			
Hemiandra pungens			
Grevillea endlicheriana			
Hakea lissocarpha			1
Trymalium ledifolium			0
Hibbertia racemosa			0
Acacia lasia			0
Acacia pulchella			0
Eucalyptus haematoxylon			0
Melaleuca acerosa			0
			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
			0
GRASSES			
× Ehrharta calycina			0
Stipa flavescens			0
× Lagurus ovatus			0
HERBS			
Arctotheca prostrata			0
× Carpobrotus edulis			0
Hypochaeris glabra			0
Trachymene pilosa			0
Conostylis candicans			0
Lomandra maritima			0
× Gladiolus caryophyllaceus			0
Centaurium erythraea			0
× Ursinia anthemoides			0
× Hypochaeris glabra			0
× Anagallis arvensis			0
× Romulea rosea			0
× Briza maxima			0

HERBS (cont.)	No	Fl	ID
× Lamarckia aurea			0
SEDGES			
Lepidosperma gladiatum			0
Lepidosperma squamatum			0

Banksia woodland
Euc. decipiens Grp

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Kalo 14
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6009.

TREES	No	Fl	ID
Euc decipiens			
Banksia attenuata			
Eucalyptus marginata			
Allocasuarina fraseri			
MALLEES			
SHRUBS			
Melaleuca preissiana			
Calothamnus quadrifidus			
Daviesia triflora			
Allocasuarina humilis			
Olearia axillaris			
Stirlingia latifolia			
Petrophile macrostachya			
Acacia lasiocarpa			0
Hardenbergia comptoniana			0
Conostylis aculeata			0
Leucopogon conostephioides			0
Hypocalymma cordifolium			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Ehrharta calycina			0
HERBS			
Centrolepis aristata			0
Pterostylis barbata			0
Anigozanthos manglesii			0
Drosera pallida			0
* Watsonia meriana var. bulbillifera			0
Stylidium calcaratum			0
* Ursinia anthemoides			0
* Hypochaeris glabra			0
* Cotula coronopifolia			0
* Petrorhagia dubia			0
* Arctotheca calendula			0
* Briza maxima			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Tetraria octandra			0

Jarrah woodland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bold 16

Date 1990

Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008

TREES	No	Fl	ID
Eucalyptus marginata			
Banksia grandis			
Eucalyptus wandoo			
MALLEES			
SHRUBS			
Acacia pulchella			
Hibbertia hypericoides			
Stirlingia latifolia			
Daviesia nudiflora			
Xylomelum occidentale			
Leucopogon polymorphus			
Grevillea thelemanniana			0
Conospermum stoechadis			0
Hardenbergia comptoniana			1

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Ehrharta calycina			0
HERBS			
Sowerbaea laxiflora			0
Conostylis aculeata			0
Drosera macrantha			0
Drosera erythrorhiza			0
* Trifolium campestre			0
* Ursinia anthemoides			0
* Romulea rosea			0
* Hypochaeris glabra			0
* Lupinus angustifolius			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Lepidosperma gladiatum			0

plotlocsq	TaxonID	SpCode	Na	Genus	Species	InfraspRank	InfraspName	Informal	ConsvCode
bold17	3502	ACAPUL		Acacia	pulchella				
bold17	3527	ACASAL		Acacia	saligna				
bold17	8786	ARTCAP		Arthropodium	capillipes				
bold17	12770	BURCON		Burchardia	congesta				
bold17	1276	CAEMIC		Caesia	micrantha				
bold17	1418	CONACU		Conostylis	aculeata				
bold17	347	EHRCAL	*	Ehrharta	calycina				
bold17	5578	EUCCAL		Eucalyptus	calophylla				
bold17	13547	EUCMARMA		Eucalyptus	marginata	subsp.	marginata		
bold17	3961	HARCOM		Hardenbergia	comptoniana				
bold17	5135	HIBHYP		Hibbertia	hypericoides				
bold17	4012	JACFUR		Jacksonia	furcellata				
bold17	945	LEPSQU		Lepidosperma	squamatum				
bold17	85	MACRIE		Macrozamia	riedlei				
bold17	4343	PELCAP	*	Pelargonium	capitatum				
bold17	19825	PETDUB	*	Petrorhagia	dubia				
bold17	18117	PIMROSRO		Pimelea	rosea	subsp.	rosea		
bold17	1312	SOWLAX		Sowerbaea	laxiflora				
bold17	17763	TRICAMCA	*	Trifolium	campestre	var.	campestre		
bold17	4322	VICSAT	*	Vicia	sativa				
bold17	1256	XANPRE		Xanthorrhoea	preissii				

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Acacia rostellifera shrubland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bour 18

Date 1995

Kangaroo Air Rd

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008

TREES	No	Fl	ID
MALLEES			
			0
SHRUBS			
Acacia rostellifera			
Melaleuca huegelii			
Hakea conchifolia			
Olearia axillaris = Aster			
Eucalyptus rudis			
E. todtiana (dwarf)	arbtcs.		
Acacia saligna			
Lepidosperma gladiatum			0
Trachyandra divaricata			0
Olearia axillaris			0
Hibbertia spicata subsp leio.			0
Acacia lasiocarpa			0
Rhagodia baccata			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Ehrharta calycina			0
Austrostipa elegantissima			0
Austrostipa flavescens			0
Austrostipa compressa			0
* Lagurus ovatus			0
HERBS			
Calandrinia balonensis			0
Haemodorum paniculatum			0
Hypoxis occidentalis			0
Tricoryne elatior			0
Wurmbea stricta			0
Arctotheca calendula			0
Pentapeltis peltigera			0
Drosera sp.			0
* Romulea rosea			0
Brachyscome dilatata			0
* Ursinia anthemoides			0
* Senecio pterophorus			0

HERBS (cont.)	No	Fl	ID
* Galium tricorne			0
* Euphorbia peplus			0
Daucus glochidiatus			0
Hypochaeris glabra			0
* Arctotheca calendula			0
* Trifolium sp. dwf			0
* Erodium botrys			0
* Centaurium tenuiflorum pink			0
Trachymene pilosa			0
Trachymene coerulea			0
SEDGES			
Lepidosperma [illegible]			0
Lepidosperma [illegible]			0

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[illegible]

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No [illegible]
Date [illegible]
[illegible]

Label each plant with plants number, site code, date and plant's name or working name if required
Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Euc rudis			
Melaleuca incana			
Acacia saligna			
MALLEES			
SHRUBS			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
[illegible]			
(Luk 1990)			
[illegible]			
HERBS			
Centella [illegible]			
* [illegible]			
Lobelia [illegible]			

HERBS (cont.)	No	Fl	ID
SEDGES			

Limestone heath dominated by Acacia huegelii

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No ROW 23
Date 1996
Keighery plot

Label each plant with plants number, site code, date and plant's name or working name if required
Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Acacia huegelii			
Jacksonia velutina			
Ingramia reticulata			
Dryandra sessilis			
Melaleuca acerosa			
Olax benthamiana			
Santalum acuminatum ssp proxi			
Melaleuca			0
2 Platysace maselli			0
Astroloma microcal x			0
			0
			0
			0
			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa elegans			0
HERBS			
Opercularia vaginata			0
Stylidium [illegible]			0
* Polycarpaea corymbosa			0
* Euphorbia peplus			0
* Anagallis arvensis			0
Daucus glochidiatus			0
* Sonchus oleraceus			0
* Petrorhagia velutina			0
Mesembryanthemum			0
Drosera macrantha ssp macr			0
Calandrinia brevisecta			0
* Lactuca saligna			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Lepidosperma [illegible]			0
Lom [illegible] flavissa			0

Limestone Heath → Eucalyptus forrestiana Mallee Shrubland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bold 23
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required
Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
0 Euc forrestiana			
MALLEES			
SHRUBS			
0 Grevillea excelsior			
0 Grevillea sp.			
0 Hakea cucullata			
0 Hak. corymbosa			
0 Allocasuarina humilis			
0 Melaleuca radula			
0 Olearia tomentosa			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
0 x Eragrostis setacea			
HERBS			
0 Conostylis aculeata			
0 Acanthocarpus preissii			
0 x Ursinia anthemoides			
0 x Petrorhagia velutina			
0 Trachyandra asperata			
0 Craspedia glauca			
0 Isolepis asperula			
0 x Sparaxis bulbifera			
0 x Arctotheca calendula			
0 x Lotus sp. in agglomeration			
0 x Heliophila pusilla			

HERBS (cont.)	No	Fl	ID
SEDGES			
0 Lepidosperma gladiatum			
0 Tetraria octandra			

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No GOLD 01
Date 22/10/92
26/11/92

Label each plant with plants number, site code, date and plant's name or working name if required
Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
ADJ Banksia menziesii			
MALLEES			
SHRUBS			
Chamelaucium uncinatum			
Hibbertia hemiles			
Hovea Pasiocarpa			
Calothamnus quadrifidus			
Leschenaultia Formosum			
Pimelea ciliata			
* Pelargonium capitatum			
Grevillea Drummondii			
Scaevola anchusifolia			
Scaevola Canescens			
Gompholobium tomentosum			
Grevillea acillaris			
Hibbertia racemosa			

SHRUBS (cont.)	No	Fl	ID
26/11/92			
Conostylis aculeata			
Scaevola thesioides			
GRASSES			
Stipa flavescens			
* Ehrharta calycina			
* Briza maxima			
* Lagurus ovatus			
* Bromus diandrus			
* Lolium sp fine			
* Lolium rigidum			
HERBS			
Conostylis candicans			
Acanthocarpus preissii			
* Petrorhagia velutina			
* Hypochaeris glabra			
Cotula coronopifolia			
* Ursinia anthemoides			
Lomandra maritima			
Lechenaultia linearis			
Diplopeltis huegelii			
Tricoryne elatior			
* Anagallis arvensis			
Calandrinia liniifolia			
* Dichisma capitatum			

HERBS (cont.)	No	Fl	ID
* Sonchus oleraceus			
* Silene nalica			
* Solanum pinnatifidum			
* Crassula tetramera			
Calandrinia calyptrata			
Gladiolus caryophyllaceus			
SEDGES			
Isolepis marginata			
Lepidosperma angustatum			
Lavandula stoechas			
Schoenus grandiflorus			

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOLD 02
Date 22/10/92
26/11/92

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Banksia attenuata			
Acacia			
Banksia menziesii			
Eucalyptus gomphocephala			
MALLEES			
SHRUBS			
Adenanthos humilis			
Acrotriche narrostachya			
Astartea pulchella			
Dampiera alata			
Hibbertia acerosa			
Hypocalymma cordifolium			
Macrozamia riedlei			
* Pelargonium australe			
Phyllanthus calycinus			
Pimelea suteri			
Stirlingia latifolia			
Synaphea petiolaris			
Verticordia densiflora			
Xylomelum occidentale			

SHRUBS (cont.)	No	Fl	ID
26/11/92			
Conostylis aculeata			
Lomandra maritima			
* Gladiolus caryophyllaceus			
Conostephium preissii			
Tricoryne elatior			
GRASSES			
* Briza maxima			
* Ehrharta calycina			
Stipa flavescens			
* Briza minor			
* Aira caryophyllea			
HERBS			
Scaevola anchusifolia			
Scaevola repens var. angustifolia			
Hydrocotyle callicarpa			
Stylidium preissii			
* Gladiolus caryophyllaceus			
Lechenaultia linarioides			
* Heliophila pusilla			
* Anagallis arvensis			
Caladenia microchila			
Drosera macrantha			
Conostylis candicans			
Dicrofa volubilis			
Isotropis cuneiformis			

HERBS (cont.)	No	Fl	ID
* Euphorbia dobia			
* Trachyandra divaricata			
* Trifolium campestre			
Caladenia flaviana			
Stylidium brunonianum			
Phlebocarya ciliata			
Stylidium macrocarpum			
Xanthosia huegelii			
Lomandra maritima			
Drosera menziesii ssp. menziesii			
* Sonchus oleraceus			
Conostylis aculeata x candicans			
SEDGES			
Schoenus grandiflorus			
Lepidosperma angustatum			
Meeboldina parviflora			
Lepidosperma squamatum			

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOLD 03
Date 22/10/92
26/11/92

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (19940 and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Agonis flexuosa			
ADJ Eucalyptus gomphocephala			
MALLEES			
SHRUBS			
Acacia auriculiformis			
Acacia lasiocarpa			
Melaleuca acerosa			
* Petrorhagia prolifera			
Hibbertia cordata			
Trymalium ledifolium			
Eucalyptus parviflorus			
Acacia cochlearis			

SHRUBS (cont.)	No	Fl	ID
26/11/92			
Thysanotus patersonii / manglesianus			
Crassula colorata			
Conostylis aculeata			
Cranichis pubescens			
* Ehrharta calycina			
GRASSES			
Poa poiphyroclados			
* Avena fatua			
* Lagurus ovatus			
* Aira maxima			
* Bromus diandrus			
* Lolium rigidum			
* Lolium sp 'fine'			
* Briza minor			
Stipa flavescens			
HERBS			
Hardenbergia comptoniana			
Acanthocarpus preissii			
* Petrorhagia dubia			
* Anagallis arvensis			
Dichelia revoluta			
Daucus glochidiatus			
Opercularia vaginata			
* Trifolium campestre			
* Euphorbia peplus			
* Pterus squarrosa			
Calodenia iohibita (erect)			
Lomandra maritima			
* Orobanche minor			

HERBS (cont.)	No	Fl	ID
* Fumaria capreolata			
* Myriophyllum aspericaule			
Caustis candicans			
* Heliophila pusilla			
* Dichopogon capillipes			
* Paronychia gnaphalodes			
SEDGES			
Lepidosperma gladiatum			
Lobocarya flexuosa			
Lepidosperma gladiatum			
Lepidosperma angustatum			
Carex preissii			
Schoenus grandiflorus			

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No GOD 64
Date 22/10/92
26/11/92

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
Eucalyptus fecunda			
SHRUBS			
Dryandra sessilis			
Templetonia retusa			
Melaleuca acerosa			
Grevillea acillaris			
* Pelargonium capitatum			
Conothalobium tomentosum			
Grevillea preissii			
Hibbertia racemosa			
Hovea pannosa			
ROS			
Melaleuca cardiophylla			
(most dominant shrub)			

SHRUBS (cont.)	No	Fl	ID
26/11/92			
* Ursinia anthemoides			
Leucopogon australis			
Microlaena stipoides			
Trymalium ledifolium			
Phyllanthus calycinus			
GRASSES			
* Briza maxima			
* Briza minor			
Lagurus ovatus			
Stipa flavescens			
* Ehrharta calycina			
HERBS			
* Solanum nigrum			
* Hypochaeris glabra			
* Trachyandra divaricata			
* Sonchus oleraceus			
* Petrorhagia velutina			
Acanthocarpus preissii			
* Galium			
Conostylis aculeata			
Dianella revoluta			
Dasiera clavidentata			
Lomandra maritima			
* Heliophila pusilla			
* Euphorbia peplis			

HERBS (cont.)	No	Fl	ID
Calandrinia corrigioloides			
* Silene gallica			
* Cerastium glomeratum			
SEDGES			
Laxocarya flexuosa			
Lepidosperma angustatum			
Schoenus grandiflorus			
Isolepis marginata			

(10-9-90)

Acacia rostellifera Shrubland SITE 1

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BCD 05
Date 1990
Keighery et al 1990

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Acacia rostellifera			
Acacia tetragonoa			
Exocarpos aphyllus			
Jacksonia horrida			
Melaleuca cordata			
Cassytha flava			
* Polygonum capitatum			
Scaevola canescens			0
Tetragonia cyanifolia			0
Opercularia vaginata			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa flavescens			0
* Lagurus ovatus			0
HERBS			
Acanthocarpus preissii			0
Lomandra maritima			0
Dianella revoluta			0
Caladenia latifolia			0
* Euphorbia paralias			0
* Euphorbia terracina			0
Calandrinia brevipedata			0
* Anagallis arvensis			0
* Sonchus oleraceus			0
* Petrorhagia velutina			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Lepidosperma gladiatum			0

Acacia Low Open Woodland with Scattered Peppermints

SITE 2

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Rocc 06
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
~~Agonis flexuosa~~			

MALLEES	No	Fl	ID

SHRUBS	No	Fl	ID
0 Acacia rostellifera			
0 Agonis flexuosa			
0 Myoporum insulare			
0 Spyridium globulosum			
0 Olearia axillaris			
0 Melaleuca acerosa			
0 Rhagodia baccata			
0 Hardenbergia comptoniana			
0 Clematis [aristata] pubescens			

SHRUBS (cont.)	No	Fl	ID

GRASSES	No	Fl	ID
0 Poa sp			
0 *Ehrharta longiflora			

HERBS	No	Fl	ID
0 Lomandra maritima			
0 Caladenia latifolia			
0 Acanthocarpus preissii			
0 Dianella revoluta			
0 Oxalis pes-caprae			
0 *Fumaria capreolata			
0 *Sonchus oleraceus			
0 *Euphorbia peplus			
0 *Fumaria muralis			

HERBS (cont.)	No	Fl	ID

SEDGES	No	Fl	ID
0 Loxocarya flexuosa			

Agonis flex low woodland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE — Label each plant with plants number, site code, date and plant's name or working name if required

SITE No	BOLO 07
Date	1990
Keighery et al	

Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Agonis flexuosa			
Hakea prostrata			
Allocasuarina humilis			
Acacia pulchella			
Hardenbergia complexiana			
Helichrysum cordatum			
Jacksonia sericea			
Melaleuca acerosa			0
Olearia axillaris			0
Gompholobium argyrotum			0
Lupinus [illegible]			0
Leptomeuria [illegible]			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Briza maxima			0
* Ehrharta calycina			0
* Lagurus ovatus			0
* Avena barbata			0
HERBS			
Pelargonium capitatum			0
Opercularia vaginata			0
* Galactites calycosa			0
Conostylis candicans			0
* Trifolium campestre			0
* Petrorhagia velutina			0
Lomandra maritima			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Tetraria octandra			0
Lepidosperma ~~gunnii~~ laterale			0

Dune heath (on heath deep sand) Dominated by Banksia sessilis

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No	BOLD 08
Date	1990
Kenyabing Rd ad	

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Olearia axillaris			
Chamelaucium uncinatum			
Organdra sessilis			
Templetonia retusa			
Hakea cygna ssp. cygna			
Calothamnus quadrifidus			
Leucopogon propinquus			
Acacia pycnocerca			0
Melaleuca acerosa			0
Casuarina fraseriana			1
Hibbertia racemosa			0
Dryandra hookeri			1
Leschenaultia linearis			0
Scaevola canescens			0
Hemiandra pungens			0
Hardenbergia comptoniana			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Lagurus ovatus			0
HERBS			
Conostylis aculeata			0
Dianella revoluta var. revoluta			0
Acanthocarpus preissii			1
Thysanotus arenarius			0
* Petrorhagia velutina			1
Trachymene pilosa			0
Calandrinia brevipedata			0
* Orchiarma arenarium			0
Calandrinia corrigioloides			0
Trigiochin calcitrapa			0
* Heliophila pusilla			0
* Lonchus olearaceus			0
Daucus glochidiatus			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Loxocarya flexuosa			0
Lepidosperma angustatum			0
Tetraria octandra			0

Western dune heath (yellow sand over limestone)

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE — Label each plant with plants number, site code, date and plant's name or working name if required

SITE No	BOLD 8a
Date	1990
Keighery et al	

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Hovea prostrata			
Allocasuarina humilis			
Calothamnus quadrifidus			
Acacia acuminata			
Hakea lissocarpha			
Melaleuca acerosa			
Gompholobium arenarium			
Acacia pulchella			0
Banksia erythrocephala			0
Conostephium preissii			0
Darwinia vaginata			0
Lomandra sp			0
Jacksonia sericea			0
Leschenaultia linearoides			0
			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Briza maxima			0
* Lagurus ovatus			0
HERBS			
Trachyandra elatior			0
Conostylis candicans			0
Sowerbaea laxiflora			0
Xanthosia huegelii			0
Stylidium macrocarpum			0
Scaevola balsamifolia = crassifolia			0
Calandrinia latifolia			0
Lomandra maritima			0
Hovea trisperma			0
Anigozanthus manglesii			0
Drosera macrantha			0
* Briza bulbosus caryophyllaceus			0
* Pelargonium capitatum			0

HERBS (cont.)	No	Fl	ID
* Crassula colorata			0
* Cerastium glomeratum			0
* Ursinia anthemoides			0
* Anagallis arvensis			0
Homalosciadium homalocarpum			0
* Hedypnois cretica			0
* Petrorhagia velutina			0
SEDGES			
Mesomelaena pseudostygia			0
Tetraria octandra			0
Lepidosperma flexuosa			0

Urine Heath

Dominated by Organdra sessilis

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No	Boun 10
Date	1990
Keighery et al	

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Organdra sessilis			
Melaleuca acerosa			
Olearia axillaris			
Grevillea synkmfolia			
Isopogon cuneata			
Lechenaultia linarioides			
Acacia lasiocarpa			
Banksia burgessii			0
Comesperma virgatum			0
Acanthocarpus preissii			0
Hemiandra pungens			0
Hibbertia racemosa			0
Helichrysum cordatum			0
Stirlingia latifolia			0
Hardenbergia comptoniana			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
			0
GRASSES			
Stipa flavescens			0
* Ehrharta calycina			0
HERBS			
Conostylis aculeata			0
Caesia racemosa			0
Tapeinanthus cremnorum			0
* Petrorhagia velutina			0
Lemandra nervosa			0
Calandrinia liniflora			0
Trigiochin calcitrapa			0
*Heliophila pusilla			0
* Petrorhagia velutina			0
*Sonchus oleraceus			0
Trachymene pilosa			0
Crassula colorata			0
Lawrencia squamata			0

HERBS (cont.)	No	Fl	ID
Urtica urentissima			
SEDGES			
Loxocarya flexuosa			0
Lepidosperma leptostachyum			0
Tetraria octandra			0

Chamelaucium dominated western grey sand dune

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bold 11

Date 1990

Kenglenvale

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Chamelaucium uncinatum			
Calothamnus quadrifidus			
Olearia axillaris			
Melaleuca cordata			
Acacia cochlearis			
Olax benthamiana			
Dryandra lasia			
Acacia lasiocalyx			0
Persoonia quadricolor			0
Hibbertia racemosa			0
Acacia lasiocarpa			0
Scaevola canescens			0
Isopogon camptonianus			0
Hemiandra macrophylla = linearifolia			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa flavescens			0
* Ehrharta calycina			0
* Lagurus ovatus			0
SEDGES			
Lomandra flavens			0
HERBS			
Conostylis candicans			0
Acanthocarpus preissii			0
Tricoryne elatior			0
Lomandra nigricans			0
Thysanotus patersonii			0
* Pelargonium capitatum			0
* Ornithogalum arcuatum			0
* Petrorhagia velutina			0
* Arctotheca calendula			0
* Hypochaeris glabra			0
* Sonchus oleraceus			0
Caladenia longicauda			0
Arctotheca laevigata ssp. pygmaea			0

HERBS (cont.)	No	Fl	ID

Banksia Low Woodland "normal"

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOLD 12

Date 1990

Kenyhang et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Banksia attenuata			
Banksia menziesii			
MALLEES			
SHRUBS			
Calothamnus quadrifidus			
Allocasuarina humilis			
Leucopogon australis			
Acacia cyclops			
Conostylis ericifolia			
Conostylis hiemalis			
Hardenbergia comptoniana			
Acacia pulchella			0
Scaevola canescens			0
Leschenaultia biloba			0
Melaleuca acerosa			0
Tetratheca ciliata			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
0 * Ehrharta calycina			
HERBS			
0 * Polycarpaea corymbosa			
0 Lomandra maritima			
0 * Crassula cardiophyllacea			
0 Conostylis aculeata			
0 Crassula colorata			
0 Isolepis cernua			
0 * Ursinia anthemoides			
0 Calandrinia granulifera			
0 Cal. brevipedata			
0 * Romulea rosea			
0 * Wurmbea dioica			
0 * Spergularia diandra			

HERBS (cont.)	No	Fl	ID
SEDGES			
0 Tetraria octandra			
0 Lepidosperma gladiatum			

Banksia menziesii woodland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bou 18

Date 1990

Lochiarra ejral

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Banksia menziesii			
Agonis flexuosa			
MALLEES			
SHRUBS			
Dakea prostrata			
Hardenbergia comptoniana			
Olearia axillaris			
Calothamnus quadrifidus			
Allocasuarina humilis			
Hemiandra pungens			
Grevillea eriostachya			
Helichrysum cordatum			0
Stirlingia latifolia			0
Hibbertia racemosa			0
Acacia lasio.			0
Acacia pulchella			0
Xanthorrhoea preissii			0
Melaleuca acerosa			0
			0
			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
			0
GRASSES			
* Ehrharta calycina			0
Stipa flavescens			0
* Lagurus ovatus			0
HERBS			
Arctotheca prostrata			0
* Polycarpon tetraphyllum			0
Kennedia prostrata			0
Tricoryne elatior			0
Conostylis candicans			0
Lomandra maidenii			0
* Cheilanthes tenuifolia			0
Craspedia glauca			0
* Ursinia anthemoides			0
* Hypochaeris glabra			0
* Anagallis arvensis			0
* Petrorhagia velutina			0
* Briza maxima			0

HERBS (cont.)	No	Fl	ID
* Carrichtera glomerata			0
SEDGES			
Lepidosperma squamatum			0

Banksia laevigata
Eucalyptus decipiens

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Kalo 16
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008

TREES	No	Fl	ID
Eucalyptus decipiens			
Banksia attenuata			
Banksia menziesii			
Allocasuarina fraseriana			
MALLEES			
SHRUBS			
Melaleuca acerosa			
Calothamnus quadrifidus			
Daviesia triflora			
Allocasuarina humilis			
Olearia axillaris			
Stirlingia latifolia			
Petrophile macrostachya			
Acacia lasiocarpa			0
Hardenbergia comptoniana			0
Conostylis candicans			0
Isopogon cuneifolius			0
Hypocalymma calycinum			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Ehrharta calycina			0
HERBS			
Conostylis aculeata			0
Pterostylis elata			0
Anigozanthos manglesii			0
Drosera pallida			0
* Romulea rosea			0
Crassula colorata			0
* Ursinia anthemoides			0
* Hypochaeris glabra			0
* Cotyledon glomeratum			0
* Heliophila pusilla			0
* Arctotheca calendula			0
* Romulea rosea			0

HERBS (cont.)	No	Fl	ID
SEDGES			
Tetraria octandra			0

Tuart Woodland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bold 15

Date 1990

Kenchington et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Eucalyptus gomphocephala			
Eucalyptus marginata			
MALLEES			
SHRUBS			
Hardenbergia comptoniana			
Macrozamia riedlei			
HERBS			
Pelargonium capitatum			✓
Arthropodium capillipes			✓

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Ehrharta calycina			✓

HERBS (cont.)	No	Fl	ID
SEDGES			
Lepidosperma gladiatum			✓

Jarrah Woodland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bold 16
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet
- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
0 Euc marginata			
0 Banksia grandis			
0 Banksia menziesii			
MALLEES			
SHRUBS			
0 Macrozamia reidii			
0 Acacia pulchella			
0 Hibbertia hypericoides			
0 Stirlingia latifolia			
0 Daviesia triflora			
0 Pimelea rosea			
0 Leucopogon parviflorus			
0 Olearia axillaris			
0 Gompholobium aristatum			
0 Hardenbergia comptoniana			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
0 * Ehrharta calycina			
HERBS			
0 Sowerbaea laxiflora			
0 Conostylis aculeata			
0 Drosera macrantha			
0 Diuris longifolia			
0 * Trifolium campestre			
0 * Ursinia anthemoides			
0 * Spergularia diandra			
0 * Hypochaeris glabra			
0 * Lupinus angustifolius			

HERBS (cont.)	No	Fl	ID
SEDGES			
0 Loxocarya ~~cinerea~~ flexuosa			

plotlocsd	TaxonID	SpCode	Na	Genus	Species	InfraspRank	InfraspName	Informal	ConsvCode	Scode
bold17	3502	ACAPUL		Acacia	pulchella					D
bold17	3527	ACASAL		Acacia	saligna					D
bold17	8786	ARTCAP		Arthropodium	capillipes					M
bold17	12770	BURCON		Burchardia	congesta					M
bold17	1276	CAEMIC		Caesia	micrantha					M
bold17	1418	CONACU		Conostylis	aculeata					M
bold17	347	EHRCAL	*	Ehrharta	calycina					M
bold17	5578	EUCCAL		Eucalyptus	calophylla					D
bold17	13547	EUCMARMA		Eucalyptus	marginata	subsp.	marginata			D
bold17	3961	HARCOM		Hardenbergia	comptoniana					D
bold17	5135	HIBHYP		Hibbertia	hypericoides					D
bold17	4012	JACFUR		Jacksonia	furcellata					D
bold17	945	LEPSQU		Lepidosperma	squamatum					M
bold17	85	MACRIE		Macrozamia	riedlei					G
bold17	4343	PELCAP	*	Pelargonium	capitatum					D
bold17	19825	PETDUB	*	Petrorhagia	dubia					D
bold17	18117	PIMROSRO		Pimelea	rosea	subsp.	rosea			D
bold17	1312	SOWLAX		Sowerbaea	laxiflora					M
bold17	17763	TRICAMCA	*	Trifolium	campestre	var.	campestre			D
bold17	4322	VICSAT	*	Vicia	sativa					D
bold17	1256	XANPRE		Xanthorrhoea	preissii					M

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Acacia xanthina shrubland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bush 18

Date 1995

Kenyon et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
			0
SHRUBS			
Acacia xanthina			
Melaleuca lanceolata			
Hakea corymbosa			
Eremaea microphylla = Micrantha			
Conospermum			
Templetonia retusa = Cretacea			
Acacia saligna = Cyanophylla			
Leucopogon = Styphelia propinquus			0
Xanthorrhoea reflexa			0
Scaevola crassifolia			0
Hemiandra pungens			0
Grevillia eriostachya = Eriostachya			0
Hibbertia spicata subsp leptot.			0
Grevillia thelemanniana spp.			0
Acacia lasiocarpa			0
Anigozanthos viridis			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Lagurus ovatus			0
SEDGES			
Lepidosperma (sp.) angustatum = Squamosum			0
Lomandra effusa = Hastilis			0
HERBS			
Calandrinia balonensis			0
Drosophyllum lanceolatum			0
Opercularia vaginata			0
Tribonanthes purpurea = Australis			0
Thysanotus patersonii			0
Thysanotus sparteus			0
Wurmbea monantha			0
Dianella revoluta			0
Patersonia occidentalis			0
Drosera sp.			0
* Romulea rosea			0
Erodium botrys			0
* Hypochoeris glabra			0
* Sonchus oleraceus			0

HERBS (cont.)	No	Fl	ID
* Cerastium glomeratum			0
* Euphorbia peplus			0
Daucus glochidiatus			0
Helipterum corymbiflorum			0
* Anagallis arvensis			0
* Trifolium sp. indet.			0
* Erodium cicutarium			0
* Centaurium maccosphora			0
Trachymene pilosa			0
Trachymene coerulea			0

Swamp (artificially dammed)

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bow 1A

Date 1990

Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008

TREES	No	Fl	ID
MALLEES			
SHRUBS			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
0 Spo[illegible] virginicus			
HERBS			
0 *Lenzyla nodiflora			
0 Trigiochin striata			

HERBS (cont.)	No	Fl	ID
SEDGES			
0 *Typha orientalis			
0 Baumea rubiginosa			

(southern)
Swamp edges - woodland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bond 20
Date 1990

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
0 Eucalyptus rudis			
MALLEES			
SHRUBS			
0 Acacia saligna			
0 Hakea lehmanniana			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
0 * Sherardia arvensis			
0 * Pennisetum clandestinum			
HERBS			
0 *Pelargonium capitatum			

HERBS (cont.)	No	Fl	ID
SEDGES			
0 Baumea juncea			
0 Lepidosperma sp. ? squamatum			

Swamp - northern edge

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bud 21

Date 1990

Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name.
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
0 Eucalyptus rudis			
0 melaleuca incana			
0 Acacia saligna			
MALLEES			
SHRUBS			
0 Lepidosperma longitudinale			
0 Xanthorrhoea preissii			
0 Hakea prostrata			
HERBS			
0 Centella cordifolia			
0 * Cyperus laevigatus			
0 Lobelia alata			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
* Juncus acutus (GK 11001)			
hydroph.			
SEDGES			
0 Juncus pallidus			

HERBS (cont.)	No	Fl	ID

Limestone, Heath dominated by Acacia huegelii

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No BOLD 22
Date 1996
Kenebering plant

Label each plant with plants number, site code, date and plant's name or working name if required
Record on Sheet

- Column 1 plant name-
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
			0
SHRUBS			
Acacia huegelii			
Templetonia retusa			
Ingarlium leptalium			
Dryandra sessilis			
Melaleuca acerosa			
Olax benthamiana			
Grevillea thelemanniana ssp pres.			
Melaleuca acerosa			0
Diplopeltis huegelii			0
Ashbolana microcarpa			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0
			0

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa flava			
HERBS			
Opercularia vaginata			
Stylidium [aff affine] marchantii			
* Pelargonium rapifolium			
* Euphorbia peplus			
* Anagallis arvensis			
Daucus glochidiatus			
* Sonchus oleraceus			
* Petrorhagia velutina			
Monadenia grandiflora			
Orossa macrantha ssp mac.			
Calandrinia brevisepta			
* Galium aparine			

HERBS (cont.)	No	Fl	ID
SEDGES			
Lepidosperma angustifolium			0
Lax ~~sclerea~~ flaccida			0

Limestone Heath → Eucalyptus foecunda Mallee shrubland

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No Bold 23
Date 1990
Keighery et al

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
0 Euc foecunda			
MALLEES			
SHRUBS			
0 Olearia exillaris			
0 Dryandra sessilis			
0 Hakea camptoniana			
0 Mel cearoga			
0 Allocasuarina humilis			
0 Macrozamia riedlei			
0 Olea banthamana			
HERBS			
0 Conostylis aculeata			
0 Acanthocarpus preissii			
0 * Ursinia anthemoides			
0 * Pentaschista velutina			
0 Trachymene calcitropa			
0 Craspedia glaberata			
0 Isolepis cernua			
0 * Sparganiaria diandra			
0 * Anagallis arvensis			
0 * Cerastium glomeratum			
0 * Hellaphila pusilla			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
0 * Ehrharta calycina			

HERBS (cont.)	No	Fl	ID
SEDGES			
0 Lepidosperma ~~gracile~~			FRUITS
0 Tetraria octandra			

M47 Bold Park, City Beach Bulletins 322 (Knightsbridge, rejected), 362 (Knightsbridge, rejected), 655 (West Coast Hwy)		
M47.1 Regional park recommendations be applied to this area.	Implementation Progressing	At this stage there is no regional park proposal for this area. However, the City of Perth is preparing Public Environmental Review addressing planning and management of the M46 and M47 areas within the City of Perth.
M47.2 City of Perth's proposal to maintain and extend Bold Park is endorsed.	Implemented	Endorsement. Friends of Bold Park has an interest in this area.

M47 Bold Park, City Beach

Bulletins 322 (Knightsbridge, rejected), 362 (Knightsbridge, rejected), 655 (West Coast Hwy)

Friends (Advocate) Management

Other Names:

(Specific Study/studies) Miscellaneous studies

Flora

Vegetation Map (1) 2 3

Flora list (1) 2 3 4

Significant Taxa (done / suitable) / doubtful

Fauna

Mammals	(1)	2	
Birds	(1)	2	(RAOU)
Reptiles and Amphibia	(1)	2	
Invertebrates	(1)	2	

Vegetation Condition Map Sites (Comment)

Disturbance Factors (Comment) (Management)

(Swan Coastal Plain Floristic Survey) compatible sites plus

AHC: National Estate- Listed / Interim / (Nominated) / Notified NT (WA): (Heritage Classification)

Notes
Friends Bold Park
Wildflower Society
RAOU

SHEET 1: System 6 - REPORT Information Search Date _____

Please circle the appropriate response or respond in the space provided.

Area M ~~46~~ 147 Name	Bold Park
Title	"West Coast Hwy Realignment"
Published/Unpublished Date	1984/85 also 1991
Author/s	A. Weston for Dames and Moore
Location of Publication	
Purpose (why was the report prepared?)	
Government	Main Roads
Corporate	
Community Group	
Management Plan	

Soils			
Units	mapped	described	referenced

Landscape		
Features	described	referenced

Flora						
Vegetation Map						
Units				Site based (no)		
Mapped						
Veg Units	Comparable Heddle *et al*		Compared Heddle *et al.*		Unit not mapped by Heddle *et al.*	
Flora list						
Timing	%completion	90%			Significant Taxa	
	Trees	Shrubs	Herbs	Sedges	Weeds	DRF CALM Priority Other

Fauna			
Timing	%completion		Significant Taxa
	Mammals	Birds	Sched1 Sched2 Other
	Reptiles	Invertebrates	

Vegatation Condition				
Site based	Mapped	Units	Comp units	
Disturbance Factors				
Phytophthora	observed		Other	incidental
	tested			itemised

Notes Also Kinhill Engineers originally Bold Park Study for Knightsbridge Development.

SHEET 2: System 6 - VERBAL Information Search

Date 12/5/94

Area M 47 Name	Bold Pk (small portion) (South-west corner) Access Rd to Amphitheatre		
Source	Robert Powell (CALM Como)		
Purpose (why was the study done?)			
Government			
Corporate			
Community Group			
Management Plan			
Publication Planned	Yes	No	Date
Planned Location			

Soils		
Units	described	referenced

Landscape		
Features	described	referenced

Flora					
Vegetation Map					
Units				Site based (no)	
Mapped					
Veg Units	Comparable Heddle *et al*		Compared Heddle *et al*	Unit not mapped by Heddle et *al*	
Flora list					
Timing	%completion			Significant Taxa	
2-3 hrs 29/3	Trees / Shrubs / Herbs / Sedges		Weeds	DRF	CALM Priority Other

Fauna			
Timing	%completion		Significant Taxa
	Mammals	Birds	Sched1 Sched2 Other
	Reptiles	Invertebrates	

Vegetation Condition				
Site based	Mapped	Units		
Disturbance Factors				
Phytophthora	observed		Other	Incidental
	tested			Itemised

Notes

System 6 - VERBAL Information Search Date 5/94

Area M47 Name	BOLD PARK					
Source	Swan Coastal Plain Floristic Survey (see General)					
Purpose (why was the study done?)						
Government						
Corporate						
Community Group						
Management Plan						
Publication Planned	Yes	No	Date			
Planned Location						

Soils		
Units	described	referenced

Landscape		
Features	described	referenced

Flora						
Vegetation Map						
Units				Site based (no)	4	
Mapped						
Veg Units	Comparable Heddle *et al*		Compared Heddle *et al.*		Unit not mapped by Heddle *et al.*	
Flora list						
Timing	%completion				Significant Taxa	
	Trees	Shrubs Herbs	Sedges	Weeds	DRF	CALM Prority Other

Fauna			
Timing	%completion		Significant Taxa
	Mammals	Birds	Sched1 Sched2 Other
	Reptiles	Invertebrates	

Vegetation Condition				
Site based	Mapped	Units		
Disturbance Factors				
Phytophthora	observed		Other	incidental
	tested			itemised

Notes

System 6 - REPORT Information Search Date 5/94

Please circle the appropriate response or respond in the space provided.

Area M47 Name Bold Park
Title

Author: How R.A. Dell J.
Date: 1990
Title: Vertebrate fauna of Bold Park, Perth
Source: Western Australian Naturalist 18: 122-130

Author: Keighery G.J. Harvey J. Keighery B.J.
Date: 1990
Title: Vegetation and flora of Bold Park, Perth, Western Australia
Source: Western Australian Naturalist 18: 100-120

Community Group
Management Plan

Soils			
Units	mapped	described	referenced

Landscape		
Features	described	referenced

Flora							
Vegetation Map							
Units				Site based (no)			
Mapped							
Veg Units	Comparable Heddle *et al*			Compared Heddle *et al.*		Unit not mapped by Heddle *et al.*	
Flora list							
Timing	%completion					Significant Taxa	
	Trees	Shrubs	Herbs	Sedges	Weeds	DRF	CALM Prority Other

Fauna			
Timing	%completion		Significant Taxa
	Mammals	Birds	Sched1 Sched2 Other
	Reptiles	Invertebrates	

Vegatation Condition		
Site based	Mapped	Units
Disturbance Factors		
Phytophthora	observed	Other Incidental
	tested	itemised

Notes

SHEET 1: System 6 - REPORT Information Search Date 3/5/94

Please circle the appropriate response or respond in the space provided.

Area M46/47 Name

Mitchell Mc Cotter and Ecoscape. 1993 Bold Park and Environs. Public Environmental Review. Perth City Council.

(Published)/Unpublished	Date 12/1992
Author/s	Ecoscape — D. Kaeshagen & B. Carr
Location of Publication	
Purpose (why was the report prepared?)	Ecoscape
Government	
Corporate	
Community Group	
Management Plan	

Soils			
Units	mapped	(described)	(referenced)

Landscape		
Features	(described)	referenced

Visual resource assessment

Flora								
Vegetation Map	mapped existing units							
Units				Site based (no)				
Mapped	based on existing maps and original work							
Veg Units	Comparable Heddle *et al*			Compared Heddle *et al.*		Unit not mapped by Heddle *et al.*		
Flora list	used existing plus abbreviations							
Timing	%completion 90%					Significant Taxa		
long term	(Trees)	(Shrubs)	(Herbs)	(Sedges)	(Weeds)	DRF	CALM	Priority Other

Fauna	used existing literature		
Timing	%completion		Significant Taxa
long term	(Mammals)	(Birds)	Sched1 Sched2 Other
	(Reptiles)	Invertebrates	

See publication for Reference

Vegatation Condition	problems conditions not mapped	
Site based	Mapped Units	general comments

Disturbance Factors	not Phytophora site		
Phytophthora	observed	not observed	Other incidental
	tested		(itemised)

Notes Dames & Moore recorded phytophthora observations not tested

SHEET 1: System 6 - REPORT Information Search Date 3/5/94

Please circle the appropriate response or respond in the space provided.

Area M 47 (Part) Name BOLD PK (PART)			
Title			
→ continuing.			
(Published)/Unpublished	Date		
Author/s R. Howe and J. Dell			
Location of Publication			
Purpose (why was the report prepared?)			
Government Museum Faunal Research Project			
Corporate			
Community Group			
Management Plan			

Soils			
Units	mapped	described	referenced

Landscape			
Features	described	referenced	

Flora					
Vegetation Map					
Units			Site based (no)		
Mapped					
Veg Units	Comparable Heddle *et al*		Compared Heddle *et al.*		Unit not mapped by Heddle *et al.*
Flora list					
Timing	%completion				Significant Taxa
	Trees	Shrubs Herbs	Sedges	Weeds	DRF CALM Priority Other

Fauna	90 days per year at 4 sites.			
Timing	%completion			Significant Taxa
	Mammals 100%	Birds 100%		Sched1 Sched2 Other
	Reptiles 100%	Invertebrates 20-40%		

Vegatation Condition			
Site based	Mapped	Units	
Disturbance Factors			
Phytophthora	observed	Other	incidental
	tested		itemised

See over

Notes Using as 'case study' for number of years on • sampling techniques (methodology)
• Species biology knowledge
- condition of animals
- predator/prey
relationship inverts & reptiles, use reptiles to indicate habitat, suggest standard sampling procedure.
indicate adequacy sampling

PTO

CASE STUDY

- establish a long term methodology for survey
- Species Biology Information
  - animal condition
  - predator/prey relationships
- relationship invertebrates and reptiles so establish parameters for sampling habitat preference and nature habitat required.
- parameters for adequacy of sampling

Present indicated directions

* Poor Condition of vegetation does not reflect absence of invertebrates
Diversity invertebrates related to

- Suite natives rather than a structurally described community
- Some integrity of structure required

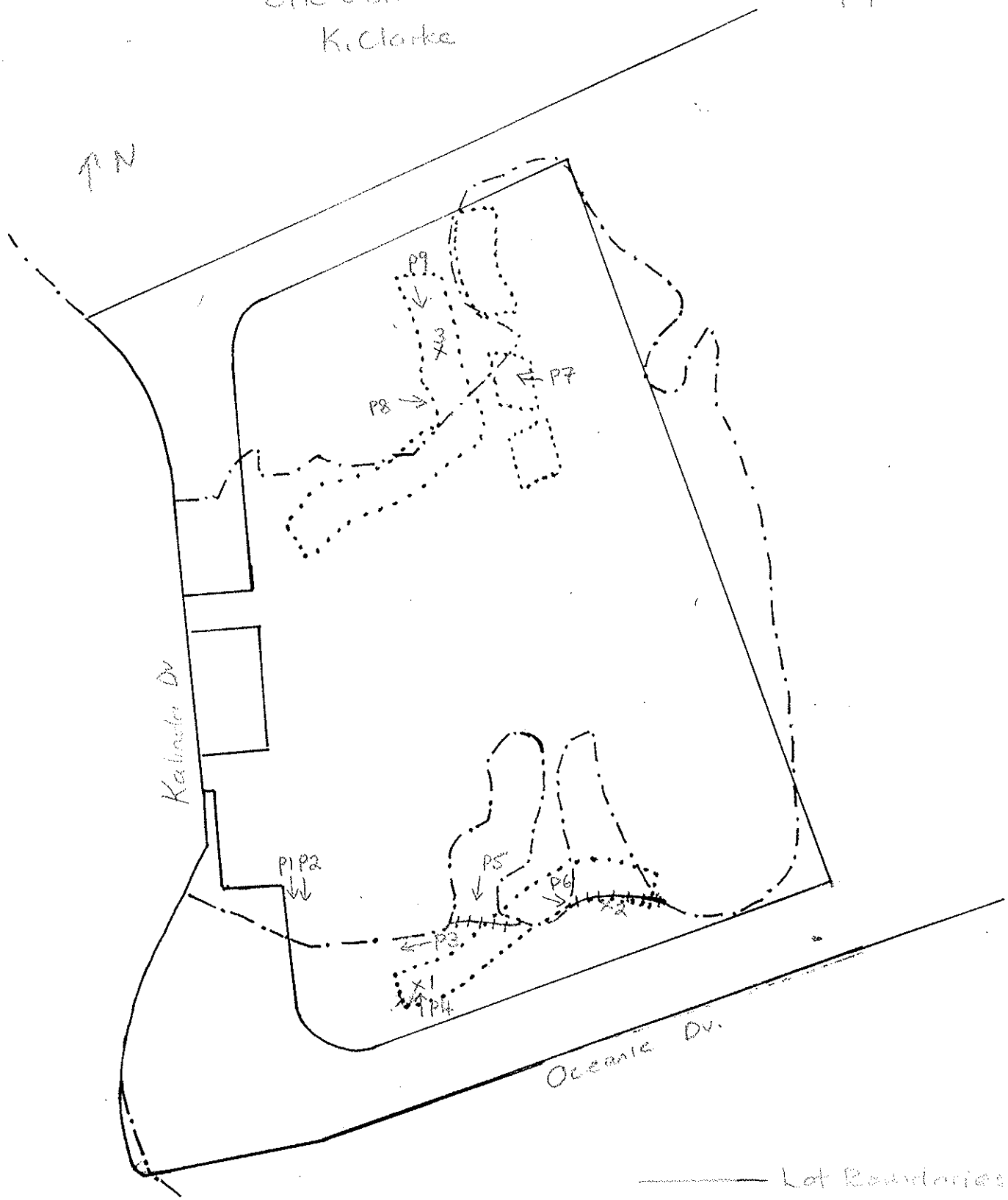
ie Habitat for invertebrates is related across plant communities

* Size area for invertebrate/reptile diversity

Bushland - 1 hectare = diversity 'native bush garden'
- 4 hect = 'Bushland' diversity

Site Visit Notes - 6/6/00

K. Clarke



——— Lot Boundaries

—·—·— Draft Perth's Bushplan Boundary

+++++ Boundary of area that may be cleared as advised on 30/3/2000

..... Minimum boundary of proposed development

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA CityBeach Main Sand Dune nr BS312 SITE NUMBER 1

DATE TRIP 6/08 RECORDERS K Clarke

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

From *'Bushland Plant Survey'* written B. Keighery (1994) and published by Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

1. LOCATION of the QUADRAT

Mud Map Draw a sketch of the location of the site below.

N

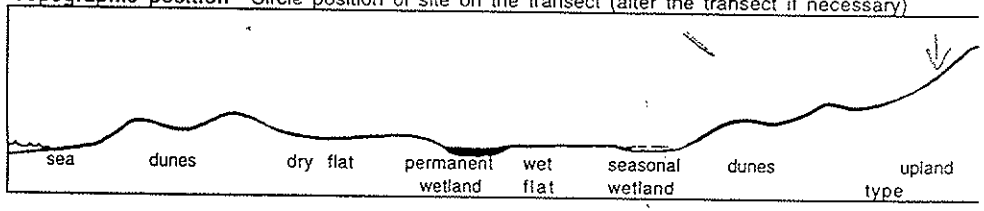
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name K. Clarke Photo No 4

Topographic position Circle position of site on the transect (alter the transect if necessary)



2. SITE DATA Circle the correct response.

Slope flat gentle (steep) *Aspect* (N) NE E SE S SW W NW

Surface Soil light pinkish grey sand *Colour*

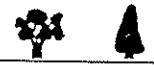
Exposed rock *type* (Limestone) % surface 50-60%

Sub-surface Soil *Colour*

Rock *type* depth to rock

Drainage (well) mod poor depth water cm *Wet* all year winter/spring

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

	TREES			MALLEES	
	over 30m	10 - 30m	under 10m	over 8m	under 8m
LIFE FORM					 30m 10m
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS		SHRUBS
	over 2m	2m - 1m	under 1m
LIFE FORM			 2m 1m
COVER CLASS (%)		2-10%	70-100%
DOMINANT SPECIES		Mel. huca. Acacia saligna (Tall) - lots of	Scav arach. Lomea HW hands

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				1m
COVER CLASS (%)			2-10%	
DOMINANT SPECIES			Desm flex (in patches)	

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		Ex - V. good.
2 EXCELLENT	I	Burnt several years ago, regenerating very well. Few tracks, some Shrubs pushed down.
3 VERY GOOD		
4 GOOD		
5 DEGRADED		

Graypres - Acatrunc - next dominants @ < 1m
Tempret, Graypres, Dryland, after Scavanch.
(Cass sp.)

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA City Beh Heath Sch nr BS312 SITE NUMBER 2

DATE TRIP 6/6/00 RECORDERS K. Clarke,

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

From *'Bushland Plant Survey'* written B. Keighery (1994) and published by Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

1. LOCATION of the QUADRAT

Mud Map Draw a sketch of the location of the site below.

N

Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name K. Clarke Photo No 6

Topographic position Circle position of site on the transect (alter the transect if necessary)

2. SITE DATA Circle the correct response.

Slope flat gentle steep *Aspect* N NE E SE S SW W NW

Surface Soil Light yellow sandy loam *Colour*

Exposed rock type Limestone % surface ~ 5% V. small boulders scattered

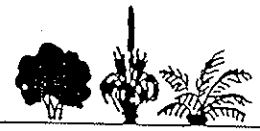
Sub-surface Soil *Colour*

Rock type depth to rock

Drainage well mod poor depth water cm *Wet* all year winter/spring

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

	TREES			MALLEES	
	over 30m	10 - 30m	under 10m	over 8m	under 8m
LIFE FORM					
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS		SHRUBS
	over 2m	2m - 1m	under 1m
LIFE FORM			
COVER CLASS (%)	30 - 70 %	10 - 30 %	10 - 30
DOMINANT SPECIES	Acaxanth Mallee (regenerating)	Scavcross.	Scavarch.

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				
COVER CLASS (%)		2 - 10 %		
DOMINANT SPECIES		Opurc. Vag		

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		V. good; dominance of Acaxanth + Scavcross indicate dist?, more tracks + some *Pelcap.
2 EXCELLENT		
3 VERY GOOD	I	
4 GOOD		
5 DEGRADED		

Grevpres, Tempreat, Lepidsqu, Santacam, Drysea, Clemmicro, Austrostipaflav.

Many spp same as site 1

* few Pelcap.

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA Fox Bells Hill Site SITE NUMBER 3

DATE TRIP 6/6/00 RECORDERS K. Clarke

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

1. LOCATION of the QUADRAT

From *'Bushland Plant Survey'* written B. Keighery (1994) and published by Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

Mud Map Draw a sketch of the location of the site below.

N

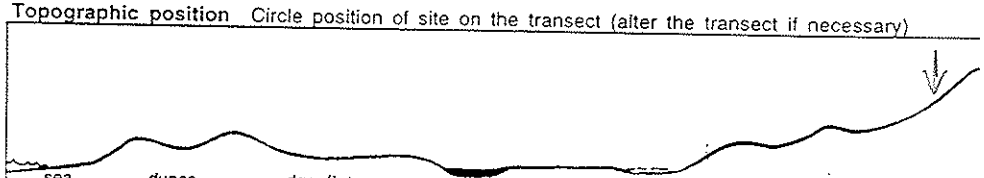
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name K Clarke Photo No 9

Topographic position Circle position of site on the transect (alter the transect if necessary)



2. SITE DATA Circle the correct response.

Slope flat gentle (steep) *Aspect* N (NE) E SE S SW W NW

Surface Soil White Quindalup Sand *Colour*

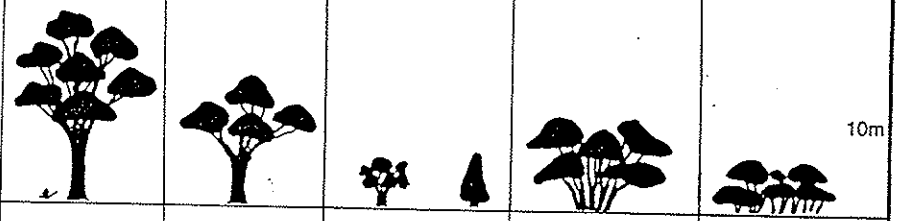
Exposed rock type N/A % surface

Sub-surface Soil *Colour*

Rock type depth to rock

Drainage (well) mod poor depth water cm *Wet* all year winter/spring

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

	TREES over 30m	TREES 10 - 30m	TREES under 10m	MALLEES over 8m	MALLEES under 8m
LIFE FORM					
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			
COVER CLASS (%)	2-10%	2-10%	10-30%
DOMINANT SPECIES	Drusess	Tempret	Mixed

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				
COVER CLASS (%)	2-10%		2-10%	
DOMINANT SPECIES	Austrostipa flav		Lodicea sqvarm	

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		V good - good. Some areas burnt v recently & little regen. yet. so difficult to tell condition. Remainder soil is unstable due to previous fires opening out veg in v. good cond. *Pelcap, *Margovat, *Pelcap only serious weed ~2-10% cover Hibbrac (grey), Acanthpreis, Olearia exsti, Conc and, Acatrun, Gomphtom,
2 EXCELLENT		
3 VERY GOOD	I	
4 GOOD		
5 DEGRADED		

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA _____ SITE NUMBER _____

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written B. Keighery (1994) and published by Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

1. LOCATION of the QUADRAT

Mud Map Draw a sketch of the location of the site below.

N

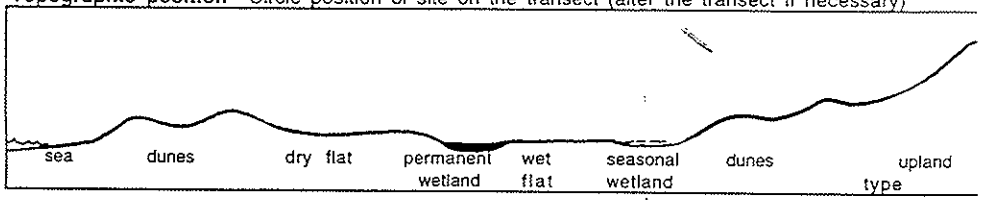
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No

Topographic position Circle position of site on the transect (alter the transect if necessary)



2. SITE DATA Circle the correct response.

Slope flat gentle steep *Aspect* N NE E SE S SW W NW

Surface Soil *Colour*

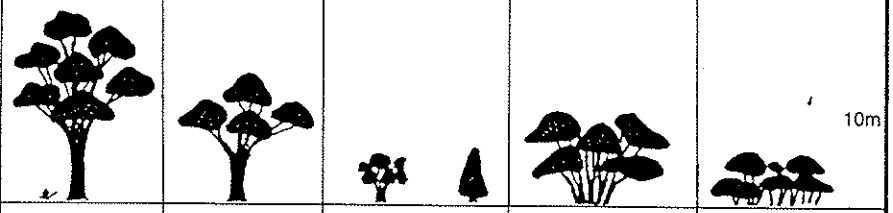
Exposed rock *type* % surface

Sub-surface Soil *Colour*

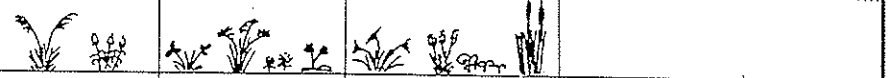
Rock *type* depth to rock

Drainage well mod poor depth water cm *Wet* all year winter/spring

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

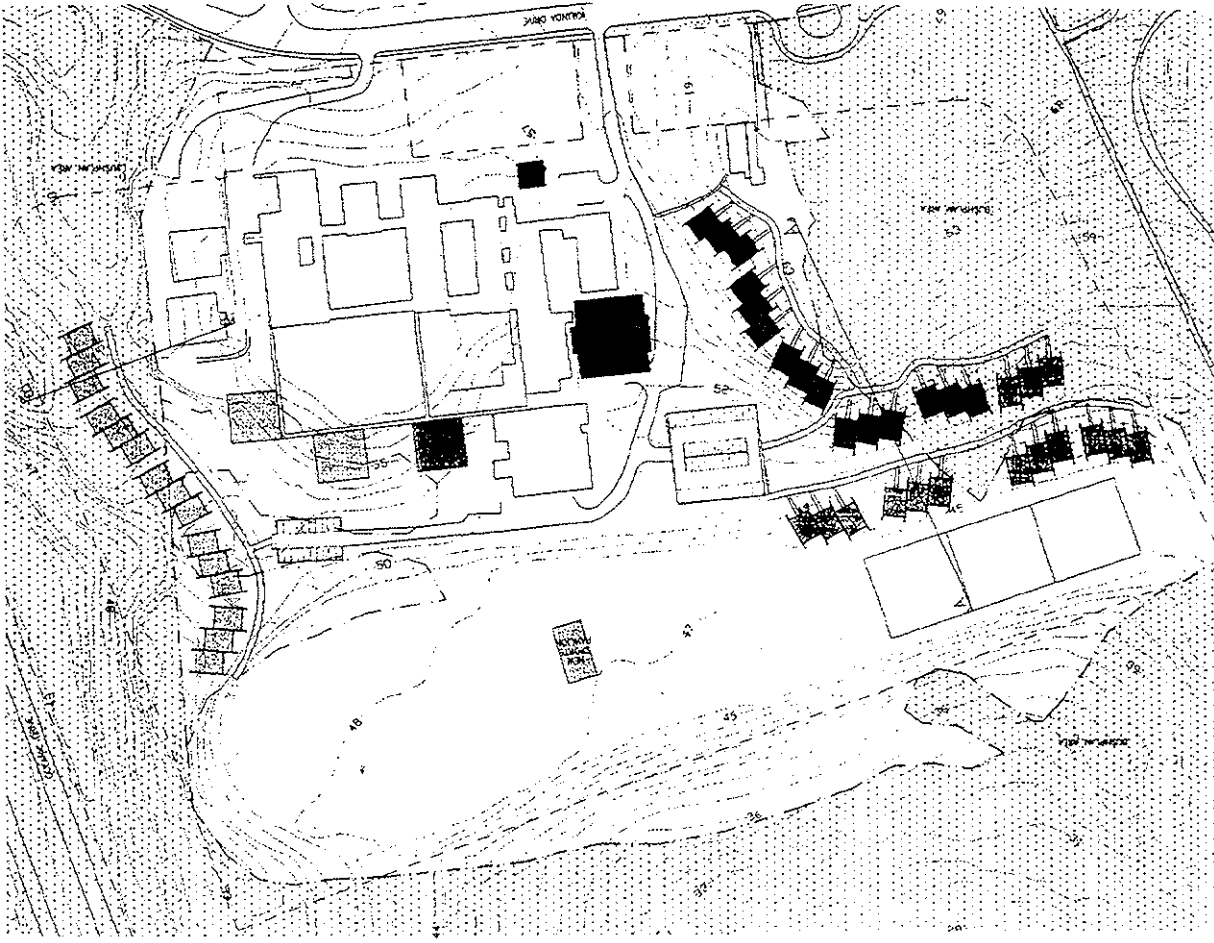
	TREES			MALLEES	
	over 30m	10 - 30m	under 10m	over 8m	under 8m
LIFE FORM					30m / 10m
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS		SHRUBS
	over 2m	2m - 1m	under 1m
LIFE FORM			2m / 1m
COVER CLASS (%)			
DOMINANT SPECIES			

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				1m
COVER CLASS (%)				
DOMINANT SPECIES				

4. VEGETATION CONDITION

1 'PRISTINE'		COMMENTS
2 EXCELLENT		
3 VERY GOOD		
4 GOOD		
5 DEGRADED		



Meeting w Jodi Mansell-Fletcher, Botanic Gardens & Parks Authority

Bold Park Authority

- revisit boundaries
- fence boundary in bushland to mark Bold Pk boundary area.
- northern section of school bushland visual impact if development
- after fire need weed removal
- no pets
- northern section - erosion problem.
- planting — local indigenous spp (no Geraldton Wax) Consult with Parks Auth
- Rog-Sign Sp — locations maps (ECOS, 1999)

Acacia xanthina
Euc decipiens } nearby

Record of Telephone Call

Call from	Call to	Folio No.
Dept	Dept	File No.
Subject	Date / /	Time

Details

Botanic Gardens & Park Authority
71 Oceanic Drive
City Beach
9 387 0800

Travel up Oceanic Drive towards the ocean, 1st driveway left after Perry Lakes Drive (Colonial style wooden building)
Open 9 am - 5 pm

Pick up - Bold Park Draft Environmental Management Plan 2000 - 2005 from reception for Karen Clarke,

Conservation Branch
Level 4
Dept. of Environ Protection
141 St George's Tce, Perth.
9222 7093.

Bushland Manager - Jody Mansell Fletcher is need assistance

Action taken/Recommendation(s) (where applicable)

2/6 Spoke to Jodie - 93870805
Nth Section burnt 27/2/00
Sth Section burnt Jan 97/98 ?

Approval (if required)

*Species list - FLORA

*Please note that this is a random sample of species in the area and that a more comprehensive list will be supplied at a later date.

List of species sited in the northern section of Reserve 299239424. 42 spp. recorded here

Vegetation structure varies from low shrubland to very open woodland of tuart and banksia. Species listed were found in the Banksia woodlands and Quindalup Dune sand (see attached vegetation map).

A
Acacia coclearis
Acacia cyclops
Acacia pulchella
Acanthocarpus preissii
Acacia saligna
Acacia lasiocarpa
Allocasuarina humilis

B
Banksia attenuata
Banksia menziesii

C
Caladenia latifolia
Cassytha sp.
Conostylis candicans
Crassula colorata

D
Daviesia divaricata
Diplopeltis huegelii
Dryandra sessilis

E
Eremophila glabra
Eucalyptus gomphocephala

G
Grevillia thelemanniana
Grevillea crithmifolia

H
Hardenbergia comptoniana
Hibbertia subraginata

I
Isolepis nodosa

L
Leucopogon parvifforus
Lepidosperma augustatum
Lepidosperma gladiatum
Lomandra maritima
Lechenaultia linarioides

M
Melaleuca acerosa
Myoporum insalare
Macrozamia riedlei

O
Olearia Axillaris
Ozothamnus cordatus

P
Phyllanthus colycinus

R
Rhagodia baccata

S
Scaevola crassifolia
Senecio lautus
Stipa flavescens
Scaevola anchusifolia
Spridium globulosum
Schoenus grandiflorus

T
Templetonia retusa

***Species list - FLORA**

*Please note that this is a random sample of species in the area and that a more comprehensive list will be supplied at a later date.

List of species sited in the northern section of Reserve 299239424. 25 spp. recorded here

Vegetation structure is tuart woodland along path east of dune ridge and west-north west of tennis courts. Please note large counts of pink-fairy orchids Caladenia latifolia. Species listed were found in tuart woodland with Cottesloe soil association (see attached vegetation map).

A
Allocasuarina humilis
Acacia pulchella
Acacia cyclops
Acanthocarpus preissii

B
Banksia attenuata

C
Corinotheca micrantha
Clematis microphylla
Caladenia latifolia
Conostylis candicans

D
Daviesia divaricata
Dianella revoluta

E
Eucalpytus gomphocephala

G
Grevillea thelemanniana

H
Hardenbergia comptoniana

L
Lomandra maritima
Leucopogon parviflorus
Lepidosperma gladiatum

M
Maerozamia riedler
Melaleuca accrosa

O
Olearia axillaris

R
Rhagodic baccata

S
Spyridium globulosum
Schoenus grandiflorus

T
Templetonia retusa

X
Xanthorrhoea preissii

Questions

M46 Agropyron racemosus

= Agropyron scabrum

= Thinopyrum dishichm

402 — 268

— 133 Δ +1

+1 Weed Mitchell McCotter

= 403.

Cold Park Bushland

- Lakes to the Sea
- 'Typical' combination, all features from Lake / limestone ridge / limestone dunes / dunes or coast
- Spearwood / Quindalup Dune System
- Flora 268 native taxa / 8 mapped units / 9 floristic groups
- Spearwood Dunes - 4 floristic groups

- Limestone ridge
  - shrubland
  - 'typical taxa'
    - Pimelea calcicola
    - Grevillea crithmifolia (i.e. ...)
  - relationship Scarp/Limestone'
    - Dryandra sessilis
    - Diplopeltis huegelii
    - Stylidium maritima - Priority
    - Other Begeria cygnorum
      Hibbertia spicata
  - Quinds / Spearwood
    - Hemiandra pungens
    - Hibbertia racemosa

- Shrubland deeper sands
  - Templetonia
  - Acacia saligna near southern limit

Shrublands interfaced woodlands
important habitat
Banksia woodlands
- Jacksonia sericea

Tuart woodlands
- interfaces
- move to Quindalups

Quindalups 5 Floristic units

- Tuart
- Shrublands (Inland Dunes)
  - Allocas leh.
  - Chamaexeriphium
- Taxa of interest
  - Hemiandra pungens
  - Hibbertia racemosa

Coastal Dune
- dominated by Olearia axillaris
  Ac. rostellifera, Mel. acerosa
- Santalum acuminatum
  Nemcia reticulata

Weeds - [134] taxa
- long assoc people/use
- Rhamnus - woody weed

21/8/98

Ross Bowman - Town Cambridge

Priorities - Health/Safety
- Appropriate Usage

Involved
- Fire Control
- Perth Main.
- Ground Main.
- Infrastructure Main
  - Bins
  - Cafe
  - Signs
  - Seats

Patrols
- Boss (Roshan)
- bicycles
- vehicles

Community Usage eg orienteering, running

Geology Ian Elliot

- 2 mil years
- Sea level 10,000 ⇒ Mixture Two
- Tamala limestone give underlying structure for coast there are marine/dune sediments
- Modern Coast (formed last 6,000 yrs = Quindalups)

Beach - Sedimentation changed by Harbour (Freo) changes not well understood problem sedimentation from Freo South cut off beach to replenish of Dunes ie fluctuate but losing sand
- foredunes being cut away

Wetlands - Wetlands impacted by
'nested blow out system - weekly set, dunes inside each other,

- major sedimentary sink ie key area where sand 'comes onshore' due to depression in Tamala Dune ridge
- areas Holocene Dunes overriding Holocene dunes
- interdunal wetlands
- restricted sediment supply

Fungi

- All groups
- 100 species recorded
- 1st record Mogure fungi from Bold
- Means for less than 5–10%
- No idea function of many
- n/e is underestimated

logs / Litter
Grass
Dune
Restoration

Snails 3 species in 40 are (2)
change from cont to (light)
Spots (dark shells) - other
colour

Soil Seed Bank July

Invertebrates - Mark Harvey

- target groups without mobile phase
- spiders, Harvestmen, Pseudoscorpions, Centipedes, cockroaches, Spider wasps

- Significant patterning across the Plain
- Bold Park 71, 66, 60 +54 high species nos (Quinedrops highest)
- some only in Bold Park

Management

fire at appropriate time

- Intertidal stage of documentation
- surveys of selected taxa which display biodiversity patterns

John Majer

- Argentine ants limit species
- list for Bold Pk

Kurt - work on associated insects
Student working on species associated with

Vertebrates

- Mammals lost Plain
- Complete suite introduced Mammals Pk

35 — 014 mammals

12 years 17 sites

Reptiles

1829 Tuss established Quarry

- land in 1839 Richards Ka — Hardman Lake

grazed the area Cattle + Lambs

became 'Lime Kilns'

Burd Bros 25 yrs with Tuss

Joseph Perry 1879 1,290 acres Cattle

1917 to Perth Council

(previous house Perry lived in)

1919 Perry House built by Council

Town clerk William E Bold

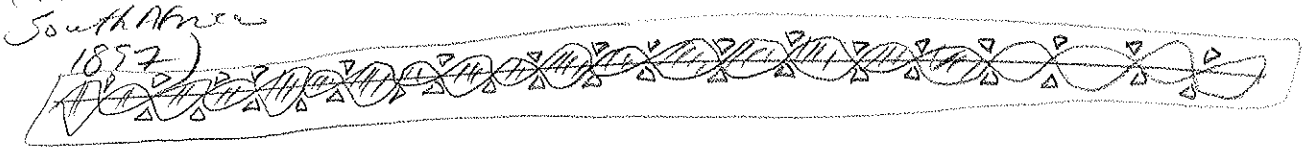
increased Parks chase name Florat

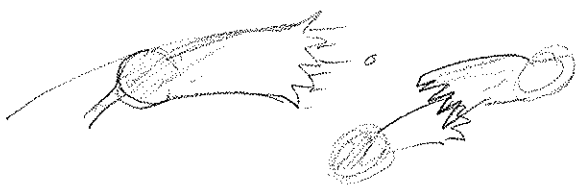
(coat of Perth Arms)

Camels, Cattle, Lambs

(from South Africa

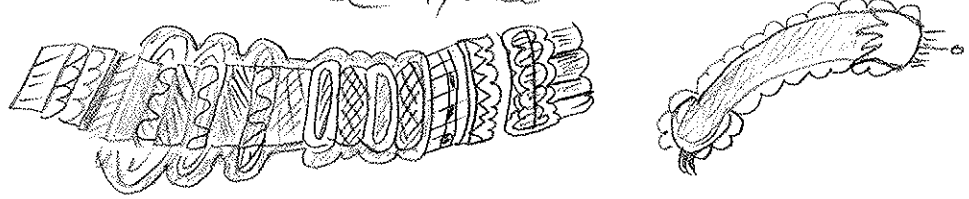
1857)



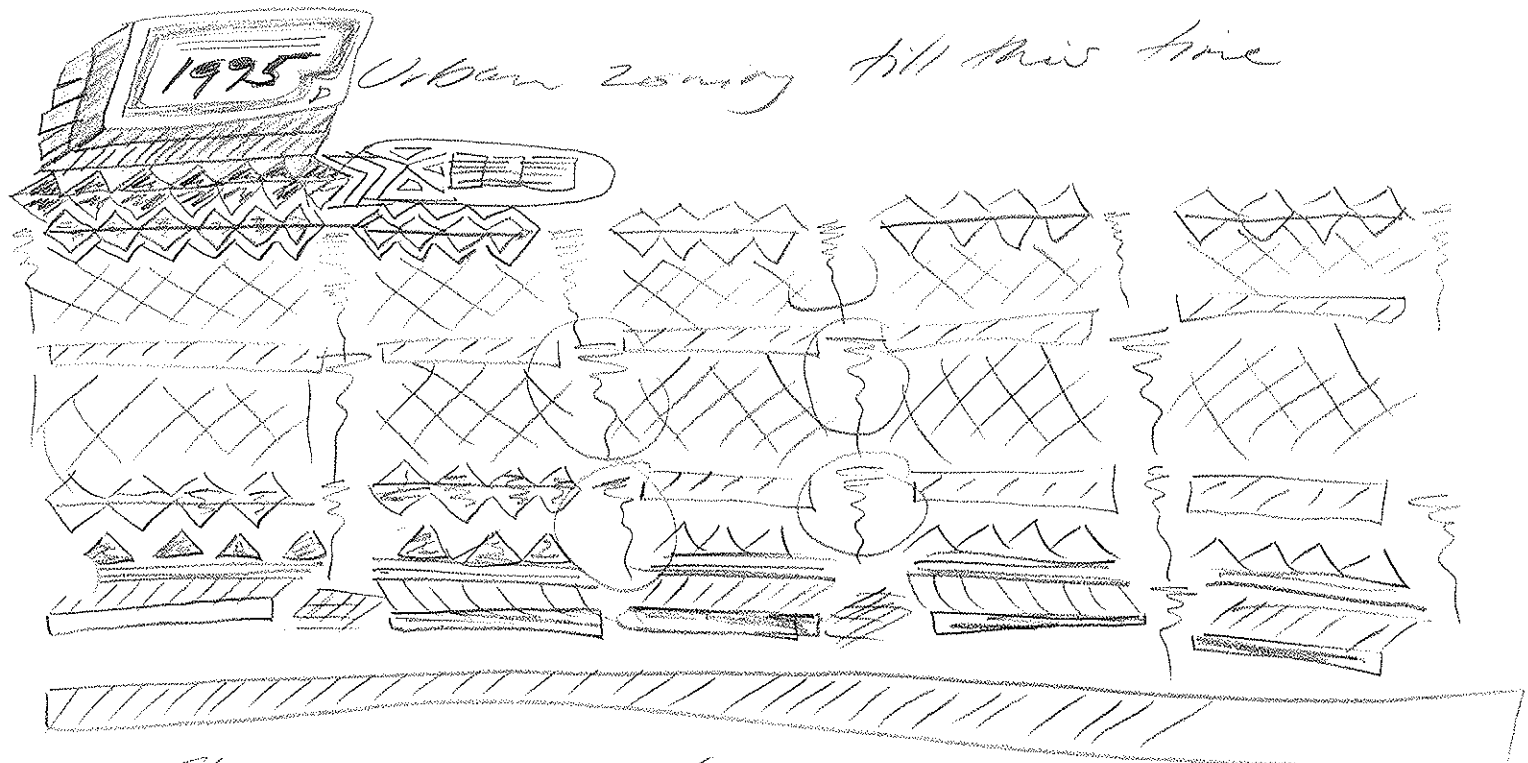


No one has chosen them

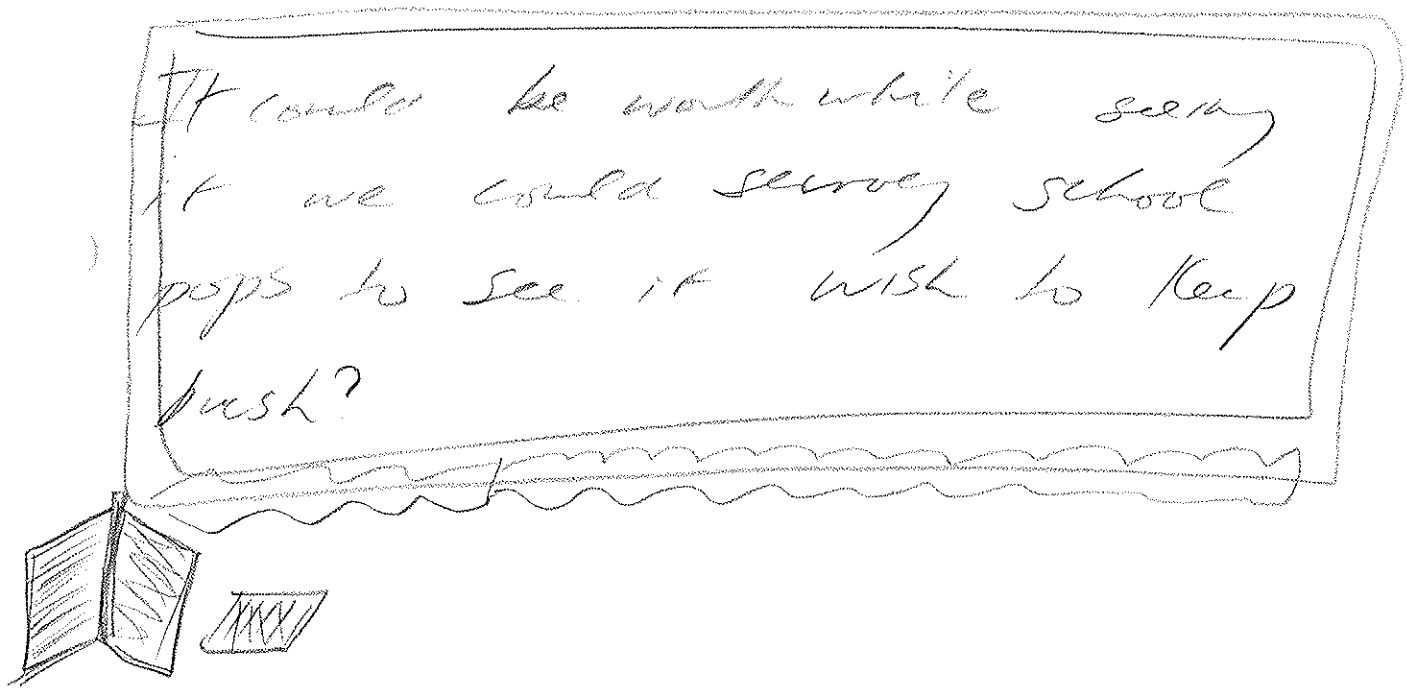
Purpose



Bold



Stephanie for format for surveys



Natural values in the Shenton Park and Mt Claremont Land Use Study Area
DEP March 2002

General Vegetation and Flora

The natural vegetation in the Study Area is predominantly upland but there is one small wetland area in the Defence land.

Wetlands (Blue) *(Note: colours are key to map presented during evening discussion on 19 march and which formed the basis of the map presented during Herve Calmy's summary Bushland Conservation Presentation on 20 March)*

Scattered *Eucalyptus calophylla* and *Acacia saligna* with a single *Melaleuca rhaphiophylla* around an area of Sedgeland and Grassland dominated variously by weedy and native species. The sedges include - *Juncus ?holoschoenus, Baumea juncea, Typha ?domingensis* and *Leptospermum longitudinale*

Uplands – (Orange, Pink, Yellow and Green)

General description of the vegetation: *Eucalyptus marginata* Woodland over *Banksia attenuata, B. menziesii* and *Allocasuarina fraseriana* Low Woodland; *Banksia attenuata, B. menziesii* and *Allocasuarina fraseriana* Low Woodland with scattered emergent *Eucalyptus marginata* and with occasional emergent *E. gomphocephala* The vegetation condition ranges from Very Good to Excellent to Completely Degraded vegetation (this category includes significant native trees)
Priority Flora: *Acacia benthammii, Jacksonia sericea*

Vegetation Categories

The Study Areas natural upland vegetation are ranked on a series of characters related to intactness and connectivity. These are as outlined below. Orange, Pink and Yellow Categories are not replaceable (except possibly at very great cost and time). Green and Dashed Green can be replaced through planting in 200 to 50 years depending on the species involved.

Upland Natural Vegetation Categories

Orange Regionally Significant Natural Vegetation (areas identified in Bushplan, most of which are recognised in Bush Forever - Bush Forever Sites 119 and 218 and part 312).

Pink Natural vegetation generally in Good or better condition contiguous with Regionally Significant Natural Vegetation suitable for consolidation of areas of Regionally Significant Natural Vegetation.

Yellow Natural vegetation generally in Good or better condition NOT contiguous with Regionally Significant Natural Vegetation.

Green Natural vegetation generally in Good or lesser condition (Degraded and Completely Degraded).

Dashed Green Scattered native trees.

Wetland natural vegetation Blue

'Construction' Opportunities
Blue Dots Opportunities for consolidation of natural vegetation linkage

Fauna

The natural vegetation in the Study Area supports regionally significant vertebrate fauna (see relevant sections in Bush Forever Sites 119 and 218 and part 312 – ***Orange areas on map***) and contributes to ecological linkages within the Study Area and in the broader area to other Bush Forever Sites outside the Study Area (e.g. Bush Forever Sites 317 and 312 - ***Pink, Yellow or Green areas on map***).

Significantly both the Underwood Avenue Bushland (Site 218) and the Shenton Bushland (Site 119) contain at least six species of those birds listed in Bush Forever as having special conservation significance on the Swan Coastal Plain as they are either habitat specialists with a reduced distribution on the Swan Coastal Plain or they are wide-ranging species with reduced populations on the Swan Coastal Plain.

In a broader context Kings Park had 16 species of those birds listed in Bush Forever as having special conservation significance on the Swan Coastal Plain and Bold Park had 21 of those species.

Another significant value of the ecological linkages (***Pink, yellow or Green areas on map***) is in facilitating the seasonal migration of small Passerine birds. A number of species move northwards at the beginning of winter and move southwards in spring. These require native vegetation for food, shelter and roosting sites while in transit.

The high bird species diversity and the high number of conservation significant species in bushland sites in the region reflects the number Sites (Bush Forever Sites) as well as the extent of the areas of contiguous or linking vegetation. This also has considerable value in reducing the impacts of disturbance such as habitat fragmentation and the effects of fire on bird populations. It has been well demonstrated that fire impacts severely on habitat specialist bird species and these need to move between areas in the event of wildfires.

General Role Ecological Linkages

Ecological linkages (***Pink, yellow or Green areas on map***) between the core conservation areas (Bush Forever Sites – ***Orange on map***) have long-term value in helping maintain genetic movement between populations of flora and fauna in the Study Area and broader area. Therefore they have a significant role in the conservation of biological diversity.

KEY

Upland Natural Vegetation Categories

Orange Regionally Significant Natural Vegetation (areas identified in Bushplan, most of which are recognised in Bush Forever - Bush Forever Sites 119 and 218 and part 312).

Pink Natural vegetation generally in Good or better condition contiguous with Regionally Significant Natural Vegetation suitable for consolidation of areas of the areas of Regionally Significant Natural Vegetation.

Yellow Natural vegetation generally in Good or better condition NOT contiguous with Regionally Significant Natural Vegetation.

Green Natural vegetation generally in Good or lesser condition (Degraded and Completely Degraded).

Dashed Green Scattered native trees.

Wetland natural vegetation Blue

'Construction' Opportunities

Blue Dots Opportunities for consolidation of natural vegetation linkage

KEY

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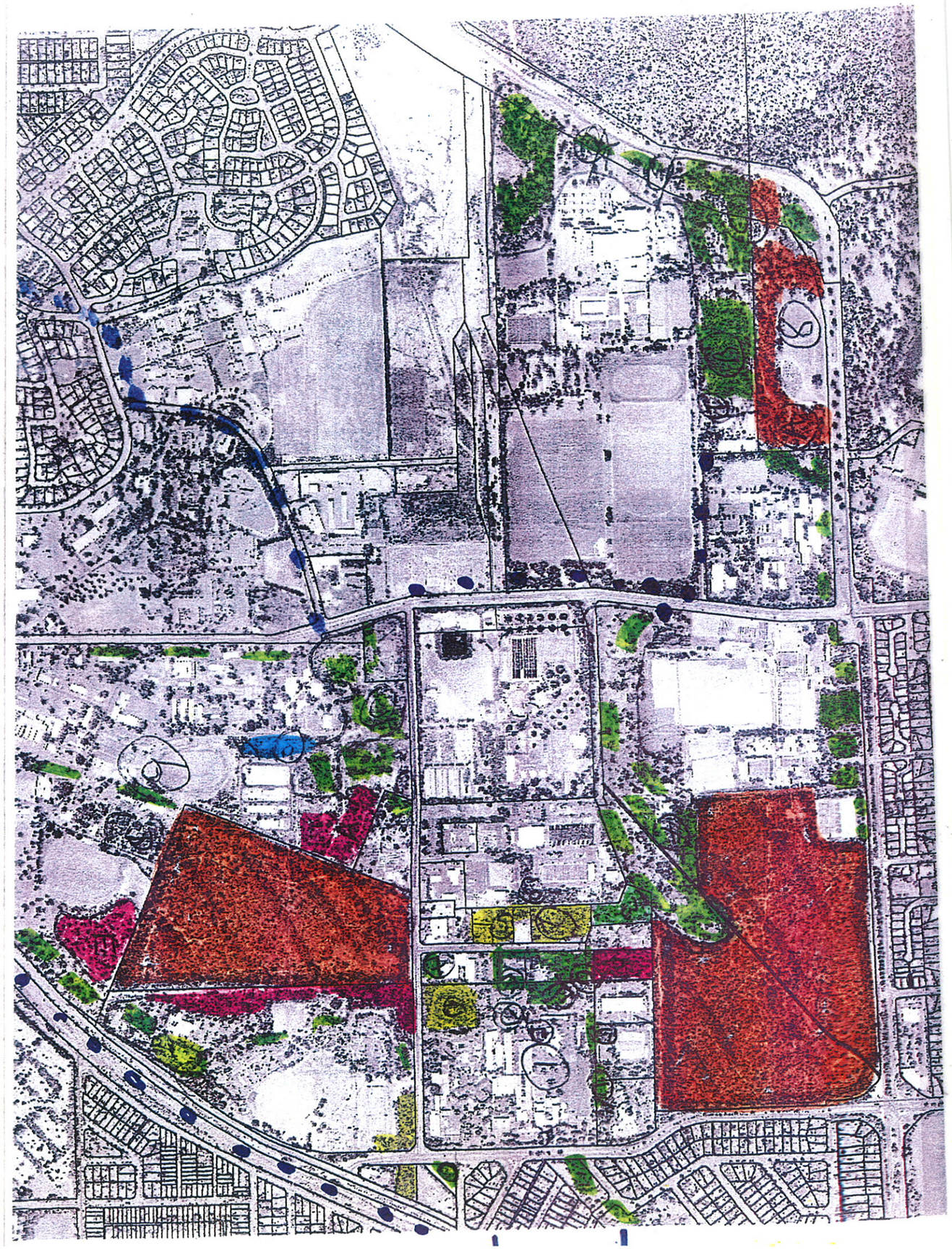
Wetland natural vegetation Blue

'Construction' Opportunities

Blue Dots Opportunities for consolidation of natural vegetation linkage



AK Reserve

LEGEND

- Road Centrelines - DLI 1/5/04
- Cadastre - DLI 1/05/05
- Bushforever - MFP 07/01
- Declared Rare and Priority Flora List - CALM 01/07/05
  - No Data
  - Priority 1 - Poorly Known Taxa
  - Priority 2 - Poorly Known Taxa
  - Priority 3 - Poorly Known Taxa
  - Priority 4 - Poorly Known Taxa
  - Declared Rare Flora - Extant Taxa
  - Declared Rare Flora - Presumed Extinct Taxa
- Threatened Ecological Communities - CALM 12/4/05
- Swan Coastal Plain North 1m Orthomosaic DLI 01/04
- Geomorphic Wetlands (Mgt Categories), Swan Coastal Plain - DOE 15/9/04
  - Conservation
  - Multiple Use
  - No longer a wetland
  - Not Assessed
  - Resource Enhancement

N

0 ~100 m

Scale 1:4093
(Approximate when reproduced at A4)

Geocentric Datum Australia 1994

Note: the data in this map have not been projected. This may result in geometric distortion or measurement inaccuracies.

Prepared by: Bec Ryan
Prepared for: Bec Ryan
Date: 27/07/2005 9:16:27 AM

Information derived from this map should be confirmed with the data custodian acknowleged by the agency acronym in the legend.

Department of Environment

KEY

Upland Natural Vegetation Categories

Orange Regionally Significant Natural Vegetation (areas identified in Bushplan, most of which are recognised in Bush Forever - Bush Forever Sites 119 and 218 and part 312).

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Green Natural vegetation generally in Good or lesser condition (Degraded and Completely Degraded).

Dashed Green Scattered native trees.

Wetland natural vegetation Blue

'Construction' Opportunities

Blue Dots Opportunities for consolidation of natural vegetation linkage

ASSESSMENT OF VALUES OF AK RESERVE LOT 711 UNDERWOOD AVE, FLOREAT

BUSH FOREVER SITE 312 - Bold Park and Adjacent Bushland City Beach

Department of Environmental
B. Ryan
August 2005

Department of Environment
AK Reserve B. Ryan August 2005

BACKGROUND

Bush Forever Site 312 encompasses 362.1 ha of remnant vegetation of regional significance. Most of the Site is zoned Parks and Recreation and is under the management of the Botanic Gardens and Parks Authority as Bold Park. A small part of the Site in the northern section, 8.2 ha, is on the AK Reserve.

The Department for Planning and Infrastructure (DPI) and the Department for Sport and Recreation commissioned consultants to develop the Mt Claremont Sports Precinct Structure Plan for a regional sports complex that includes McGillvray playing fields, Challenge Stadium, AK Reserve, a City of Nedlands Crown reserve, land owned by Christ Church Grammar School and AK Reserve. The Western Australian Planning Commission (WAPC) released the consultants report for public comment. It has not yet been endorsed by the WAPC. Concurrently, the Perry Lakes Stadium Redevelopment Project developed by the Town of Cambridge involves the relocation of sporting facilities onto AK Reserve. The Minister for Planning and Infrastructure has previously announced that the Government supports this.

AK Reserve is owned freehold by the Town of Cambridge and is zoned Parks and Recreation in Perth's Metropolitan Region Scheme. Under the WAPC's draft Statement of Planning Policy 2.8 the site implementation category is Bush Forever reserve, which has the highest level of protection. The draft *Statement of Planning Policy 2.8 Bushland Policy for the Perth Metropolitan Region* regards Bush Forever reserves to be lands with some level of protection (existing or proposed) and are currently within or intended for public ownership and management. Furthermore, it supports a general presumption against the clearing of regionally significant bushland, or other degrading activities, within Bush Forever reserves.

A field inspection was made by Bec Ryan on 27 July 2005. Approximately one hour was spent traversing the bushland on foot. Since it was July there were relatively few plants flowering and most annually renewed plants were dormant. Therefore, vegetation condition assessments are subject to revision on a mid/late spring inspection. A search for significant flora (DRF, priority, range restricted etc) was not made.

FLORA AND VEGETATION

Flora

Bush Forever reports 268 native taxa occur on Bush Forever Site 312, which was estimated as 90% of the expected flora. Among these are a number of significant flora including four Priority Flora listed by CALM and 15 significant flora.

One of these significant flora was observed during the field inspection. *Trymalium ledifolium* var. *ledifolium* is a typical Tamala limestone taxa and is significant in the Perth Metropolitan Region.

A series of weeds were observed during the field inspection, and include:

- **Acacia podalyriifolia* (Queensland Silver Wattle)
- **Asparagus asparagoides* (Bridal Creeper)
- **Chamelaucium uncinatum* (Geraldton Wax)
- **Euphorbia terracina* (Geraldton Carnation Weed)
- **Lycium ferocissimum* (African Boxthorn)
- **Oxalis pes-caprae* (Soursob)
- **Pelargonium capitatum* (Rose Pelargonium)
- **Ricinus communis* (Castor Oil Plant)
- **Schinus terebinthifolia* (Japanese Pepper)
- **Watsonia bulbillifera* (Watsonia)

Vegetation

The regionally significant bushland in Bush Forever Site 312 is representative of the Karrakatta Central and South Vegetation Complex. The bushland consists of a variety of Eucalyptus woodlands.

Figure 1: Photo depicting *Eucalyptus gomphocephala* and *E. marginata* Open Forest over *Banskia attenuata* Tall Shrubland.

The vegetation of the study area is described below. The majority of the area within the AK Reserve (approximately 60%) contains natural vegetation.

- *Eucalyptus calophylla, E. marginata* and *Eucalyptus gomphocephala* Open Forest over *Banksia attenuata* Tall Shrubland (western portion)
- *Eucalyptus calophylla* and *E. marginata* Open Forest over *Allocasuarina fraseriana* and *Banksia attenuata* Tall Shrubland (south west portion)
- *Eucalyptus marginata, E. calophylla* and *Eucalyptus gomphocephala* Open Forest over *Banksia attenuata, B. menziesii, B. grandis* and *Hakea prostrata* Tall Shrubland over mixed Shrubland (southern portion)
- *Eucalyptus gomphocephala* and *E. marginata* Open Forest over *Banskia attenuata* Tall Shrubland (south eastern portion)
- *Eucalyptus gomphocephala* and *E. calophylla* Open Forest over *Jacksonia furcellata* Tall Shrubland (parkland cleared, eastern portion)

Figure 2: Photo depicting *Eucalyptus marginata, E. calophylla* and *Eucalyptus gomphocephala* Open Forest over *Banksia attenuata, B. menziesii, B. grandis* and *Hakea prostrata* Tall Shrubland over mixed Shrubland.

It was inferred that these vegetation units are representative of floristic community type 25 – Southern *Eucalyptus gomphocephala – Agonis flexuosa* woodlands.

The majority of the native vegetation at AK Reserve is in Degraded to Good condition. It should be noted that over 80% of the Bold Park is highly disturbed and rated as of "poor" to "very poor" condition (Mattiske Consulting Pty Ltd 1998); these areas are mostly the

Banksia-Tuart Woodlands, which are similar to those found on AK Reserve. Less than 10% of Bold Park is in "good" to "very good" condition and typically these areas are the coastal dunes and shrublands or the limestone heaths.

Figure 3: Photo depicting *Eucalyptus calophylla, E. marginata* and *Eucalyptus gomphocephala* Open Forest over *Banksia attenuata* Tall Shrubland in a Degraded condition.

The decline in condition at AK Reserve is likely to be due to poor native seedling recruitment due to the very high weed seed load in the soil. It does not appear that active management, particularly to control weeds, occurs on AK Reserve.

The field inspection confirmed that within AK Reserve, the boundaries of the mapped vegetation defined in Bush Forever were correct except for one section. The mapping defined in Bush Forever in the western portion incorrectly shows a small area with no vegetation, but the field inspection found there to be remnant vegetation in this location.

LINKAGE

The linkages between Shenton Park Bushland (BFS 218), Underwood Ave Bushland (BFS 119) and AK Reserve (BFS 312) supports the regional significant ecological linkages between Kings Park (BFS 317 and Bold Park (BFS 312). These ecological linkages have long-term value in helping maintain genetic movement between populations of flora and fauna in area. It also has considerable value in reducing the impacts of disturbance such as habitat fragmentation and the effects of fire on bird populations.

APPENDIX 1: SITE DESCRIPTION

BOLD PARK AND ADJACENT BUSHLAND, CITY BEACH

Boundary Definition: protected area/management/bushland boundary (Areas of bushland within the boundaries of the Site are not accurately mapped. The boundary has been drawn to include any unmapped bushland; Boundary adjusted from that in draft *Perth's Bushplan*.)

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 312 **Area (ha):** bushland 361.7 (Site also includes open water.)

Map no. 45, 46 **Map sheet series ref. no.** 2034–II SW

Other Names: not known

Local Authorities (Suburb): Town of Cambridge (City Beach, Floreat), City of Nedlands (Mt Claremont)

System 6 (1983): M47 part System area bushland and part scattered native plants (canopy), all vegetation described

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Spearwood Dunes

Sands derived from Tamala Limestone (Qts: S7)

Tamala Limestone (Qtl: LS1)

Quindalup Dunes (Holocene dunes)

Safety Bay Sands (Qhs: S2)

Wetlands (within the Quindalup/Spearwood Dunes)

Holocene Swamp Deposits (Qhw: Cps)

VEGETATION AND FLORA

Vegetation Complexes

Spearwood Dunes (near the interface with the Quindalup Complex)

Karrakatta Complex — Central and South

Cottesloe Complex — Central and South

Floristic Community Types

Supergroup 2: Seasonal Wetlands

S7 Northern woodlands to forests over tall sedgelands alongside permanent wetlands

Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes

24 Northern Spearwood shrublands and woodlands

25 Southern *Eucalyptus gomphocephala — Agonis flexuosa* woodlands

27 Species-poor mallees and shrublands on limestone

29b *Acacia* shrublands on taller dunes

30a2 Woodlands and shrublands on Holocene dunes

S11 Northern *Acacia rostellifera — Melaleuca acerosa* shrublands

WETLANDS

Wetland Types: lake, sumpland

Natural Wetland Groups

Spearwood Dunes

Balcatta (S.2)

Wetland Management Objectives: Conservation (12ha)

Swan Coastal Plain Lakes EPP: 18.2ha

THREATENED ECOLOGICAL COMMUNITIES

Not assessed, Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: coastal dunes, inland dunes, limestone ridge, open water, vegetated wetlands

Vegetation and Flora: limited survey (ECOS Consulting Pty Ltd 1999, part Site — Clarke and Keighery 2000e, Dames and Moore 1986, Gibson *et al.* 1994 (plots Bold 01–04), Griffin 1993, Griffin 1994 (plots SW 01–11), Keighery, GJ, 1996 D (plots M46 01–02)); detailed survey (part Site — Keighery, GJ, *et al.* 1990, Keighery, GJ, and Keighery 1993c, Kinhill Engineers Pty Ltd 1987, Mitchell McCotter and Ecoscape 1993)

Structural Units: mapping (ECOS Consulting Pty Ltd 1999, Keighery, GJ, *et al.* 1990, Mitchell McCotter and Ecoscape 1993, Kinhill Engineers Pty Ltd 1987)

Spearwood Dunes

Uplands — Sands derived from Tamala Limestone: *Eucalyptus gomphocephala* Open Forest to Woodland; *Banksia attenuata* and *B. menziesii* Low Woodland; *Eucalyptus decipiens* Low Woodland; *Eucalyptus gomphocephala* and *E. marginata* Woodland; *Eucalyptus marginata* and *E. calophylla* Woodland; Closed Low Heaths and Closed to Open Heaths dominated by *Acacia truncata, Melaleuca systena, Calothamnus quadrifidus, Allocasuarina humilis* and combinations of these

Uplands — Tamala Limestone: Closed Low Heaths, Closed to Open Heaths and Tall Scrub dominated by *Acacia truncata, Melaleuca systena, Calothamnus quadrifidus, Dryandra sessilis* var. *cygnorum, Grevillea crithmifolia, Acacia lasiocarpa, A. xanthina* and combinations of these; *Eucalyptus foecunda* Closed Shrub Mallee

Wetlands: *Eucalyptus rudis* Woodland; *Bolboschoenus caldwellii* Sedgelands; Mixed Herblands (on dry lake bed)

Quindalup Dunes

Uplands — Safety Bay Sands: Oldest dunes — Open Heaths dominated by *Melaleuca systena, Acacia rostellifera, Chamelaucium uncinatum, Calothamnus quadrifidus, Olearia axillaris, Acacia xanthina* and combinations of these over Herblands dominated by *Lomandra* sp.; *Agonis flexuosa* Low Closed Forest

Scattered Native Plants: *Eucalyptus gomphocephala* Woodland; *Eucalyptus marginata* and *E. calophylla* Woodland — regionally significant vegetation recognised as being in the area of Site in need of protection

Vegetation Condition: >60% Very Good to Excellent, <40% Good to Degraded

Total Flora: 268 native taxa, 134 weed taxa (compilation by Gibson *et al.* 1994 D, Keighery, GJ, *et al.* 1990, Keighery, GJ, and Keighery 1993c, Mitchell McCotter and Ecoscape, 1993) (estimated 90% expected flora)

Significant Flora: *Beyeria cygnorum* (2), *Jacksonia sericea* (3), *Hibbertia spicata* subsp. *leptotheca* (3), *Stylidium maritimum* (3); Keighery, GJ, *et al.* 1990 — most southern populations of *Chamelaucium uncinatum, Melaleuca cardiophylla, Allocasuarina lehmanniana, Gyrostemon ramulosus* (uncommon on the

Plain, poorly reserved), most northern population of *Agonis flexuosa*; *Fimbristylis vittata* (uncommon on the Plain, a species of the dry lake bed community); typical Tamala Limestone taxa — *Astroloma microcalyx, Grevillea crithmifolia, Grevillea preissii, Beyeria cygnorum, Melaleuca cardiophylla, Trymalium ledifolium* var. *ledifolium, Diplopeltis huegelii* var. *huegelii, Stylidium junceum* (limestone variant), *Pimelea calcicola*

Fauna: structured surveys for birds (106 species), native mammals (1 species), reptiles (33 species) and amphibians (3 species) (How and Dell 1990, How *et al.* 1996). Significant populations of Blue-billed Duck, Musk Duck, Hardhead, Splendid and Variegated Fairy-wrens and a large assemblage of honeyeaters. Significant bird species: category 1 (1), category 2 (6), category 3 (13) and category 4 (8). Many burrowing and fossorial reptiles including five species of snake

Linkage: adjacent bushland to the south (Site 315, part across road); part of Greenways 18, 19, 20 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)

Other Special Attributes: Quindalup/Spearwood Dune System interface, significant fauna habitat, rich in reptiles and birds; National Trust of Australia (WA) Classification

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

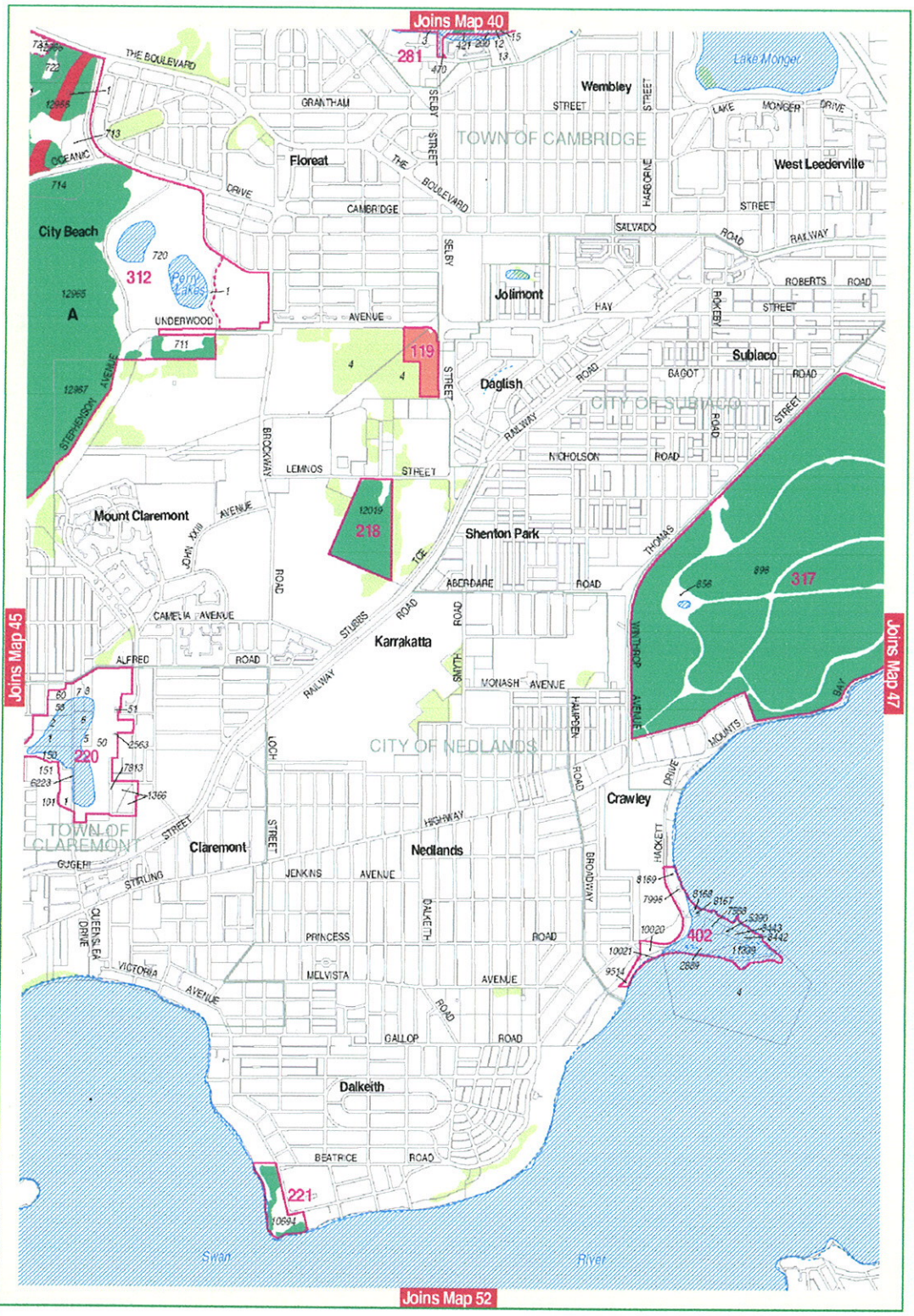
Indicative place (AHC 2000 D); Location for JAMBA/CAMBA species; subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values

Recommendation: Site with Some Existing Protection; the existing purpose, care, control and management of this Site is endorsed (see Table 3, Volume 1).

Bush Forever Map No. 46 showing AK Reserve
(from *Bush Forever* Volume 1 Government of WA 2000)



Map Sheet No. 46

Remnant Vegetation Assessment - AK Reserve (Town of Cambridge)

by Stephen Connell of OZGIS
ph 9402 1916

2003 Survey

Maps

1. regional location
2. air photo
3. vegetation map

Tables

1. AK Reserve details
2. Plant species in AK Reserve
3. Comparison of life form spectra with Sand Plain Community 28

missing

1 Description of Reserve

The regional location of AK Reserve is shown in Map 1. It lies on the southeastern edge of Bold Park, being separated from it by Underwood Avenue.

The reserve occurs on the Spearwood Dune system; the substrate being calcareous sands derived from Tamala Limestone. Native vegetation in the reserve consists of three remnants separated by dirt roads and firebreaks and crossed by horse trails. The total area of remnant vegetation is approximately 11 ha. For convenience the areas was broken into 6 areas as noted in Table 1 and shown on Map 2. Only three of these areas contain remnant vegetation.

Table 1 AK Reserve details

Remnant Component	Area (ha)	Sub-community Type
A	5.11	1
B	3.59	1
C	2.39	2

Non remnant Component	Description
D	Open grassland of ephemeral weeds
E	Poorly maintained cleared parkland with a central firewood dump
F	Pony club – animal yard consists of scattered Banksia and other tall shrubs/trees over a heavily grazed and compacted surface

2 Regional and Planning Context

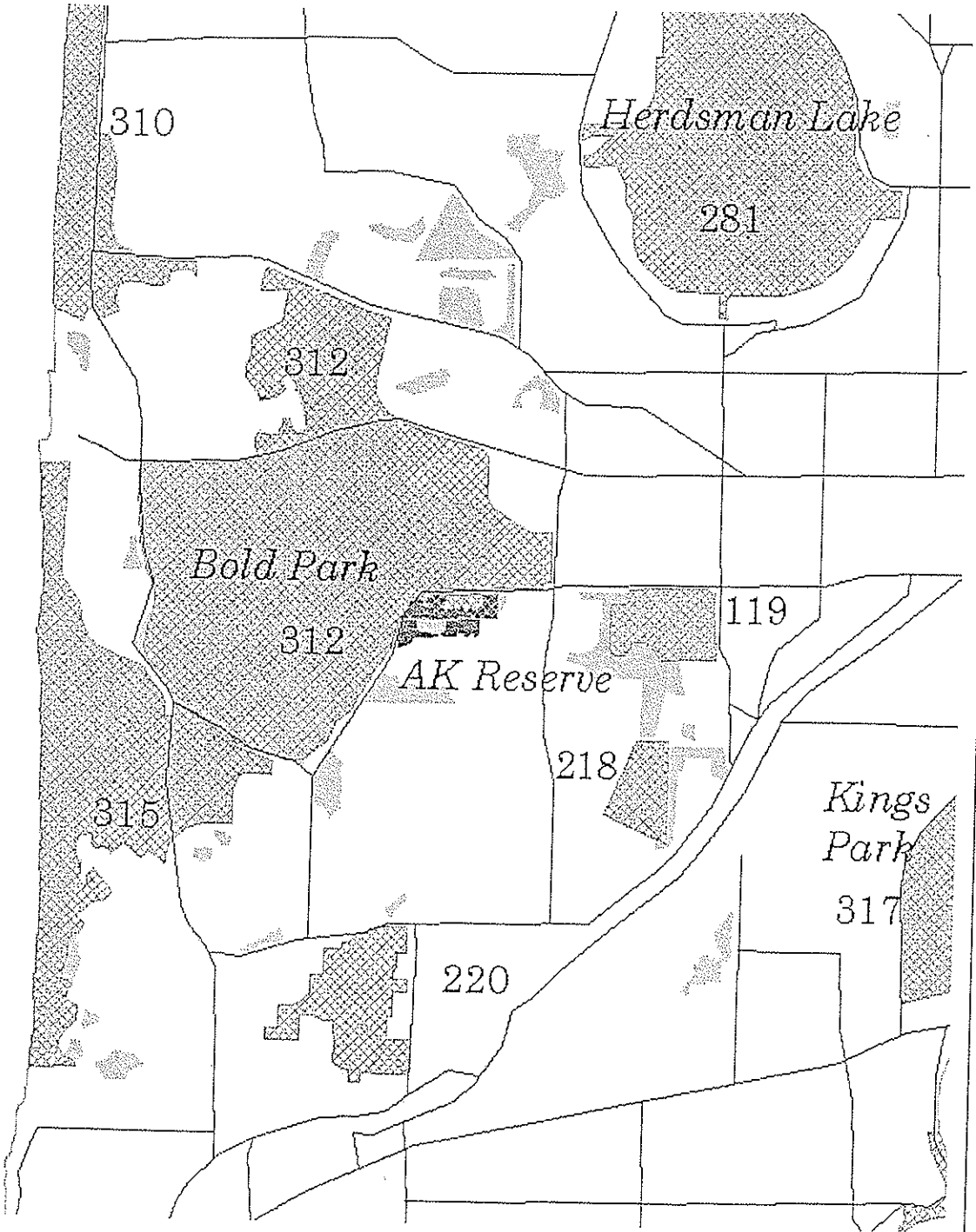
Greenways and Bush Forever

The reserve is a component of Bush Forever Site 312 which includes Bold Park, Perry Lakes as well as adjacent remnant vegetation. Bold Park is a component of three Greenways as well as a potential wetland linkage (Alan Tingay and Ass. 1998). Bush Forever Site 312 includes approximately 400 ha of remnant vegetation – 360 ha of which is in Bold Park. AK Reserve is a peripheral component of Bush Forever Site 312

Perth Greenways are planning constructs which include islands of remnant vegetation, Greenspaces of varying types (ovals, Parks, etc.) and may be considered to include other components such as street trees, native gardens etc. Greenways aim to provide a habitat network by which native fauna and flora may persist in the metropolitan area.. They provide a conservation framework for planning.

In many cases these Greenways follow major roads which are not ideal animal or plant habitats. AK Reserve does not link to other native vegetation remnants, wetlands or lakes and it does not significantly extend the spatial distribution of native vegetation in Bush Forever Site 312.

Map 1 Regional location of AK Reserve

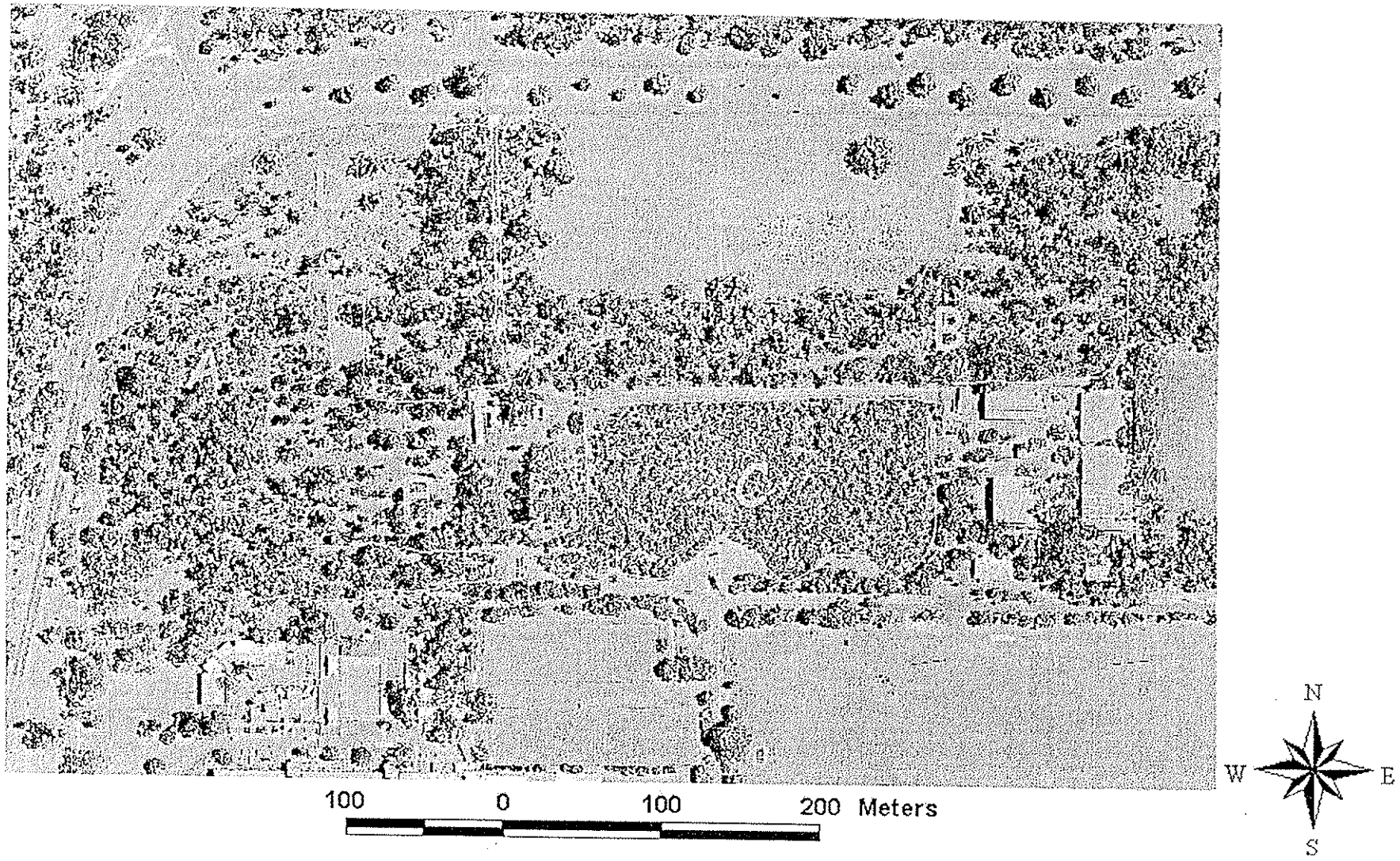


1 0 1 2 3 Kilometers

N
W E
S

Main Roads
Bush Forever sites
Remnant Vegetation(1994)

Map - AK Reserve



3 Plant Community Types

AK Reserve was visited on three occasions during 20 February 2003 – 12 March 2003, and again on 10th June 2003. Species lists, general observations and landscape assessments were undertaken. Further floristic and ecological assessments are required during Spring to complete plant species lists and to assess the community during peak growth. The results presented in this document should be viewed in this context.

There are 2 distinct vegetation sub-communities present (Maps 2 and 3)

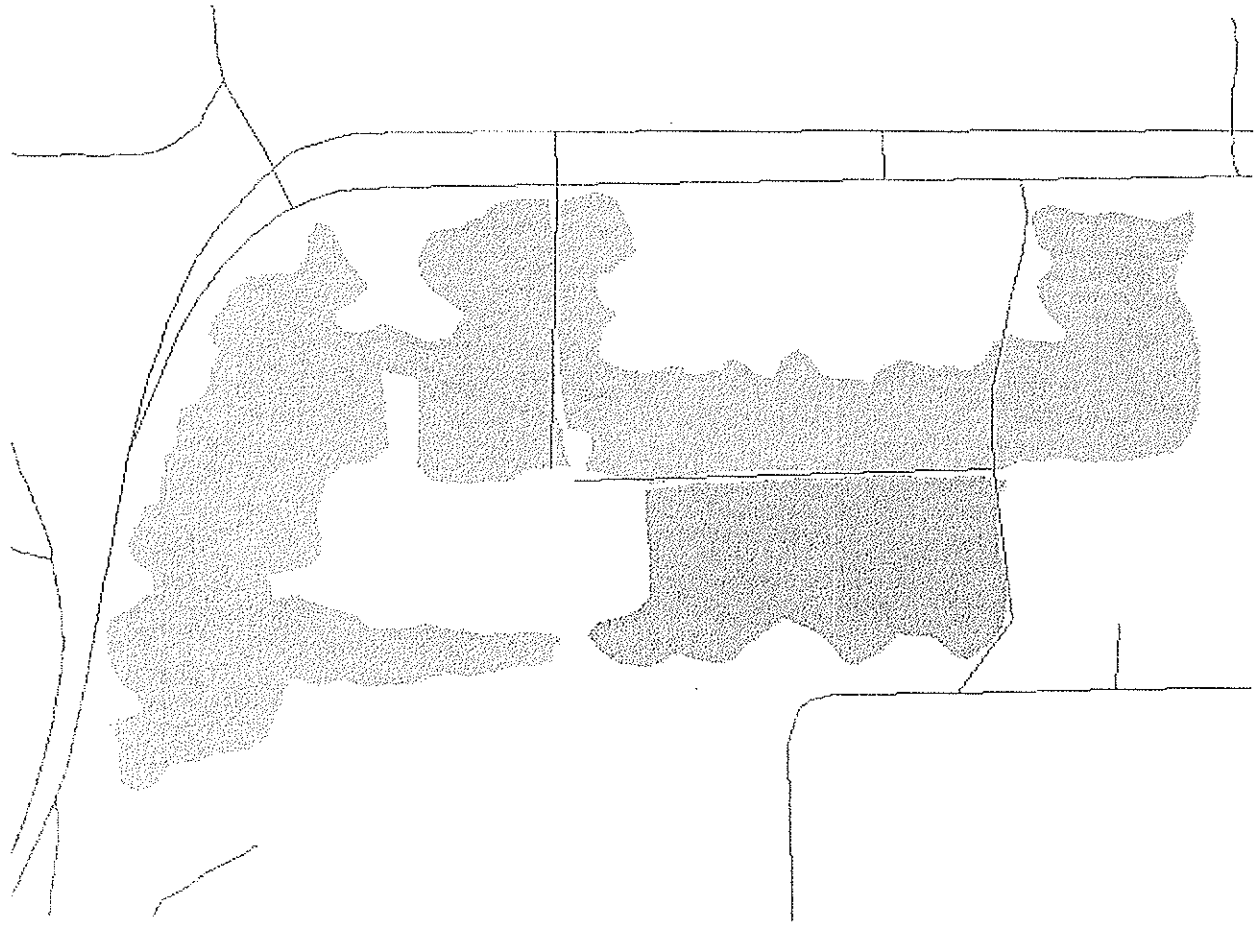
1 *Corymbia calophylla – Eucalyptus gomphocephala - Eucalyptus marginata* (Marri-Tuart-Jarrah) woodland (north of firebreak and challenge stadium). Large emergent trees over a tall shrub layer consisting of *Banksia attenuata, B. grandis* and *B. menziesi*. To the west of the Pony Club the shrub layer is more dense with *Dyrandra sessilis* and *Banksia prionotes* occurring. The understorey layer is degraded – primarily due to weed invasion (particularly *Freesia* and *Oxalis*). Localised dumping of household, garden and industrial rubbish occurs. There is little evidence of tree or shrub species seedling establishment except in the moister and less weed invaded areas west of the Pony Club. Understorey shrubs and herbs suffer more extensive degradation due to the competitive interaction of weeds with both adult and juvenile plants. Observations of the native geophytes and ephemerals are incomplete.

2 *Banksia prionotes/Dryandra sessilis* thicket (UWA land - south of firebreak). An open thicket of 3-4m tall shrubs. Degraded understorey layer. Similar observations to the above – seedling failure combined with weed competition (*Asparagus asparagoides* amongst others). Observations of the native geophytes and ephemerals are incomplete.

Species lists for the three remnant areas are presented in Tables 2a (native sps.) and 2b (exotic sps.). There is a total of 60 native species and 34exotic species in the reserve. These numbers do not include landscape plants (e.g. *Agonis flexuosa* along roadsides) and will change with later inspections.

Examination of the current species lists indicates that a significant number of native species remain and that there is widespread invasion of environmental weeds. The life-form spectra for reserve (Table 3) indicate the relative paucity of native geophytic and ephemeral species (this is partly due to the season of observation) as well as the large number of exotic ephemeral species.

Map 3 - AK Reserve



Roads
AK Reserve
Woodland
Low Woodland
System 6 Vegetation Units
Karrakatta (Central +South)
Cottesloe (Central +South)

100 0 100 200 Meters

N
W E
S

Table 2a. Native plant species in AK Reserve
(life-form categories are described in the glossary)

Species	Life-form	A	B	C
Acacia cyclops	W		1	
Acacia pulchella	W	1	1	1
Acacia rostellifera	W	1	1	1
Acacia saligna	W	1	1	
Acacia stenoptera	W	1	1	1
Acanthocarpus preissii	H	1	1	1
Allocasuarina fraseriana	W	1	1	1
Astroloma sp	W	1		
Banksia attenuata	W	1	1	
Banksia grandis	W		1	
Banksia menziesii	W	1	1	
Banksia prionotes	W	1		1
Burchardia umbellata	G	1	1	1
Chamaelaucium uncinatum	W	1		
Conostephium minor	W	1	1	
Conostephium pendulum	W	1	1	1
Conostylis candicans	G		1	
Corymbia calophylla	W	1	1	
Corynotheca micrantha	G	1	1	
Dianella divaricata	H	1	1	1
Drosera erythrorhiza	G	1		1
Drosera menziesii	G	1		1
Dryandra sessilis	W	1		1
Eucalyptus gomphocephala	W	1	1	
Eucalyptus marginata	W	1	1	
Gompholobium tomentosum	W	1	1	
Haemodorum sp	G	1	1	
Haemodorum spicatum	G	1	1	1
Hakea prostrata	W	1	1	1
Hardenbergia comptoniana	C	1	1	1
Hibbertia cuneiformis	W	1	1	1
Hibbertia hypericoides	W	1	1	1
Hibbertia hueglii	W	1	1	
Hibbertia subvaginata	W		1	
Hovea trisperma	W	1	1	1
Jacksonia furcellata	W	1	1	1
Jacksonia sternbergiana	W	1	1	1
Lechenaultia linearoides	W	1	1	
Lepidosperma gladiatum	H	1	1	1
Leucopogon propinquus	W			1
Loxocarya flexuosa	H	1	1	1
Macarthuria sp	W	1	1	
Macrozamia riedlei	W	1	1	1
Mesomelaena pseudostygia	G	1	1	1
Microtis sp	G	1	1	1
Oxylobium capitatum	W	1	1	
Petrophile linearis	W	1	1	
Petrophile macrostachya	W	1	1	
Pterostylis vittata	G	1	1	
Rhagodia baccata	H	1	1	
Scaevola canescens	H	1	1	1

Table 2a. continued

Species	Life-form	A	B	C
Stipa sp	H	1	1	
Templetonia retusa	W	1	1	
Tetraria octandra	E	1	1	1
Thysanotus manglesianus	G	1	1	1
Thysanotus sparteus	G	1	1	1
Tricoryne elatior	G	1	1	1
Xanthorrhoea gracilis	W	1	1	1
Xanthorrhoea preissii	W	1	1	1

Table 2b. Exotic plant species in AK Reserve
(life-form categories are described in the glossary)

Species	Life-form	A	B	C
Acacia podalyrifolia	W	1		
Arctotheca calendula	E	1	1	1
Asparagus asparagoides	G	1	1	1
Asphodelus fistulosis	G			1
Avena barbata	E	1	1	1
Brassica tournefortii	E	1	1	1
Briza maxima	E	1	1	1
Briza minor	E	1	1	1
Bromus sp.	E	1	1	
Chasmanthe floribunda	G	1		
Conyza bonariensis	E	1	1	1
Ehrharta sp	E	1	1	
Euphorbia peplus	E	1	1	1
Euphorbia terracina	E	1	1	
Freesia aff. leichtlinii	G	1	1	1
Fumaria capreolata	E	1	1	
Gladiolus caryophyllaceus	G	1	1	1
Hordeum leporimum	E	1	1	
Hyparrhenia hirta	H	1		
Hypochaeris glabra	E	1	1	1
Lupinus consentinii	E		1	
Lycium ferocissimum	W	1		
Monadenia bracteata	G	1	1	1
Oxalis corniculata	G	1	1	1
Pelargonium capitatum	H	1	1	1
Plantago sp	E	1		
Romulea rosea	G	1	1	1
Rumex pulcher	E	1	1	
Schinus terebinthifolius	W		1	
Solanum linneanum	H	1		
Solanum nigrum	E	1	1	
Sonchus oleraceus	E	1		
Stenotaphrum secundatum	H	1	1	1
Ursinia anthemoides	E	1	1	1
Watsonia bulbillifera	G	1	1	1

Table 3. Life-form spectra for the three surveyed areas.

Life Form	A	B	C
Woody Perennial	33 (1)	31 (1)	16 (0)
Herbaceous Perennial	7 (4)	7 (2)	5 (2)
Perennial Geophyte	12 (8)	11 (8)	9 (8)
Annual	1 (18)	1 (17)	1 (9)
Climber	1 (0)	1 (0)	1 (0)
TOTALS	47 (29)	47 (25)	32 (17)

*numbers in brackets are exotics

Comparison with existing vegetation datasets

System 6 vegetation mapping (Heddle *et al.* 1980) is the most detailed spatial dataset available. It is dated and coarse and fails to discriminate the many plant community types identified by Gibson *et al.* (1994). Bold Park and adjacent lands straddle two System 6 vegetation complexes (Map 3). Both vegetation complexes have been extensively cleared in the metropolitan region. They are described in Table 4.

Table 4. System 6 Vegetation Community Descriptions (after Heddle et al. 1984)

49 Karrakatta (Central + South)	Predominately open forest of *E. gomphocephala – E. marginata – C. calophylla* and woodland of *E. marginata – Banksia* species
52 Cottesloe (Central +South)	Mosaic of woodland of *E. gomphocephala* and open forest of *E. gomphocephala – E. marginata – C. calophylla.* closed heath on the limestone outcrops.

The "Flora of the Swan Coastal Plain" study (Gibson *et al.* 1994) compiled species lists for 500+ plots across the sandplain. From these lists 30 plant community types were recognized. The study was extended by DEP in 1996.

A preliminary analysis of the similarity between the species lists for AK Reserve and composite lists from Gibson *et al.* (1994) confirms that the northern woodland areas are floristically related to Community Type 28 – "Spearwood *Banksia attenuata* or *Banksia attenuata – Eucalyptus woodlands*" and Community Type 24 – "*Northern Spearwood shrublands and woodlands*" – see Table 5.

Community Type 28 is considered by Gibson *et al.* to be "well reserved" and at "low conservation risk". This Community Type extends north from Perth to Seabird, and on average, 55 native species and 8 exotic species can be found within a $100m^2$ plot.

Community Type 24 is considered by Gibson *et al.* to be "well reserved" and has a "susceptible" conservation risk. It extends north from Rockingham to Seabird with an average of 42 native species (14 exotics) within a $100m^2$ plot. "Susceptible " conservation risk is defined by Gibson et al. (1994) as 'A community of concern

because there is evidence that it can be modified or destroyed by human activities, or would be vulnerable to new threatening processes".

Both Community Types extend north beyond the metropolitan area.

Table 5. Comparison of the species lists from AK Reserve with sandplain sites (After Gibson et al. 1994)

Remnant	Similarity Index and Community Type
A	0.425 Community 24 0.407 Community 28 0.345 Community 21a
B	0.445 Community 28 0.362 Community 24 0.350 Community 21a
C	0.295 Community 24 0.275 Community 28 0.241 Community 26b

*similarity index ranges from 0 to 1.0 – with higher values indicating a more similar species composition

The numbers of species in an average $100m^2$ plot from the Gibson et al. (1994) study are comparable with the numbers recorded over larger areas at AK Reserve. Ephemeral and Geophytic native species are under-recorded at AK Reserve, these life-forms being dominated by exotic species. A final comparison of the floristics will be undertaken once species lists are finalized (following the Autumn/Spring visits).

Table 6. Comparison of the plant life-form spectra from AK Reserve with Community Types 24 and 28 (After Gibson et al. 1994) – values are means + Standard Deviation.

Life Form	AK Reserve	Community 24	Community 28
Woody Perennial	27.7 (9.2)	11.8 (4.7)	16.8 (6.6)
Herbaceous Perennial	9.0 (2.0)	4.7 (2.3)	7.2 (2.9)
Perennial Geophyte	15.6 (3.2)	7.5 (4.3)	15.7 (3.3)
Ephemeral	15.7 (4.9)	16.2 (4.5)	14.3 (5.5)
Climber	1 (0)	0.9 (0.8)	0.7 (0.6)
Parasite	0 (0)	0.3 (0.6)	0.3 (0.6)
TOTAL	67.7 (19.1)	41.5 (9.3)	55.0 (11.2)

4 Nature of Disturbances

Environmental weeds cover the reserve. These species are primarily annual and geophytic plants which competitively exclude native species of all life forms. Control of these species is impractical given the small area of the reserve, the extent of the weed invasion, and likely absence of remaining native species.

The pony club contributes to the environmental degradation of the native vegetation by movement of weed propagules, grazing and trampling.

There is localised dumping of both domestic and industrial wastes on the reserve. Given the extent of other environmental disturbances this is not a serious problem.

The populations of many of the native tree and shrub species present would appear to be dysfunctional. Species such as *Corymbia calophylla, Banksia grandis, B. attenuata, B. prionotes* and *Dryandra sessilis* recruit annually under favourable conditions. Thus their populations typically consist of larger established plants together with smaller plants of varying ages (representing different annual cohorts). Where seed set is reduced (either by lack of pollinators or increased granivore activity) or seedling establishment is diminished (either by competition with weed species, or loss by grazing) the populations begin to senesce – this is particularly the case with short lived species of *Acacia, Banksia* and *Dryandra*. Populations of all woody native species exhibit such disruption at AK Reserve. Populations in the area west of the Pony Club are less disrupted – weed invasion is not as extensive in this area.

5 Significant Trees

The northern part of the area retains a number of large trees. These may be useful resources for nesting spots, food resources, etc. for native fauna. Where possible the trees should be retained as part of a native garden landscape.

The low woodland is dominated by species known to be significant food plants for birds and insects. Native landscaping should include these species.

6 Environmental Values

Perth greenways

The reserve has little value as wildlife linkage due to its location and degradation. It is peripheral to Bold Park and does not link to other remnants. The native vegetation may support a transient population of fauna

The reserve has limited ecological value due to

- the low number of native species and the fact that they are mostly widely distributed and common species,
- the widespread distribution of the Community Types (Gibson *et al.* 1994) present
- the overall degradation due to weed infestation and dumping
- the location of the reserve – peripheral to Bold Park and with no linkages to other remnants.

Significant flora

No significant flora were found – this does not include ephemeral species whose identification awaits a Spring visit. *Jacksonia sericea* is recorded as a significant plant species in Bold Park, Shenton Park and Underwood Avenue Bushlands. It may be present in AK Reserve – follow up inspections will detect it. *Jacksonia sericea* is a Priority 3 species (Poorly know species)

Regional Significance

The site has no regional conservation significance. It may have local value in terms of nesting locations, food resources etc. for visiting bird and insects species, but probably adds little to that already available in Bold Park. The site is too small to contain long-term viable populations of mammals, birds or reptiles and being separated from Bold Park by a major road can only be of limited utility for any species resident there.

7 Management/Landscape

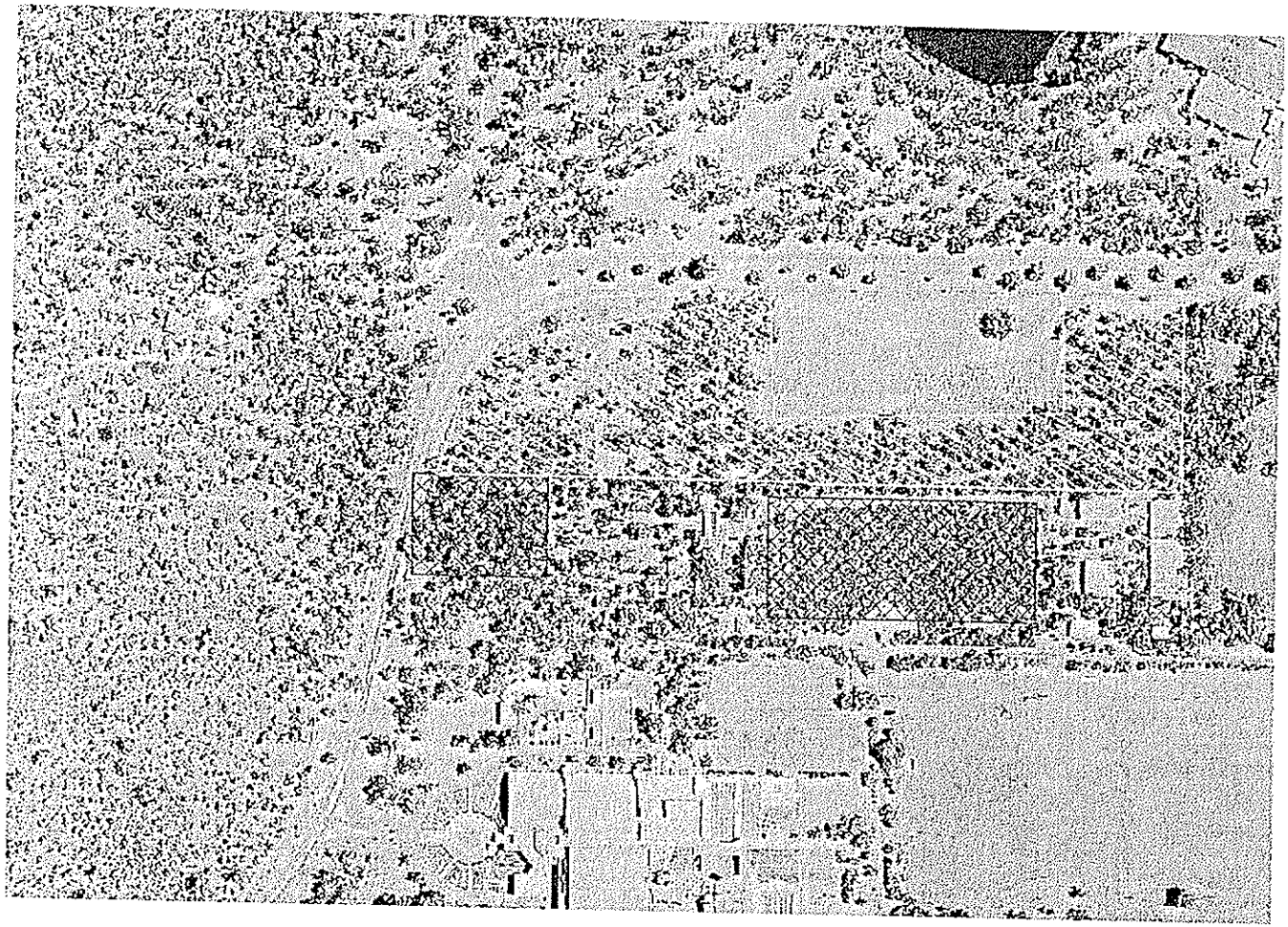
The remnant vegetation present on AK Reserve consists of degraded populations of native species and extensive populations of environmental weeds. Rehabilitation of the remnants would require significant resources producing outcomes which may be obtained by the less intensive management option of retention of smaller, maintained, patches (Map 4 – Area 2) and placement of native gardens (Map 4 – Area 1).

It is important that management of the native gardens include plant replacement strategies. As plants, particularly trees and the larger shrubs senesce, seedlings should be established as ultimate replacements.. Similarly attention should focus on strategies to include as wide a range of local native species as possible.

Where feasible, existing large trees should be preserved and used as the focus for landscaping planting. This will combine the aesthetic with practical conservation outcomes.

Provenance issues – all landscaping plants should be local natives sourced from surrounding vegetation.

Map 4 - Landscape area



Area 1
Area 2

200 0 200 400 Meters

N
W E
S

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10 Glossary

Climber (C) – plant species which climb or trail. Weak stemmed and relying upon other structures for support.

Ephemeral (E) - plant species which germinate and set seeds within one (annual) or two (biennial) years..

Geophyte (G) – species possessing underground perennating organs (e.g. bulbs, corms, rhizomes, tubers etc.) from which annual leaves and flowers are produced – mostly in Winter-Spring

Herbaceous Perennial (H) – plant species which lack true secondary growth and which also lack an underground perennating organ (e.g. bulb, corm etc.). Essentially understorey species including grasses and flowering herbs.

Parasite (P) – plant species which are parasitic upon other plants (e.g. mistletoes, Dodder, W.A. Christmas Tree)

Woody Perennial (W) – plant species which possess secondary growth (wood), including massive monocotyledonous species (e.g Blackboys) and cycads

8 Summary and Recommendations

- The native vegetation of AK Reserve consists of 2 distinct community types – Eucalyptus woodland, low Proteaceous woodland. Both community types are depauperate in native species and possess serious infestations of environmental weeds.

- The populations of native species present in the reserve are probably not viable in the long term without intensive management.

- The reserve has little regional ecological value and limited local value due to its degradation, size and location.

- Two landscape areas are recognized. Within Area 1 (Map 4), individuals trees and small areas should be used as the focus for native garden landscaping. Where possible trees should be considered in the architectural design process. Area 2 (Map 4) contains native vegetation from which remnant areas should be retained and managed. Management includes weed removal and native plant population maintenance and supplementation over time.

- Retain trees where possible as part of native garden landscaping. Expand plantings with locally sourced seed/seedling/cuttings. Include within the native gardens, species representative of the low woodland area which are food resources for birds and insects.

Evaluation of the National Estate Value of remnant bushland on the Swan Coastal Plain between Moore River and Mandurah

BOLD PARK AND ADJACENT BUSHLAND

System 6 areas M46 and M47

Prepared by Mary Gray

For the Wildflower Society of WA (Inc.)

December 1993

This project is funded under the National Estates Grants Program, a Commonwealth financed grants scheme administered by the Australian Heritage Commission (Federeal Government) and the Heritage Council of Western Australia (State Government).

This document consists of a nomination to the Australian Heritage Commission for listing on the Register of the National Estate.

Headings (and their numbers) and the format are according to the Natural Environment nomination form supplied by the Australian Heritage Commission.

Nomination for the Register of the National Estate
BOLD PARK AND ADJACENT BUSHLAND
(SYSTEM 6 AREAS M46 and M47)

1. Identification

1.1 NAME OF PLACE: **Bold Park and adjacent bushland.** The area corresponds to the two System 6 areas of M46 and M47. M47 is known as Bold Park, and M46 is known in part as the Mt. Claremont Bushland, part as the Commonwealth Rifle Range,part is vacant Crown Land, and the remainder is in coastal recreation reserves.

1.2 Computer file name of place: **Boldpark**

2. Location

Bold Park is in the Perth suburb of City Beach (6015), and entry is via Oceanic Drive or Perry Lakes Drive, City Beach. Mt. Claremont bushland is in the suburb of Swanbourne (6010) and entry is via Rochdale Road and Challenger Parade.

2.3 APPROXIMATE AREA OF THE PLACE: 450 hectares.

2.4 PROPERTY DETAILS:

The property details are complex but important for historical reasons. Most of the area is freehold land owned by the City of Perth.

M47: 1. Lot 1 Stephenson Avenue (Knightsbridge) is privately owned, and is part of Swan Location 2103, Volume 1619 folio 880 (shown as Dia 63030 on title 1771/349) in the City of Nedlands. It was previously University of Western Australia Endowment Land. The government of WA purchased this land in December 1993.

2. Land in the north and east of M47 is part of the original private estate called the 'Limekilns Estate' and is on Title 1720/277, and includes Perthshire locations Al and Ak.. It was purchased by the Perth City Council in 1917 and included in the City boundaries on 18 January 1918.

3. Water Authority Reservoir: The proprietor of the land in the north west sector of M47 marked 'Reservoir' is the Minister for Water Supply and Drainage. This section is included because it contains significant stands of the Fremantle Mallee *(Eucalyptus foecunda).*

4. The remainder of M47 (the major segment) is 'Endowment Land' which stems from an area of 'commonage' that was vested in the City Council in 1883 giving it limited rights to lease the land. In 1920 this land was granted to the City of Perth as 'Endowment Land' under the City of Perth Endowment Lands Act, giving it full powers of ownership. The Act provides the land for the people of Perth and any sale proceeds can only be applied to development of the endowment lands and not to any other area of the City.

Refer Figure 2 for boundary of the 'Endowment Lands' and showing how the Park boundary for Bold Park as agreed by the Council has evolved over the years. Notably the amendments to the MRS and to a lesser extent to the Town Planning Scheme have not kept up with these changes. Hence the apparent conflict in future land uses.

The Endowment Land in M47 is on Title 1771/349 and includes part of Locations 571, 585, 617, 1911, 2103

5. *Leases:* On the north side of Reabold Hill, 3.083 hectares comprising the Quarry Amphitheatre in the old limestone quarry and associated facilities is leased to the Perth Theatre Trust for 21 years. It is used in summer only for outdoor performances. Perry House (built as an early farmhouse, then used later used as a Caretakers residence by the City of Perth) near the corner of Perry Lakes Drive and Oceanic Drive is leased to the Wildflower Society and the RAOU under letters of agreement.

M46: 1.Mt Claremont bushland is in the City of Perth on Title 1771/349 and is part of the Endowment Land with Bold Park. Note that the Christchurch College playing fields are excluded from the nomination.

2. Parks and Recreation Reserve. The area north of the Rifle Range extending to Challenger Parade in the north is a Reserve for Parks and Recreation under the Metropolitan Region Scheme (MRS) and is owned by Perth City Council on Title 1771/349, location 1911 (part).

3. Coastal Reserve No 16921 west of the above and extending north along the coast, includes recreation reserve 16921 owned by Perth City Council.

4. Coastal Reserves No A23729 and A27250 are south of Location 313 at the coast and are both vested in the City of Nedlands for recreation.

5. Commonwealth Rifle Range. A portion of Location 313 is leased to the Commonwealth on lease 36L/449. This area is within the City of Nedlands.

6. Part of Location 313 is vacant Crown Land within the City of Nedlands.

2.5 DESCRIPTION OF LOCATION AND BOUNDARIES:
The area corresponds to the two System 6 areas M46 and M47 (Department of Conservation and Environment 1983). M47 is generally referred to as Bold Park in the suburb of City Beach and stretches from The Boulevard in the north to Rochdale Road in the south. Except for Lot 1 Stephenson Avenue which is private land within the City of Nedlands, all of this area lies within the City of Perth and is owned by the City, mostly under the terms of the City of Perth Endowment Lands Act.
M46 includes two segments in the suburb of Swanbourne: the area known as Mt. Claremont Bushland bordered by Rochdale Road in the north, West Coast Highway and The Christchurch Grammar playing fields and Cottesloe Golf Club on the south; and the area stretching from the west of West Coast Highway to the Indian Ocean bordered by Challenger Parade in the north. Part of this latter segment is leased to the Commonwealth as a rifle range. Most of M46 lies in the City of Nedlands and the Mt Clarement area lies within the City of Perth subject to the City of Perth Endowment Lands Act.

2.6 ADMINISTRATIVE AREA:
State: WA. Local Government Area: City of Perth
State: WA. Local Government Area: City of Nedlands

3. Identification of nominator

Organisation Wildflower Society of WA (Inc.).
Nomination prepared by: Mary Gray, Project Officer
Address PO Box 64 Nedlands State: WA Postcode: 6009
Telephone 09 383 7979

I wish my name to remain confidential *no*
I wish the name of my organisation to remain confidential *no*
I agree that my name can be released on request *yes*
I agree that the name of my organisation can be released on request *yes*

SIGNATURE OF NOMINATOR .....DATE .....

5.Owners or Lessees of Place:

Holding/Section/Portion: Swan Location 2103, (Lot 1 Stephenson Avenue in City of Nedlands
Name of owner: Government of WA.
Address (Details of recent change of ownership in December 1993 unknown)
City Perth State WA Postcode 6000
Telephone

Holding/Section/Portion: Swan Locations 571, 585, 617, and 1911, Perthshire locations Ak, Al, Reserve 16921 (Lot 2301), all in City of Perth
Name of owner/lessee: City of Perth
Address 27 St Georges Terrace
City Perth State:WA Postcode:6000
Telephone: 09 265 3333

Holding/Section/Portion: Swan Location 1911(part) in City of Perth (Water supply reservoir)
Name of owner: Minister for Water Resources
Address 20th Floor Forrest Centre, 221 St. Georges Terrace
City Perth State WA Postcode 6000.
Telephone: 09. 481 2044

Holding/Section/Portion: Recreation Reserve 27250 (Cottesloe Town Lot 328), Recreation Reserve 23729 (Cottesloe Town Lot 312) in City of Nedlands
Name of vesting body: City of Nedlands
Address 71 Stirling Highway
City Nedlands State: WA Postcode:6009
Telephone: 09 386 2414

Holding/Section/Portion:	Cottesloe Town Lot 313 (Crown Lease 526) in City of Nedlands
Name of lessee:	Commonwealth of Australia
Address:	
City:	State: Postcode:
Telephone:	
Holding/Section/Portion:	Perry House (near cnr Perry Lakes Drive and Oceanic Drive)
Name of Lessee:	1. Wildflower Society of WA
Address:	PO Box 64 Nedlands State WA Postcode 6009
Telephone	09 383 7979
	2. RAOU (WA group)
	PO Box 199 Jolimont, State WA Postcode 6014
Telephone	09 383 7749

6.Previous assessments

Name of agency:	1. National Trust of Australia (WA)
Address:	4 Havelock Street
City:	West Perth State: WA Postcode:6005
Result:	Classified
Name of agency:	2. Mitchell McCotter and Ecoscape
Address:	PO Box 144, West Perth WA 6872
	and PO Box 50 North Fremantle WA 6159.
Result:	Draft Public Environmental Review for Bold Park and Environs Prepared for the City of Perth, (includes assessment of values).

DESCRIPTION SECTION

7.GENERAL DESCRIPTION

Natural elements

The relatively large area of urban bushland lovingly referred to by the community as Bold Park, consists of coastal dune formations with outcrops of limestone along a scenic ridge line running approximately south west to north east. Reabold Hill is the major topographical feature of the area and as the highest point on the Swan Coastal Plain at a height of 84.8 metres, is a regional landmark. It stands as a natural bushland feature at 'the end of the road' when viewed from Cambridge Street in West Perth and Wembley. The lookout on the top of Reabold Hill is a popular tourist destination and the network of walktrails and bridle paths are very popular for recreation. The Water Authority's Reservoir and surrounding land is also a landscape feature at a height of 70 metres.

Most of the area consists of Quindalup dunes; Spearwood dunes include Cottesloe and Karrakatta associations which occur in the north east sector. Dunes are gently undulating with slopes of 3-10% in most of the area However steep slopes of up to 20% occur in the Quindalup dunes adjacent to Challenger Parade and on the eastern ridgeline west of Perry Lakes, making these areas fragile and prone to wind erosion if vegetation is disturbed.

There are no natural drainage channels because the sandy soils are highly permeable and rain infiltrates quickly. Runoff does occur, however, with some subsequent localized gully erosion, from carparks and walking trails. The depth to groundwater varies from zero at Camel Lake to over 20 metres at Reabold Hill. The groundwater flows towards the south west at a rate of 50 to 100 metres per year. Camel Lake is a surface water expression of groundwater and levels vary by about 0.8 metre per year . It receives no surface drainage so has reasonable water quality protected by relatively intact natural vegetation. Camel Lake was modified early this century by excavation and mounding of a one metre bund on its eastern side to provide a permanent watering point for camels.

Soils consist mainly of deep calcareous sands of aeolian (or windblown) origin. They form a mosaic of differing depths reflecting the strongly undulating topography and ageing from west to east. Cottesloe soils are shallow in the vicinity of Reabold Hill where the underlying Tamala limestone outcrops. Numerous limestone outcrops are evident from their limestone heath vegetation. Karrakatta soils are generally in the interdunal depressions and are deeper.

The vegetation is extremely variable and complex in composition despite falling into only 7 major formations. Banksia low woodland, Tuart woodland, and heath (limestone heath, dune heath, *Dryandra sessilis,* and *E. foecunda* mallee) are the most common, and others include shrublands *(Acacia rostellifera,* and *Acacia xanthina)* and other Eucalypt woodland (Jarrah- Marri, Flooded Gum), wetland communities, a Pine Plantation, and disturbed sites. These formations may be further divided into 20 different plant communities where species richness varies from 8 to 42 species per 100 square metres of sample area, with an average of 30. Limestone heath communities are naturally not as species rich as dune heath communities, but do contain a number of uncommon species confined to the Swan Coastal Plain . Dune heaths are the most variable, depending on aspect, slope, and soils. The heath is either dominated by the Daisy bush, *Olearia axillaris,* the low shrub Sheoak, *Allocasuarina humilis, Dryandra sessilis,* or Geraldton Wax,*Chamelaucium uncinatum,* with a species rich understorey. Many of the understorey species are widespread except for those in the swamp community which is restricted and less species rich.
Although there have been a number of developments in the area north of Oceanic Drive, there are very good stands of Fremantle Mallee *(Eucalyptus foecunda),* Limestone Marlock *(E. decipiens),* Tuart *(E. gomphocephala),* and White Stemmed Wattle*(Acacia xanthina)* found there.

Little mammalian fauna remains. The Common Brushtail possum inhabits the Tuart woodlands and Flooded Gums around Camel Lake. Western Grey kangaroos inhabited the Park until 1986 when they were killed by dogs or vehicles. Bats are apparently depleted in the area and only calls of *Todaria australis* were recorded by the Perth Wildlife Watch in 1990.

Bold Park is rich in reptiles and has 3 species of frog. There are 22 species of lizard, 1 species of blind snake, and 6 species of elapid snake. All of the region's burrowing snakes are present: Western Black-striped snake *(Vermicella calonotos),* Jan's Banded Snake *(V. bertholdii),* Black-naped snake *(V.binaculata),* Narrow-banded snake *(V. fasciolata)* and the Southern Shovel-nosed snake *(V. semifasciata).* The Carpet Python and Tiger Snake have also been sighted. Species of reptiles are highest in Banksia woodlands (26 species), coastal heath (24), and Dryandra heath (21). The Western Black-Striped snake, formerly listed as rare, is found in the area.

The birds of Bold Park and Mt Claremont are well studied and total 77 species. The diverse number and types of birds in the area is a reflection of the rich variety of habitats in terms of floristics and structural diversity The area is part of an extensive corridor of bushland from Herdsman Lake to the coast, to Lake Claremont, and to Kings Park. Bird species include the Splendid Wren *(Malurus splendens),* Black-capped sitella *(Neositta pileata),* Variegated wren *(M. lamberti),* White-winged Wren *(M. leucopterus),* White-plumed Honeyeater *(Meliphaga ornata),* Yellow-plumed Honeyeater *(M. penicillata),* White-backed swallow *(Cheromoeca leucosterna),* Turtle frog *(Myobatrachus gouldii),* Sand Monitor *(Varanus gouldii),* Rosenberg's Monitor *(V. rosenbergi).*
The Mt. Claremont bushland provides a unique habitat of particular interest for about 20 species of small territorial insectivorous birds, which do not venture into home gardens or parks. It is the only habitat where the Fairy Wren, Splendid Fairy Wren, and White-winged Fairy Wren co-occur, and is also an important habitat for the White-browed Scrub Wren which is sparse in Bold Park. The *Acacia rostellifera* shrubland is apparently a fire climax community which provides important habitat for small birds. Honeyeaters are attracted to the area because of the abundance of nectar on shrubs such as the One-sided Bottlebrush, *(Calothamnous quadrifidus),* Cockie's Tongue, *(Templetonia retusa),* Parrot bush *(Dryandra sessilis),* and various *Banksias.*
Parrots, cockatoos, and other birds that nest in tree hollows are well represented in the Tuart woodland. Striated Pardalote and the Tree Martin also rely on tree hollows for nesting.
There are 9 large birds of prey or raptors forming another important group in the area. The Peregrine Falcon is rare and classified in need of special protection (CALM 1990). These birds require large feeding grounds and the large size of the area is thus very important for them.

In comparison with Kings Park and Trigg Dunes, Bold Park and adjacent bushland has a greater variety of habitats and many more species of birds and reptiles.

Cultural elements: *History*
With the advent of European settlement of the Perth region, Aboriginal people were forced to find new camp sites, one of which was at the south east corner of Bold Park. A fig tree planted there remains today.
In 1834, Henry Trigg established a limestone quarry and lime burning works in the area now used as an open air theatre called the 'Quarry Amphitheatre'. In 1844 the land was bought by Walter Padbury, a well known entrepreneur in the colony, and became his 'Limekilns Estate'. It produced meat, skins and tallow. The area became the starting point for the Old North Road, which was the major

exploration route to the north.
In 1880, Joseph Perry purchased the whole Limekilns Estate and included horsebreaking and horse dealing. Perry Lakes were named after him.
The first camels which travelled from the Eastern States were watered at Camel Lake, and hence the name 'Camel Lake' although it was first known as 'Hidden Perry'. Scars where camels were tethered are still evident on Flooded Gums at the Lake (Friends of Bold Park 1989).
In 1917, Reabold Hill was named after the Town Clerk who served for 44 years, Mr. Bold, and the Mayor of Perth Mr. Rea. The City Council purchased the Limekilns Estate of about 522 hectares from Joseph Perry. At the same time the Council recommended that a Park incorporating Reabold Hill, Perry Lakes and the area now the City of Perth Golf Complex be set aside and pines were planted as a park feature. The park was surveyed and comprised 499 hectares (1233 acres) (Mitchell McCotter and Ecoscape 1993).
A number of areas have been excised from this original park over the years leaving 282 hectares. By 1974, 157 hectares were developed around Perry Lakes leaving 130 hectares as natural bushland. Then extensions have been added by Council from adjoining lands. By 1991, Bold Park was extended progressively by Council resolution as far south as Rochdale Road. In line with these decisions, amendments to the Metropolitan Region Scheme and the City's Town Planning Scheme to rezone the whole area of M47 (Bold Park) for 'Parks and Recreation' have not yet been carried out. Thus part of the City's Planning Scheme is out of line with the Council's own resolution of 1991 to set the area aside as 'Bold Park'.

8. Detailed Description.

Geology: Variably lithified siliceous Tamala limestone, calcareous Safety Bay dune sand, siliceous sand derived from Tamala limestone, peaty clay swamp deposits

Geomorphology: Transition zone between parabolic and nested parabolic Quindalup dunes and degraded Spearwood dunes of aeolian origin. Deflation hollows.

Soils: Siliceous Spearwood sands, peaty clay, calcareous Safety Bay sands

Vegetation communities: Foredune community, *Acacia rostellifera* shrubland, *Agonis flexuosa* low woodland, Dune Heath (4 types: *Olearia axillaris* dominated, *Dryandra sessilis* dominated, Western Dune heath, *Chamelaucium* dominated), Banksia low woodland, Tuart woodland, Jarrah woodland, *Acacia xanthina* shrubland, Swamp, Limestone heath.

Flora species: Typical species:
Species which are uncommon or of ecological and scientific importance:

* *Gryostemon ramulosus* , most southerly extension of range
* *Chamelaucium uncinatum* , (Geraldton Wax), most southerly extension and closest to the type locality of the species. This species is of great horticultural importance.
* *Agonis flexuosa,* (WA Peppermint), northernmost naturally occurring population
* *Stylidium maritima (MS),* a restricted species, reserved only in Yanchep and Yalgorup National Parks.
* *Sonchus hydrophillus,* uncommon and confined to the Swan Coastal Plain
* *Jacksonia sericea,* Priority 3 species, and near the northern limit of its range.
* *Beyeria cynorum,* Priority 1 species
* *Eucalyptus foecunda,* Priority 4 species
* *Cartonema philydroides,* Priority 3 species
* Uncommon yellow flowering form of *Banksia menziesii.*

Species richness: Species list for Bold Park is attached in Appendix.
In Bold Park, 228 native species, 133 aliens, and another 44 species planted in the bushland have been recorded by Keighery et al 1990. The percentage of aliens is similar to that found in Kings Park (Dixon pers. comm.).

Fauna species: (see attached species list in Appendix) Includes Splendid Wren (*Malurus splendens*), Black-capped sitella (*Neositta pileata*), Variegated wren (*Malurus lamberti*), White-winged Wren (*Malurus leucopterus*), White-plumed Honeyeater (*Meliphaga ornata*), Yellow-plumed Honeyeater (*Meliphaga penicillata*), White-backed swallow (*Cheromoeca leucosterna*), Turtle frog (*Myobatrachus gouldii*), Sand Monitor (*Varanus gouldii*), Rosenberg's Monitor (*Varanus rosenbergi*).
All of the region's burrowing snakes are present: Western black-striped snake *(Vermicella calonotos),* Jan's Banded Snake *(V. bertholdii),* Black-naped snake *(V.binaculata),* Narrow-banded snake *(V. fasciolata)* and the Southern Shovel-nosed snake *(V. semifasciata).*

Natural processes/systems: Coastal Quindalup Dune formation (both present and past), Tamala limestone outcrops including Reabold Hill and their associated limestone heath, lithification of dunes, succession, important area for resident and migratory birds, and herpetofauna.

Natural features or sites: Diverse range of plant communities, good Banksia woodland, good Tuart woodland, stands of peppermint trees, some Jarrah woodland, important small freshwater swamp (Camel Lake) with surrounding vegetation mostly intact unlike the other wetlands in the Perry Lakes system.

Landscape character: Near coastal dunes and limestone outcrops are a major landscape feature of the area. Vegetation types include the primary community of the foredune to the climax communities of Jarrah, Tuart and Banksia woodland and one freshwater swamp, Camel Lake.

Non-Aboriginal cultural sites or associations: The area was used as a quarry and as a resting place for camel trains in the early days of settlement. The area was also used as the starting point for the Old North Road, the major northwards exploration route. The area was 'Endowment Land' given to the City of Perth for the benefit of the people of the City.

9. Description checklist

9.1 **Altitudinal Range**: Low: 2 metres. High: 85 metres.

9.2 **Geology**

4121 Sedimentary Rocks - present
4151 Unconsolidated substrate - significant

9.3 **Landforms**

4214 Parabolic dune systems - significant
4220 Coastal dune systems - significant

9.4 **Palaeoenvironment**

4406 Fossil or buried soil - present

9.6 **Soils**

4501 Calcareous sand/ soil - significant
4511 Organic - present
4513 Sand - significant
Great soil groups: Quindalup association, Spearwood Association consisting of Cottesloe soil and Karrakatta soil
Soil colour and contrast: Mainly deep calcareous sands of aeolian origin. For detail see Mitchell McCotter and Ecoscape 1993 pages 2.1 - 2.2.

9.7 **Vegetation classification** - structural formation

4606 Woodlands - significant
4620 Mallee shrubland - significant
4630 Shrublands - significant
4640 Heathlands - significant
4690 Sedgelands - significant

9.9 **Vegetation** - partial floristics classification

Forest & woodlands
4802 *Banksia* sp. forest & woodlands
4805 *Eucalyptus* sp. forest & woodlands
4809 *Agonis flexuosa* woodland

Mallee shrublands
4811 *Acacia* sp. shrubland significant
4822 *Eucalyptus* sp. mallee shrublands significant

9.10 **Significant fauna**

Systematic survey: 1986-1989 by How and Dell,1990.
4901 Amphibians - significant
4911 Birds - significant
4951 Terrestrial reptiles - significant

9.11 **Bioclimatic zone**
5070 Temperate zone present
9.12 **Wetland environments**
5181 Swamp significant (an artificially dammed wetland used for watering camels last century)

9.13 VEGETATION-Floristics
Area/Community Name: Low closed shrubland
Community Type: *Acacia rostellifera* shrubland
Dominant species: *Acacia rostellifera*
Understorey species: *Acacia lasiocarpa, Melaleuca acerosa, Templetonia retusa, Helichrysum cordatum, Cassytha flava, Scaevola canescens, Tersonia cyathiflora, Opercularia vaginata, Acanthocarpus preissii, Lomandra maritima, Dianella revoluta, Loxocarya cinerea, Caladenia latifolia, Stipa flavescens, Calandrinia brevipedata*
Emergent species: Nil
Indicator species/growth forms: Nil
No. of species: 23 (6 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Low open acacia woodland
Community Type: *Acacia rostellifera* open woodland
Dominant species: *Acacia rostellifera*
Understorey species: *Myoporum insulare, Spyridium globulosum, Olearia axillaris, Melaleuca acerosa, Rhagodia baccata, Loxocarya cinerea, Lomandra maritima, Caladenia latifolia, Acanthocarpus preissii, Dianella revoluta*
Emergent species: *Agonis flexuosa*
Indicator species/growth forms: *Hardenbergia comptoniana* (vine), *Clematis aristata* (vine)
No. of species: 21 (6 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Peppermint woodland
Community Type: *Agonis flexuosa* mallee woodland
Dominant species: *Agonis flexuosa*
Understorey species: *Hakea prostrata, Allocasuarina humilis, Acacia pulchella, Helichrysum cordatum, Jacksonia sericea, Melaleuca acerosa, Olearia axillaris, Gompholobium aristatum, Leucopogon australis, chenaultia linearoides, Opercularia vaginata, Tetraria octandra, Loxocarya cinerea, Conostylis candicans, Lomandra maritima*
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana* (vine), *Agonis flexuosa* (northernmost stand)
No. of species: 25 (8 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Olearia heathland
Community Type: *Olearia axillaris* dominated dune heathland
Dominant species: *Olearia axillaris* (90% of this stratum), *Chamelaucium uncinatum, Dryandra sessilis*
Understorey species: *Templetonia retusa, Helichrysum cordatum, Calothamnus quadrifidus, Leucopogon australis, Acacia lasiocarpa* (60% of the stratum 30-50 cm), *Melaleuca acerosa, Cassytha flava, Hibbertia racemosa, Diplopeltis huegelii, Lechenaultia linearoides, Scaevola canescens, Hemiandra pungens, Conostylis aculeata, Dianella revoluta, Acanthocarpus preissii, Loxocarya cinerea, Lepidosperma angustatum, Tetraria octandra, Thysanotus arenarius, Trachymene pilosa, Calandrinia brevipedata, Calandrinia corrigioloides, Triglochin calcitrapa, Daucus glochidiatus*
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No. of species: 33 (5 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Western Dune Heath
Community Type: Hakea heathland
Dominant species: *Hakea prostrata, Allocasuarina humilis*
Understorey species: *Calothamnus quadrifidus, Acacia cochlearis, Helichrysum cordatum, Melaleuca acerosa, Gompholobium aristatum, Acacia pulchella, Grevillea crithmifolia, Conostephium preissii, Opercularia vaginata, Jacksonia sericea, Lechenaultia linearoides, Mesomelaena stygia, Anigozanthos manglesii*

Emergent species: None
Indicator species/growth forms: *Caladenia latifolia, Hovea trisperma, Drosera macrantha*
No. of species: 39 (9 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Dryandra heath
Community Type: *Dryandra sessilis* dominated dune heath
Dominant species: *Dryandra sessilis*
Understorey species: *Melaleuca acerosa, Olearia axillaris, Grevillea crithmifolia, Jacksonia sericea, Acacia lasiocarpha, Diplopeltis huegelii, Stipa flavescens, Loxocarya cinerea, Calandrinia corrigioloides, Calandrinia liniflora*
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No. of species: 35 (6 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Western grey sand dune heath
Community Type: *Chamelaucium* dominated heathland
Dominant species: *Chamelaucium uncinatum, Calothamnus quadrifidus, Olearia axillaris, Helichrysum cordatum, Acacia cochlearis, Olax benthamiana*
Understorey species: *Diplopeltis huegelii, Acacia lasiocarpa, Tersoonia cyathiflora, Constylis candicans, Acanthocarpus preissii, Loxocarya cinerea, Tricoryne elatior, Calandrinia brevipedata*
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana* (vine), *Clematis microphylla* (vine), *Chamelaucium uncinatum* (southernmost recorded stand)
No. of species: 31 (8 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): "Normal" woodland
Community Type: Banksia woodland
Dominant species: *Banksia attenuata, Banksia menziesii*
Understorey species: *Calothamnus quadrifidus, Allocasuarina humilis, Leucopogon australis, Acacia pulchella, Scaevola canescens, Tetraria octandra, Lomandra maritima, Crassula colorata, Isolepsis cernua, Calandrinia granulifera, Calandrinia brevipedata*
Emergent species: *Eucalyptus marginata, Eucalyptus gomphocephala*
Indicator species/growth forms: *Cassytha flava* (vine), *Hardenbergia comptoniana* (vine)
No. of species: 29 (7 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): *Banksia menziesii* woodland
Community Type: *Banksia menziesii* woodland
Dominant species: *Banksia menziesii, Agonis flexuosa*
Understorey species: *Hakea prostrata, Olearia axillaris, Hemiandra pungens, Grevillea crithmifolia, Helichrysum cordatum, Scaevola canescens, Acanthocarpus preissii*
Emergent species: *Eucalyptus gomphocephala, Eucalyptus marginata*
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No.of species: 35 (9 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Mallee/Banksia woodland
Community Type: *Eucalyptus decipiens* stand in Banksia woodland
Dominant species: *Eucalyptus decipiens, Banksia attenuata, Banksia menziesii, Allocasuarina fraseriana*
Understorey species: *Melaleuca acerosa, Calothamnus quadrifidus, Daviesia triflora, Allocasuarina humilis, Olearia axillaris, Stirlingia latifolia, Conostephium pendulum, Isotropsis cuenifolia, Conostylis aculeata, Anigozanthos manglesii, Drosera pallida, Crassula colorata*
Emergent species: *Eucalyptus gomphocephala, Eucalyptus marginata*
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No. of species: 30 (8 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Tuart woodland
Community Type: *Eucalyptus gomphocephala* woodland
Dominant species: *Eucalyptus gomphocephala*
Understorey species: *Eucalyptus marginata, Macrozamia riedleii, Lepidosperma gladiatum,*

Arthropodium capillipes
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No. of species: 8 (2 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Mallee Jarrah
Community Type: *Eucalyptus marginata* woodland
Dominant species: *Eucalyptus marginata, Banksia grandis*
Understorey species: *Banksia menziesii, Macrozamia riedleii, Acacia pulchella, Hibbertia hypericoides, Stirlingia latifolia, Daviesia triflora, Gompholobium aristatum, Sowerbaea laxiflora, Conostylis aculeata, Drosera macrantha*
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No. of species: 24 (6 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Marri-Jarrah woodland
Community Type: *Eucalyptus calophylla/ Eucalyptus marginata* woodland
Dominant species: *Eucalyptus callophylla, Eucalyptus marginata*
Understorey species: *Jacksonia furcellata, Acacia saligna, Xanthorrhoea preissii, Macrozamia riedleii, Acacia pulchella, Pimelea rosea, Hibbertia hypericoides, Arthropodium capillipes, Burchardia umbellata, Caesia micrantha, Sowerbaea laxiflora, Conostylis aculeata*
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No. of species: 21 (5 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): *Acacia xanthina* shrubland
Community Type: Low closed heath
Dominant species: *Acacia xanthina*
Understorey species: *Melaleuca huegelii, Beyeria cinerea, Trymalium ledifolium, Melaleuca acerosa, Leucopogon australis, Templetonia retusa, Scaevola crassifolia, Hemiandra pungens, Olearia axillaris, Hibbertia spicata, Grevillea thelemanniana, Acacia lasiocarpha, Phyllanthus calycinus*
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana, Clematis microphylla* (both vines)
No. of species: 42 (10 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Camel lake
Community Type: Rushland
Dominant species: **Typha orientalis, Bulboschoenus caldwellii*
Understorey species: *Sporobolus virginicus, Triglochin striata*
Emergent species: None
Indicator species/growth forms: None
No. of species: 7 (4 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Camel lake southern edges
Community Type: *Acacia saligna* woodland
Dominant species: *Acacia saligna*
Understorey species: *Baumea juncea, Lepidosperma* sp.
Emergent species: *Eucalyptus rudis*
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No. of species: 8 (3 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Camel lake northern edges
Community Type: Woodland
Dominant species: *Melaleuca incana, Acacia saligna*
Understorey species: *Juncus krausii, Lobelia alata, Centella cordifolia*
Emergent species: *Eucalyptus rudis*
Indicator species/growth forms: *Sonchus* aff. *asper* (GK 11001) (Unique, rosetted perennial herbs, not erect succulent annuals. Thought to be a native *Sonchus* sp., of which this is the only known

population.)
No. of species: 8 (2 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Limestone Heath
Community Type: *Acacia truncata* dominated
Dominant species: *Acacia truncata, Templetonia retusa, Trymalium ledifolium, Dryandra sessilis*
Understorey species: *Melaleuca acerosa, Olax benthamiana, Grevillea thelemanniana, Diplopeltis huegelii, Astroloma microcalyx, Stylidium* aff. *affine, Opercularia vagianta*
Emergent species: None
Indicator species/growth forms: *Stylidium* aff. *affine* (known only from Yanchep and Yalgorup National Parks outside of Bold Park)
No. of species: 25 (6 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community Name (if any): Limestone Heath
Community Type: *Eucalyptus foecunda* Mallee shrubland
Dominant species: *Eucalyptus foecunda, Olearia axillaris, Dryandra sessilis, Melaleuca acerosa*
Understorey species: *Allocasuarina humilis, Macrozamia riedleii, Olax benthamiana, Conostylis aculeata, Loxocarya cinerea, Tetraria octandra, Acanthocarpus preissii*
Emergent species: None
Indicator species/growth forms: *Hardenbergia comptoniana* (vine)
No. of species: 22 (7 aliens)
Information source and reliability: Keighery et al, 1990

Area/Community type: Mt. Claremont dunes
Community type: Dune sheoak (*Casuarina lehmanniana)* shrubland
Dominant species: *Casuarina lehmanniana*
Understorey species:
Emergent species:
Indicator species:
Information source and reliability: Wykes 1990, Keighery, B.J.1993, pers. comm.

10. Description checklist - LANDSCAPE AND CULTURAL ELEMENTS

10.1 Year of Establishment of Cultural Elements

When Europeans first settled in the area, the area now known as Bold Park was utilised by the Aboriginals as a hunting area. (Friends of Bold Park, 1989). The area has significance for early establishment of European activities.
1834 Quarry and limekiln established by Henry Trigg
1844 Area purchased by Walter Padbury, formed part of "Limekilns Estate", production of meat, skins and tallow. Also starting point for the Old North Road.
1880 Area purchased by Joseph Perry, introduction of horsebreaking and stockdealing to the estate. First Camel Trains from the Eastern States to WA used Camel Lake as a watering point.
1917 Area purchased by Perth City Council.
1936 Perth City Council declares area around Reabold Hill *'a Park for the local residents forever'*.

10.2 **Landscape character spectrum:** A relatively large area of natural near-coastal bushland within an established urban region. Dune ridges and swales exhibit a complex array of plant communities. Reabold Hill is the highest point on the Swan Coastal Plain and consists of a limestone outcrop which is visible as a landscape feature for miles around.

10.3 **Landscape aesthetics:** Large tuarts, now uncommon on the coastal plain, remain in Bold Park and Mt Claremont bush providing a sense of natural grandeur and habitat for large birds. The area has all of the characteristics of a coastal succession, from the initial dune vegetation to the climax community. The area's undulating appearance, enhanced by the extensive covering of Banksias and Eucalypts and ever present bird calls is very appealing. As you walk through the area, many diverse communities can be seen which are not apparent when taking a general overview of the area, for example from Reabold Hill. A sense of 'the city in the bush' as referred to by Seddon in *A City and its Setting* (Seddon and Ravine 1986) is encapsulated in the area.

10.4 **Landscape history:** The area was declared a park for the people of Perth in 1936. Camel Lake was used as a resting point for the camel trains coming west from the eastern states. Refer 10.1 for

details of landscape history.

10.5 **Present Land use:** Extensive recreation, along established walk trails, of both regional and local importance including bushwalking, bird watching, nature appreciation, jogging, horse riding, and landscape viewing especially from Reabold Hill. Bold Park has wide educational use for appreciation of flora and fauna of urban bushland via activities such as guided bushwalks by the Museum, Wildflower Society and RAOU, and use by schools. It is an important site for study and understanding the natural history of avifauna and herpetofauna, especially snakes and lizards on the Swan Coastal Plain.

11. Historic Sites or Areas
1018 Historic sites - present
1024 Conservation areas significant
1029 Mining sites & mineral processing - present (historic only)

12. Aboriginal Sites or Areas
1044 Occupation sites - present

13. CONDITION
Overall, the topography of the landscape is intact and the structural condition of the vegetation is very good. The understorey, however, has been extensively invaded by weeds.

In the central Bold Park area, the number and percentage of alien species varies with plant community. In general weed invasion is low in heaths and some Banksia woodlands, and higher in open Eucalypt woodland, and is severe along tracks and margins of the Park especially around Reabold Hill. Common weeds include Veld grass, and Pelargonium. In the central Bold Park area over 40 taxa of native species not indigenous to the area have been planted in the bushland in the past, especially along walk trails.

The northernmost sector north of Oceanic Drive has been disturbed in the past by various developments such as the Skyline Drive-in, Swimming Pool, City Beach High School, and the Water Supply Reservoir. Nevertheless bushland envelops these incursions and there are good stands of Tuart, Limestone Marlock, Fremantle Mallee, *Acacia xanthina* shrubland and heathland which are of conservation significance in this sector. The high dunes on the western side around the reservoir are a dominating landscape feature of importance.

The southern part of the area (M46) is generally in better condition than Bold Park and has far less recreational pressure. The intact condition of the herb layer in some of the vegetation assemblages provides important habitat for small birds. The Tuart woodlands and the fringing Banksia woodlands at Swanbourne Beach and Rifle Range and Mt. Claremont bushland are significantly invaded by perennial Veld grass, *Ehrharta calycina,* although invasion is not as significant in the other communities. The herb layer in all communities is predominantly weed species. Weeds of greatest concern are *Myrsiphyllum asparagoides* and *Euphorbia terracina.* The percentage of non-native taxa (weeds) in this area is 33% which, when compared with comparable coastal areas, Reserve 24309 at Coogee (System 6 area M91) has 39% weeds, and Port Kennedy (M106) has 28%.
Generally the M46 area is in good to poor condition, with much of the heath in very good condition, which is an important feature for birds. There has been significant disturbance in the area associated with roads, tracks, rubbish dumping and adjacent irrigated areas.

13.4 **Prognosis**
Although the area is subject to System 6 recommendations (M46 and M47), which proposed Regional Park status for the whole area, it is not yet secure as a single conservation reserve. When changes to the structure of Perth City Council are completed in 1994, responsibility for the area will be transferred to the new Local Authority to be called Cambridge. The security of Mt. Claremont bushland is currently at stake and some proposals suggest sale of this area for urban housing development in order to fund new Municipal buildings for Cambridge.

Protection of the relatively large size of the whole area is vitally important to maintenance of its integrity in the urban setting. Without any further fragmentation or disturbance, the area can be maintained as one of the most important bushland reserves in the Perth metropolitan region. Improved management as urban bushland will be important. If the area were fragmented by other land uses, the values would be severely impaired.

CRITERION	DATA RELATING TO CRITERION	RELATIVE VALUE
A.1 Importance in the evolution of Australian flora, fauna, landscapes or climate	*Flora and plant communities at limit of range:* The area contains the most southerly populations known of *Gyrostemmon ramulosus* and *Chamelaucium uncinatum* (Geraldton Wax). *Melaleuca cardiophylla* is at the southern-most limit of its range (Keighery et al 1990). The stand of *Agonis flexuosa* (WA Peppermint) is the northernmost known although escapees from cultivation occur north of Bold Park at Yanchep National Park (Keighery and Keighery 1992). *Acacia xanthina* shrubland is the most substantial stand at the southern limit of its range (also at Cantonment Hill) (G. Keighery pers. comm., Weston, 1987). Heath communities dominated by *Chamelaucium uncinatum* are the most southerly naturally occurring and the only ones known in the metropolitan region (G. Keighery pers. comm.). *Allocasuarina lehmanniana* (sheoak) found in Mt. Claremont bushland is at or near the southern limit of its range (EPA 1992). *Jacksonia sericea* is a restricted species near the northern limit of its range annd occurs on the western boundary of Lot 1 Stephenson Ave in heath (Weston 1987).	**medium**

A.2 Importance in maintaining existing processes or natural systems at the regional or national scale.	*Geomorphology:* The area is the most extensive outcrop of Tamala limestone (Cottesloe) still with native vegetation between Yanchep and Yalgorup National Parks. The limestone heath communities are especially significant in maintaining existing processes (G.J. Keighery pers. comm.).	**medium**
	Avifauna: The large size of the area and complexity of adjoining habitats provide complementary feeding, breeding, and refuge sites for many species of birds, both resident and migratory, large and small (How and Dell 1990).	**very high**
	The Mt.Claremont area in particular is important with 55 species of birds because of the habitat richness and critical habitat in very good condition. In addition some 20 species of small birds present in Mt. Claremont do not occur in gardens and rely solely on bushland habitats for feeding and breeding (Wykes 1991).	**very high**
	Specific feeding habitats for honeyeaters include one-sided bottle brush *(Calothamnus quadrifidus)* in Mt Claremont bushland in early summer, banksia flowers in Bold Park in autumn and winter, and then they move north along coastal dunes to breed. The Splendid Fairy Wren, White browed Scrub Wren and Variegated Fairy Wren depend on the less disturbed Mt. Claremont and Rifle Range habitats. Thus this area provides a critical wildlife corridor to Bold Park then linking with the coastal dune system of City Beach (Wykes 1990).	**very high**
	Seasonal movements of birds, reptiles and smaller animals occur amongst different plant communities in different habitats.. The area provides essential corridors to Kings Park via Shenton Park bushland (Lemnos St) and to Herdsman Lake via the Wembley golf course and Churchlands bushland (Mitchell McCotter and Ecoscape 1993)	**very high**
	The relatively large area and presence of big old trees such as Tuart provide suitable habitat for breeding, feeding and nurseries for large birds including hawks, kestrels, and kites which forage over large areas (How and Dell 1990).	**high**
	Herpetofauna: Being high in the food chain, the complete assemblage of burrowing snakes in Bold Park reflects the species richness of lizards (29 species) which in turn is an indication of a rich invertebrate assemblage surviving on a rich floristic assemblage. Bold Park is the only site where the 5 species of burrowing snake co-exist within the metropolitan region, making the site very significant at the regional scale in maintaining ecological processes. The relatively large size of the area is a crucial feature of this (How 1993 pers. comm.)	**very high**
A.3 Importance in exhibiting unusual richness or diversity of flora, fauna, landscapes or cultural features	The geomorphology of the coastal Quindalup and Spearwood dune systems results in varied ridge and swale landscapes providing an unusually rich variety of habitats for flora and fauna in an urban environment (Mitchell McCotter and Ecoscape 1993), and an array of scenic landscapes readily accessible for public appreciation. The 8 major vegetation types (Mitchell, McCotter and Ecoscape 1993) are extremely variable and complex and can be divided into 20 distinct associations based on floristics (Keighery et al 1990).	**very high**
	Fauna: The richness and diversity of herpetofauna is the highest recorded for urban bushland in the Perth region. There are 29 species of reptiles with representatives of all 5 families in 22 species. This richness is described by How and Dell (1990) as remarkable for an isolated urban area.	**very high**
	The Dugite and diversity of 5 species of burrowing snake *Vermicella* is closely related to the diversity and abundance of fossorial and semi-fossorial lizards on which they feed. Together they form an important assemblage of reptiles. Bold Park is the only site where the 5 species of burrowing snake occurr together in the metropolitan area (How and Dell, 1990).	**very high**

	Avifauna: A rich assemblage of 61 bird species in Bold Park includes resident and migratory species (How and Dell 1990). The Mt. Claremont area supports 55 bird species alone because of dense *Acacia rostillifera* shrublands in very good condition intermixed with dune heath and eucalypt woodland unburnt for about 25 years. The number of small bird species (over 20) which do not frequent suburban gardens is particularly high for an urban bushland area (Wykes 1990).	**very high**
B.1 Importance for rare, endangered or uncommon flora, fauna, communities, ecosystems, natural landscapes or phenomena, or as a wilderness.	*Flora:* There are 4 Priority species listed by CALM (Mitchell, McCotter and Ecoscape 1993). *Beyeria cynorum* s a Priority 1 species is found in the Banksia woodlands . *Eucalyptus foecunda* (Fremantle Mallee) occurs in Bold Park with particularly good stands in the northern sector. This is the only known population between Woodman Point and Quinns Rocks apart from 2 specimens on cliffs in east Fremantle. *Jacksonia sericea* , a Priority 3 species, is near the northern limit of its range. *Cartonema philydroides* is also a Priority 3 species found in Banksia woodlands (*ibid,* Keighery et al 1990). *Stylidium* maritima (M.S.) is a restricted species confined to the Swan Coastal Plain (Keighery et al 1990). The population of the rosetted perennial herb*Sonchus hydrophillus* at Camel Lake is uncommon, being confined to freshwater lakes on the Swan Coastal Plain (G. Keighery pers. comm.). The uncommon yellow flowering form of *Banksia menziesii* occurs in M47 (Weston 1987). Communities of *Callitris preissii* (Rottnest Island Pine), present on the stable dunes of Mt Claremont bushland, are now uncommon in the metropolitan region because of frequent fire (EPA 1992). *Wetlands:* Camel Lake although small is one of few freshwater wetlands still in relatively natural condition with some vegetation intact (G. Keighery pers. comm.).	**medium**
	Fauna: The burrowing snake, *Vermicella calonotus,* previously listed as rare and in need of protection (How and Dell 1990), is still uncommon and occurs in low numbers in Bold Park (How 1993 pers. comm.).	**high**
	Breeding records of the Painted Button-quail in tuart woodland at Bold Park during spring are the only recent records in near coastal parts of the Swan Coastal Plain (How and Dell 1990).	**high**
	Mt Claremont bushland is an important habitat for the uncommon species of insectivores, including 3 Fairy Wren species: the White-winged Fairy Wren, the Splendid Wren, and the Variegated Wren. This is the only known site where these 3 species co-occur (Wykes 1990).	**very high**

C.1 Importance for information contributing to a wider understanding of Australian natural history, as a research site, teaching site, type locality, reference or benchmark site.	*Flora:* The stands of *Chamelaucium uncinatum* are the closest to the type locality for this outstanding horticultural species (Keighery et al 1990).	**high**
	Vegetation: The rich variety of vegetation types and their relationships with soil types and landforms provide a benchmark for understanding and teaching about revegetation and management of Quindalup and Spearwood systems on the Swan Coastal Plain (Wykes pers. comm.)	**high**
	Fauna research : The WA Museum has been studying fauna in Bold Park for a number of years. Because of the relatively intact assemblage of snakes and lizards and their food supplies (as described in A3), and the large size of the area, the site provides an important window of understanding into ecological processes on the Swan Coastal Plain (How 1993 pers. comm.). The Mt. Claremont Bird Banding Group carries out research into resident and migratory birds, with more detailed research conducted by University students (Mitchell McCotter and Ecoscape 1993).	**high**
	Education: Bold Park is used extensively as an educational site by a range of bodies. The Museum's Education Department conducts extensive programs for teachers, school students, the disabled and the general public. Neighbouring schools also use the area for education *(ibid).* Bold Park is an important teaching site for the community as the Wildflower Society and the RAOU have their headquarters at Perry House at the foot of Reabold Hill. Each has an annual programme of guided walks through the bushland as part of lease arrangements. The Local Plant Group, the Tree Society, and the Naturalists Club all conduct activities also. Perth City Council conducts an annual 'Bold Bush Festival' of educational and recreational events over a 4 week period in October.	**high**
C.2 Importance for information contributing to a wider understanding of the history of human occupation of Australia.	The area was concerned with early European settlement activities: in 1834 Henry Trigg established a limestone quarry at the Quarry Amphitheatre. In 1844 Walter Padbury produced meat, skins, and tallow on his Limekilns Estate, and the area was the starting point for the main exploration route north, known as the Old North Road. In 1880, Joseph Perry was a horse dealer who purchased the Estate and ran horses there. Remnants of old fences still remain in Bold Park. The first camels which travelled from the Eastern States were watered at Camel Lake, and marks of chains which tied camels can still be seen on Flooded Gums around the Lake today (Friends of Bold Park 1989).	**high**

D.1 Importance in demonstrating principal characteristics of the range of landscapes, environments or ecosystems, the attributes of which identify them as being characteristic of their class.	*Geomorphology:* The area is an important representation of Quindalup dunes in natural condition, which differ from the Trigg Dunes; the latter have been mostly modified or lost by urbanisation elsewhere. Reabold Hill is an important outcrop of Tamala limestone within the Cottesloe system, being the highest point on the Swan Coastal Plain. The dune ridge system contrasts with the relatively flat terrain of most of the Coastal Plain.	**high**
	Vegetation The area provides very good representation and a large area of diverse vegetation communities of Quindalup Dunes and Cottesloe limestone, little of which still remains on the Swan Coastal Plain (B. J. Keighery pers. comm.).	**very high**
	In particular, there is: good representation of closed coastal limestone heath in very good condition (G. Keighery pers. comm.); good representation of *Acacia xanthina* shrubland which is a species rich but unusual vegetation formation (Keighery et al 1990); good representation of large Tuart now mostly lost from the Coastal Plain (B.J.Keighery pers. comm.); good representation among the best in the metropolitan area of *Eucalyptus decipiens* (Limestone Marliock) around the former Skyline Drive-in in the northern sector (Mitchell McCotter and Ecoscape 1993).	**high**
	Herpetofauna: An excellent example of an intact assemblage of lizards and snakes of the Swan Coastal Plain within an isolated urban area, with better representation of species than at Kings Park (How 1993 pers. comm.). Representatives of all 5 families of lizards are present in 22 species including arboreal, fossorial and epigeic forms. Both species of *Varanus* and Carpet Pythons still occur. This suggests that the assemblage of lizards is little changed from the original composition (How and Dell 1990). Five species of burrowing snake still occur in the Park and such diversity is closely related to the diversity and abundance of fossorial and semi-fossorial lizards present (How and Dell 1990).	**very high**
	Avifauna: Representation of small birds and their intact dune habitat in Mt Claremont bushland is excellent. A total of 53 species have been recorded in this area of 37 hectares of which about 20 species are permanent inhabitants (Wykes 1992). Representation of honeyeaters is also excellent, due to abundance of nectar in plants such as the One-sided Bottlebrush *(Calothamnus quadridfidus)* (Wykes 1990).	**very high**
E.1 Importance for a community for aesthetic characteristics held in high esteem or otherwise valued by the community.	Bold Park, Kings Park and Rottnest Island are the three bushland areas which are quintessential features of the landscape identity of Perth and all are held in very high esteem by the community and visitors. Community views consistently emphasize that the area is well known and valued for its integrity and size, quality and unique values of landscape, flora and fauna, and high degree of naturalness, there being no comparable area in the Perth metropolitan region. (Mitchell, McCotter and Ecoscape 1993). Reabold Hill is the highest point on the Swan Coastal Plain and commands spectacular views of the city, suburbs and ocean (Friends of Bold Park 1989). The lookout on Reabold Hill is a popular tourist destination readily accessible to visitors. Walk trails in Bold Park provide easy access to an estimated 200,000 visitors per year (*ibid*) to enjoy pleasing views of the ocean, Swan Coastal Plain and the changing ridge and swale vegetation ranging from tuart woodland to swamp and limestone heath. Abundant birdlife is always evident and much valued. The varied dune landscape and rich wildlife typical of the Perth region are highly valued by users and the community (Clegg, Haverkamp and Robinson 1987), Dames and Moore 1992), (Mitchell McCotter and Ecoscape 1993).	**very high**

G1. Importance to a community for religious, spiritual, cultural, educational or social associations	Bold Park is held in high esteem by the community as a natural coastal landscape which is part of the region's sense of place. Perth's identity as *'the city in the bush'* is described by Seddon and Ravine in the book 'A City and its Setting' 1986 (p.57). Other evidence of this social value is as given above for E1.	**very high**
	In addition Clegg, Haverkamp and Robinson (1987) in the 'Survey of Users of Bold Park Bushland' found that the area functions as a popular regional park, serving people from a very large part of the Perth region including 105 different suburbs. 77% of respondents came from suburbs not immediately adjacent to the park. Respondents placed high value on the area as a bushland park. To the majority Bold Park offered unique recreational opportunities and to others it was comparable to Kings Park. Recreational activities were, in order, walking, going to lookout points, nature observation, photography, enjoyment of peace and quiet, and meditating.	**very high**

16. STATEMENT OF SIGNIFICANCE

Bold Park and adjacent bushland provides a scenic natural area of coastal dunes which is readily accessible and highly valued by the community. Reabold Hill, an outcrop of Tamala limestone, is the highest point on the relatively flat Swan Coastal Plain. Popular to tourists, it commands dramatic views of the ocean, coastal suburbs, the City, and a backdrop of the Darling Range. In 1987, there were an estimated 200,000 visitors. Community attitudes about the area are well documented and rate the area highly for its aesthetic landscape values, for flora and fauna, recreation, education and enjoyment of the peacefulness of nature, all within the urban setting.

The area is the best representation on the Swan Coastal Plain of the Quindalup dune system and its complex vegetation assemblages. It has the most extensive outcrop of Tamala limestone in the urban area and still supports its natural limestone heath vegetation. Bold Park has the richest assemblage of reptiles in the metropolitan region, and is the only site where the 5 species of burrowing snake co-occur. This is an indicator of a relatively intact ecosystem where the snake assemblage is dependent on a rich assemblage of 22 lizards representing all 5 families, which in turn depend on a rich invertebrate suite and a rich floristic assemblage. Thus it is a very significant site of regional importance exhibiting natural processes and rich faunal diversity.

It is the large size of the area and the complexity of adjoining habitats which provide the important complementary feeding, breeding and refuge sites for resident and migratory birds, large and small. The Mt. Claremont area in particular has very high conservation value, with 55 species of birds because of the habitat richness and critical habitat in very good condition. There are some 20 species of small resident birds which are entirely dependent on this habitat. It is the only known area in which the 3 species of territorial insectivores (the White-winged Wren, *Malurus leucopterus*, Splendid Wren, *M. splendens*, and Variegated Wren *M. lamberti*) are all present. Mt. Claremont is also an important summer feeding site for honeyeaters, attracted to extensive thickets of the One-sided Bottlebrush, *Calothamnus quadrifidus*. The large size of the area provides important feeding and breeding grounds for 9 species of large birds of prey (raptors), including the rare Peregrine Falcon.

The area is an important representation of the complexity of vegetation communities on Quindalup dunes and Cottesloe soils including limestone. It is an important reference site for the understanding and development of bush regeneration techniques for the Swan Coastal Plain. The limestone heath communities and the White stemmed Wattle*(Acacia xanthina)* community are especially well represented. The Tuart woodlands are one of few stands remaining in the metropolitan region and are an important breeding and resting habitat for large birds. The stands of Geraldton Wax *(Chamelaucium uncinatum),* a widely cultivated species, are important as the closest to the Type Locality. There are some 18 species of plant which are uncommon or of scientific interest, including 4 gazetted as Priority species under the Wildlife Conservation Act (WA). Camel Lake is a small freshwater swamp and is the only example of the Perry Lakes still in relatively natural condition, with flora of scientific interest. It is also an historic site where interstate camels were watered.

The area is an important research and education site used by the WA Museum. Mt. Claremont is particularly important as a research site for avifauna, especially for the study of small birds and their relationship with habitat. The whole area is an important teaching site about coastal processes, flora and fauna, for schools, universities, and the general community. Specialist societies such as the RAOU, Field Naturalists, and Wildflower Society all use the area.

17. RATIONALE FOR THE PROPOSED BOUNDARIES

Boundaries include the whole of the System 6 areas of M46 and M47. They include all the natural bushland as well as some relatively small sections which have been modified in the past but which are valued by the community for recreation and education or for their important landscape value.

The segment south of Rochdale Road is all bushland and has very high conservation values. The bushland coastal reserves are included because of their importance to small birds and as areas of primary dunes and foredunes in coastal processes, and as natural coastal landscapes.

The central segment between Rochdale Road and Oceanic Drive is predominantly bushland. The pine plantation is included because it is central and hidden from much of the area, has some historical interest and is valued for recreation, including horse riding. Wollaston College is a religous retreat and convention centre and is enclosed by bushland which is the natural garden setting. An area on Rochdale Road has been cleared and used as a turf farm in the past by the Perth City Council. Two old quarry sites are included and have historic value. The margin along Perry Lakes Drive consists of grassed parkland in sections (eg. in front of Perry House) and includes carparks for bushwalkers. Perry House has historic value as a former farm house and now has educational value as the home of the RAOU and Wildflower Society. It is proposed to include all this central area bounded by West Coast Highway, Oceanic Drive, Perry Lakes Drive and Rochdale Road as a landscape unit predominantly bushland.

The segment north of Oceanic Drive to The Boulevard includes a number of past developments which are nearly all recreational facilities or educational. The Water Supply Reservoir is included because of the high position in the landscape and important surrounding heathland vegetation. The retirement village is excluded. It is proposed to include the City Beach High School as it is nestled in a dune swale and is enveloped by bushland, including important dune heath on the southern edge of the school. The School uses the area for education. The former Skyline Drive-in is no longer used and some natural regeneration is occurring. Other incursions include cleared areas for ovals which are not irrigated. Despite these developments most of which are nestled into the bushland, it is the high dune landscape and the native vegetation which is the overwhelming feature of this segment. The latter are considered to have important National Estate values.

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19. PERSONAL CONTACTS

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6. Boyd Wykes, Perth Birdbanders Group, former Perth Wildlife Watch, Consultant, 6 Narla Road, Swanbourne, WA Tel. 09 384 5469.

20. ATTACHMENTS

Appendix: Species lists for flora and fauna.
Map showing proposed boundaries

List of Photographs taken on the 11th and 14th of November, 1992

1. Understorey of Bold Park woodland, showing the number of Zamia palms *(Macrozamia riedlei).*
2. Jarrah *(Eucalyptus marginata)* from the top of Reabold Hill, with Bold Park in the background.
3. *Banksia attenuata* in flower in the Banksia woodland, with Perth in the background.
4. View south-west from the top of Reabold Hill.
5. View west from the top of Reabold Hill.
6. Open Banksia woodland.
7. Open Banksia woodland, showing two types of Banksia.
8. Understorey.
9. Recreation in Bold Park.
10. Banksia woodland, with its dense understorey.
11. Banksia woodland with emergent Tuart, *(Eucalyptus gomphocephala).*
12. *Jacksonia* in *Drayandra sessilis* heath.
13. View from Bold Park, a piece of Urban Bushland.
14. Bobtail in threat posture in the understorey of Bold Park.
15.
16. Dunelands at Swanbourne in the south of the area.
17. First region of the Swan Coastal Plain succession, in the south of the nomination.
18. Dunelands in the south of the area

SWANBOURNE
BS315

BOLD PK
BS312

PROPOSED REALIGNMENT OF THE WEST COAST HIGHWAY, CITY BEACH

PUBLIC ENVIRONMENTAL REVIEW

for

City of Perth

Dames & Moore Job No. 15345-003-071

January 1992

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5.1.6 Fauna

5.1.6.1 General

Lack of faunal data prior to 1986 and proposed plans to develop parts of the M46 and M47 areas have prompted faunal surveys of the Mount Claremont Bush and Bold Park, of which the project area is a part (Wykes, 1990a; Wykes, 1990b; How & Dell, 1990).

The Western Australian Museum undertook a survey of ground vertebrate fauna within Bold Park from 1986 to 1989 through a programme of trapping and opportunistic observations (How & Dell, 1990). The objective of this programme was to determine the distribution, relative abundance and habitat preferences of native species in the Perth Metropolitan Area. One of the trap sites is located near to the project area.

Fauna of the Mount Claremont Bush has been documented through the bird banding programme of the Perth Wildlife Watch (Wykes, 1990b). Some opportunistic sightings of reptiles have also been recorded, although a need for a comprehensive survey is recognised (Wykes, 1990a; 1990b).

5.1.6.2 Mammals

Only one native mammal, the Brushtail Possum (*Trichosurus vulpecula*), was positively recorded during the Western Australian Museum's survey, although the possible presence of two species of bat fauna was suggested (How & Dell, 1990). Several introduced feral species have been recorded, including the introduced House Mouse (*Mus musculus*), European Rabbit (*Oryctolagus cuniculus*), Fox (*Vulpes vulpes*) and Cat (*Felis catus*). The mammal assemblage at Bold Park appears to have suffered great losses since the commencement of urbanisation of the area. This decline in mammal species at Bold Park reinforces the findings of other workers, e.g. Kitchener *et al.* (1980); How *et al.* (1987). How & Dell (1990) indicate that it is likely that many mammal species, in addition to the Brushtail Possum, previously existed in the area. How & Dell (1990) list an additional 14 native mammals and suggest that others were probably also present.

No mammal surveys have been undertaken in the Mount Claremont Bush. However, it is likely that the mammal assemblage in this area would be similarly impoverished.

5.1.6.3 Birds

Sixty-one species of birds were recorded during the Western Australian Museum's survey of Bold Park between 1986 and 1989 (How and Dell, 1990). Other species, especially nomads and migrants such as birds of prey and birds using Bold Park during transit, are likely to be recorded during additional surveys.

The most abundant birds in Bold Park are honeyeaters. These were noted as occurring in *Banksia* woodland (Singing Honeyeater, Brown Honeyeater), in *Dryandra sessilis* heath (Brown Honeyeater) and amongst *Calothamnus quadrifidus* shrubland (Singing Honeyeater, White-cheeked Honeyeater, New Holland Honeyeater, Tawny-crowned Honeyeater) (How & Dell, 1990).

The tuart woodlands provide nesting hollows for an array of species including the Striated Pardalote, the Tree Martin and various species of cockatoos and parrots. The Painted Button-quail is also noted as breeding in the tuart woodland. These are the only recent records of this species in near-coastal parts of the coastal plain.

The Perth Wildlife Watch's monthly banding programme has documented the avifauna of the Mount Claremont Bush. The site is noted as being a haven for numerous small insectivorous birds which are considered vulnerable to human impacts such as clearing, fire, introduced predators and barriers such as roads (Wykes, 1990a). Species recorded include the White-browed Scrub-wren, Splendid Fairy-wren, Variegated Fairy-wren, White-winged Fairy-wren, Inland Thornbill, Yellow-rumped Thornbill, Western Gerygone, Grey Fantail, Weebill, Black-capped Sittella and Rufous Whistler.

The site is also considered a major focus for suburban honeyeaters, the presence of which may be due to the extensive *Calothamnus quadrifidus* (Wykes, 1990a). Abundant species include White-cheeked Honeyeater, Brown Honeyeater, Singing Honeyeater and Silvereye. Birds of prey are also a significant feature of the avian community of the Mount Claremont Bush (Wykes (1990a). Species recorded are Hobby, Goshawk, Black-shouldered Kite, Kestrel, Whistling Kite, Little Eagle, Boobook Owl and Tawny Frogmouth.

The bird assemblage in Bold Park and Mount Claremont Bush contains several species that are now threatened with local extinction (How & Dell, 1990). The breeding populations of Painted Button-quail in Bold Park and the White-winged and Splendid Fairy-wrens in Bold Park and Mount Claremont Bush represent very important refuge populations of these species in urban areas (How & Dell, 1990). The principal value of the Bold Park and Mount Claremont Bush to avifauna is its extent and diversity of habitat types (How & Dell, 1990; Wykes, 1990a). Together these areas also provide a corridor which links the coastal dune system with Bold Park and may be important for avifaunal migration (Wykes, 1990a).

5.1.6.4 Herpetofauna

Three species of frogs and 29 species of reptiles were recorded in Bold Park between 1986 and 1989. Western Australian Museum records suggest that several additional species may yet be recorded there (How & Dell, 1990). The three species of frogs were captured only after rain or on nights with high humidity. Only the Banjo Frog (*Limnodynastes dorsalis*) was both widespread and abundant.

Lizards account for 22 of the 29 species of reptiles recorded in Bold Park, with representatives of all five families present. Arboreal, fossorial and epigeic forms are all present, suggesting that the assemblage has been little changed from its original composition. The skinks are the most numerous group of reptiles in Bold Park and vary markedly in their abundance and use of habitats. Both species of *Varanus* monitors are still present in the area, as are the Dugite and five species of burrowing snake (*Vermicella* spp.) (How & Dell, 1990).

The richness and diversity of the herpetofauna of Bold Park is the highest recorded for urban bushland in the Perth metropolitan area (29 reptile species as compared with 17 from Kings Park) and highlights the conservation value of this isolated urban area (How & Dell, 1990).

No specific reptile surveys were undertaken for the Mount Claremont Bush. However sightings, tracks and diggings suggest a varied community (Wykes, 1990b).

5.1.6.5 Invertebrates

Invertebrate fauna in Bold Park, as is characteristic of many areas, has not received the same level of attention as that of the vertebrate fauna. Studies of invertebrates have been carried out at Reabold Hill (Koch & Majer, 1980; Majer & Koch, 1982). Pitfall trapping was undertaken at Manjimup, Dwellingup and Reabold Hill to determine the seasonal activity and phenology of invertebrates in these areas. The assemblage of invertebrates at Reabold Hill compares favourably to those found in the Dwellingup and Manjimup trapping sites, both in terms of numbers of species and the total number of individuals trapped at the site (Koch & Majer, 1980).

No invertebrate surveys have been carried out in the Mount Claremont Bush and thus nothing is known of invertebrate numbers or diversity in this area (Boyd Wykes, pers. comm.).

5.1.6.6 Conclusions

The importance of Bold Park bushland as a conservation area for vertebrates lies in its relatively large area that provides habitats for resident and migratory bird species and a rich assemblage of reptiles.

The Mount Claremont Bush contains one of the best examples of the fauna of the Quindalup Dune System. The bird community in this area has proven to be rich and to contain species which are otherwise rare in the urban area.

5.1.7 Weeds and Diseases

Weed invasion in the project area is significant, especially in areas which are in close proximity to roads (West Coast Highway, Rochdale Road). The most conspicuous weeds are the herbaceous perennials *Ehrharta calycina* (Veldt Grass) and *Pelargonium capitatum*, both of which are particularly well established in the *Banksia* woodland and Tuart woodland. Heath vegetation is comparatively free of weed invasion.

Vegetation can be radically altered by dieback disease caused by the root-rot fungus *Phytophthora cinnamomi*. This is a soil-borne pathogen that can be carried on the underbodies, wheels and tracks of vehicles, and in mud or soil on the feet of animals and humans. Once introduced to a site, the fungus spreads slowly through the soil and among the root systems of susceptible species. It may also be washed downslope with the soil water flow during rainfall.

Recent research has demonstrated variations in disease impact over time. The degree of impact depends on landscape position (downslope sites are more vulnerable), vegetation type and host susceptibility (myrtaceous and proteaceous species, such as occur in the project area, ~e more susceptible) and drainage characteristics (poorly drained sites in high rainfall areas are at greater risk).

Widespread visual evidence of *Phytophthora cinnamomi* dieback disease was noted in the Study Area during field surveys. It was particularly noted in the vicinity of the walk trails on the eastern boundary of the project area, south of the junction with the bridle path. This reinforces the importance of dieback disease hygiene management, as outlined in Section 7.1.5, in an effort to prevent its spread into uninfected areas.

5.1.8 Fire Management

The City of Perth prepared a set of "Draft Guidelines for Fire Protection Operations" in 1989. Advice was sought from the Environmental Protection Authority, who provided input and ~ommendations on the Council's plans. The programme, in essence, is as follows:

- the development of fire buffers and the reduction of fuel loading of broad buffers between existing fire breaks and walking trails is provided in order to establish a system of low-fuel mosaics. ;
- Parks and Gardens officers from the City of Perth are to undertake a rotational burn management programme to reduce the accumulation of fuel within the boundaries of Bold Park over a 6-10 year cycle;
- the development of a trained fire control response team for Bold Park; and
- controlled burning of the pine plantation in August/September in consultation with the Department of Conservation and Land Management;

TABLE 2

SIGNIFICANT FLORA OF BOLD PARK (M47) AND MOUNT CLAREMONT BUSH (M46)

Species	*Family*	*Significance*[1]	*Habitat in Project Area*	*Nearest Locality*[1]
Acacia xanthina	MIMOS	At or near southern limit of distribution	No	Limestone above quarry amphitheatre, Bold Park
Agonis flexuosa	MYRT	At or near northern limit of distribution	Yes	Valleys and slopes in project area, M46 and M47
Allocasuarina lehmanniana	CASU	At or near southern limit of distribution	Possible	Stable dunes and limestone bordering Rochdale Road and southern end of project area, M46
Banksia menziesii yellow flowered form	PROT	Uncommon form	Possible	Centre and eastern side of Bold Park
Beyeria cygnorum	EUPH	Priority 1 species; possible a limestone variant of *Beyeria cinerea*	No	Limestone in *Acacia xanthina* area, M47
Callitris preissii	CUPR	Rare in metropolitan area	Possible	Rifle Range and stable dune, M46, near project area
Cartonema philydroides	COMM	Priority 3 species	Possible	Rare in Bold Park *Banksia* woodland
Chamelaucium uncinatum	MYRT	At or near southern limit of distribution; although *C. uncinatory* (Geraldton Wax) is reasonably common in near-coastal areas between Perth and Kalbarri and is in existing and proposed national parks the Perth form is poorly conserved (Keighery pers. comm.)	Yes	Stable dunes in project area
Eucalyptus decipiens	MYRT	Especially sporadic on the Swan Coastal Plain and locally	Possible	South east of pine plantation, M47
Eucalyptus foecunda	MYRT	Priority 5 species; quite uncommon in the metropolitan area	Possible	Eastern side of Bold Park
Eucalyptus "petrensis"	MYRTA	Priority 3 species; undescribed eucalypt referred to by Brooker and Kleinig (1990) as *E.* "petrensis", an unpublished name; an uncommon recently recognised species, occurring on limestone between Yalgorup National Park and Lancelin. The buds, flowers, nuts, leaves and stems of the Bold Park plants are shown in Plate 1H. The habit of the Bold Park plants is, however, much straighter and the substrate much sandier than Powell describes for *Eucalyptus* "petrensis". The Bold Park plants have probably been planted (Keighery Pers. comm.)	Possible	At Site J and south of it a few metres east of the track there are a few small, smooth-trunked eucalypt trees with buds, flowers and nuts which match Western Australian Herbarium drawings and descriptions in Powell (1990) of *Eucalyptus* "petrensis". The nearest locality of a natural populations is in Sorrento.
Gyrostemon ramulosus	GYRO	At or near southern limit of distribution	Possible	Tuart and *Banksia* woodlands, south eastern corner of M47
Hakea ruscifolia	PROT	Uncommon in Metropolitan area	Possible	M47, east of project area
Jacksonia sericea	PAPI	Priority 3 species	Yes	Widespread in project area
Sonchus aff. *asper*	ASTE	A form which is possibly a native *Sonchus* species recorded from only one locality	No	Camel Lake, M47
Stylidium aff. *affine*	STYL	Rare and restricted species	No	Under *Acacia xanthina*, M47

1. Keighery *et al.* (1990), Dames & Moore (1986), Weston (1987), EPA (1988), CALM (pers. comm.), Keighery (pers. comm.).

TABLE 3

ENDANGERED FLORA (DRF) OF THE METROPOLITAN REGION (LIST OF SPECIES BASED ON GOVERNMENT GAZETTE, WA, 1 JUNE 1990)

Species and Family	Localities and Distribution[1]	Habitat[1]	Flowering Times[1]
Aponogeton hexatepalus APONOGETONACEAE	>15: Kenwick-Darradup-Augusta	Shallow winter pools on clayey soils	(May-)Aug-Sep
Caladenia huegelii (=C. sp. (coastal plain)) ORCHIDACEAE	>15: Gnangara-Yallingup-Margaret River	Sandy soils in *Banksia* and eucalypt woodland, often with *Allocasuarina fraseriana* and usually low on the landscape	Aug-Oct(-Nov)
Diuris drummondii ORCHIDACEAE	3: Rocky Gully-Perth (near Jandakot)	Open swampy areas, particularly during the season following a summer fire	Nov-Dec
Diuris purdiei ORCHIDACEAE	9: southern Perth area-Harvey	Seasonal semi-swamp on sandy over clay soils, usually in *Regelia* and *Pericalymma* shrublands; flowers in habits which were burnt the previous dry season	*Sep-Oct(-Nov)*
Diuris sp. (Kwinana) aff. *laxiflora* A.P. Brown 10/9/84 ORCHIDACEAE	1(-2): Kwinana	Small shallow winter-wet swamps amongst short sedgeland, predominantly of *Lepidosperma longitudinale*, on sandy-clayey soils	Aug-Sep
Drakaea elastica (=*D. jeanensis*) ORCHIDACEAE	8: Gingin-Busselton	Sandy soils, often firm and very white, in *Kunzea ericifolia* tall shrubland and *Banksia* woodland, low on the landscape	(Sep-)Oct-Nov
Drakaea sp. (south west) ORCHIDACEAE	5: Canning Vale, Yarloop, Mowen, Bakers Junction	Sandy soils in scrub and woodlands, low in the landscape, often near swamps	Sep-Oct
Drosera occidentalis ssp. *occidentalis* DROSERACEAE	>15(?): Gingin-Pinjarra; Darling Range[2]	With short Centrolepidaceae sedges on peaty, sandy soils which are winter-inundated, usually shallowly, in swampy areas	(Oct-)Nov-Dec
Dryandra mimica (=*D.* sp. A in Flora of the Perth Region) PROTEACEAE	3(-4): Mogumber-Wattle Grove (-Whicher Range)	Flowers bright yellow; low sandy flat in heath or scrub in *Banksia* woodland or with *Kingia* and *Byblis*	(Sep-[Type: Dec 17])Jan-Feb
Hydrocotyle lemnoides APIACEAE	47: Kenwick-Upper Swan-Bolgart; Darling Range	Shallow winter pools on clayey soils	Sep-Oct

Notes:

1. The information in this table was compiled from Rye and Hopper (1981), Hoffman and Brown (1984), Sainsbury (1985), Marchant *et al.* (1987), Lowrie (1989), Hopper *et al.* (1990), information provided by L. Mutter and botanists of the Western Australian Herbarium and the WAWRC, and field work by A.S. Weston during 1989 and 1990. There may be a few more localities for some of the species than the number given in the table, but some of the species are no longer found in some of the localities where they were previously recorded.

2. *Drosera occidentalis* is now believed to be more abundant and widespread than Western Australian Herbarium collections indicate (Atkins and Moore, pers. comm.; Lowrie (1989)).

DRAFT PERTH'S BUSHPLAN -

PRELIMINARY VEGETATION ASSESSMENT OF THE CITY BEACH HIGH SCHOOL, PART OF BUSHPLAN SITE 312 – BOLD PARK AND ADJACENT BUSHLAND, CITY BEACH

Department of Environmental Protection
K. Clarke and B. Keighery
July 2000

Department of Environmental Protection
Bushplan Site 312 K. Clarke and B. Keighery, July 2000

BACKGROUND

Bushplan Site 312 encompasses 362.1 ha of remnant vegetation of regional significance. Most of the Site is zoned Parks and Recreation and is under the management of the Botanic Gardens and Parks Authority as Bold Park (Map 1). A small part of the Site in the northern section, 3.3 ha, is on the land of the former City Beach High School, managed by the Education Department (Maps 1 and 2). The Education Department is keen to develop the high school land (Lot 8424/Reserve 29923 Kalinda Drive)) and has engaged Landvision to consider the inclusion of this Lot in Bushplan.

At present the International School is negotiating with the Department of Education to lease about half of the school site to develop an international day and boarding school. To achieve this they wish to build accommodation, a theatre, sports pavilion and new teaching block. To accommodate the boarding students they are seeking approval to build 63 residential units, in three phases. Several development applications have been put forward, all requiring clearing of remnant vegetation included in Perth's Bushplan to build the residential units. Therefore, a detailed vegetation assessment of the areas proposed for development was requested by the Ministry for Planning.

A field inspection was made by Karen Clarke and Sean Collingwood (MfP) on 6/6/2000. Approximately one and a half hours were spent traversing the bushland on foot. Being June there were relatively few plants flowering and annually renewed plants were dormant. Therefore, vegetation condition assessments are subject to revision on a mid/late spring inspection.

COMMENTS ON INSPECTION OF CITY BEACH HIGH SCHOOL

Vegetation in this Bushplan Site is generally typical of the Spearwood Dune System comprising the Cottesloe Vegetation Complex – Central and South in the west and the Karrakatta Vegetation Complex – Central and South in the east (Heddle *et al.* 1980). The Site consists of coastal dunes, inland dunes, limestone ridges, vegetated wetlands and open water supporting a wide range of vegetation communities. The Site Description (see Appendix 1) summarises the values of this Bushplan Site.

In the area of the City Beach High School there is a combination of uplands based on either:

- Tamala Limestone which supports heaths and shrublands dominated by *Acacia truncata, Melaleuca acerosa, Calothamnus quadrifidus, Dryandra sessilis* var. *cygnorum, Grevillea crithmifolia, Acacia lasiocarpa*; *A. xanthina* and combinations of these or
- sands derived from Tamala Limestone supporting woodlands of *Eucalyptus gomphocephala*; *Banksia attenuata* and *B. menziesii*; *Eucalyptus decipiens*; *Eucalyptus gomphocephala* and *E. marginata*; *Eucalyptus marginata* and *E. calophylla*; and heaths dominated by *Acacia truncata, Melaleuca acerosa, Calothamnus quadrifidus, Allocasuarina humilis* and combinations of these.

Detailed vegetation mapping of Bushplan Site 312 has recently been completed by ECOS Consulting Pty Ltd (1999) as part of the development of a management plan for Bold Park (PPK 2000). This mapping includes the vegetation along the southern boundary of the City Beach High School (see Map 3). The vegetation here is described as:

- Low Heath dominated by *Acacia* spp. and *Melaleuca* spp. on shallow soils with limestone outcropping (plant community 7a, Map 3), bordered by
- Woodland of *Eucalyptus gomphocephala* over a variable understorey on grey sand (plant community 1a, Map 3) and along the boundary in the south-east corner of the site
- Closed Shrubland of *Acacia xanthina* over mixed shrubs and herbs on pale grey sand, often underlain by limestone (plant community 5b, Map 3).

Previous mapping of Bold Park and Environs by Mitchell McCotter and Ecoscape (1993) also described this area as Limestone Heath and *Eucalyptus gomphocephala* Woodlands but noted an area of *Eucalyptus decipiens* Woodland on the northern side of the Limestone Ridge (see Map 4).

Inspection of the area on 6/6/00 focused on the areas proposed for development of the residential units (see overlay on Map 5). Inspection of the southern boundary confirmed the previous vegetation studies and presence of the substantial Tamala Limestone Ridge (see Map 5). The only variation noted was identification of a small additional area of *Acacia xanthina* (equivalent to plant community 5b as defined by ECOS Consulting Pty Ltd 1999) (AxS on Map 5), and area of non-native plantings (P on Map 5) and a weedy disturbed area (Cl on Map 5). A more detailed description of the native vegetation in the area proposed for development is given below:

- Site 1 - Top of limestone ridge (SaMhH on Map 5, Figure 1): *Melaleuca huegelii* and *Scaevola anchusifolia* Closed Low Heath over *Desmocladus flexuosus* Very Open Sedgeland.
  Condition: Excellent to Very Good.
- Site 2 – Bottom of limestone ridge (AxS on Map 5, Figure 2): *Acacia xanthina* Tall Open Scrub over *Scaevola crassifolia* Shrubland and *Scaevola anchusifolia* Low Shrubland over *Opercularia vaginata* Very Open Herbland.
  Condition: Very Good.

On a previous site visit by Jacinta Christie (DEP) and Sean Collingwood (MfP) on 28/2/00 to assess the first version of the residential unit development proposal, it was noted that the two narrow "corridors" of vegetation extending into the school grounds were degraded and supported a largely non-native overstorey (Appendix 3). It was advised that there was some opportunity for these areas to be developed. The detailed inspection conducted on 6/6/00 was able to more accurately define these degraded areas which correspond to EdW, Cl and P as shown on Map 5. The *Eucalyptus decipiens* Woodland (EdW) despite being degraded is still of value because *Eucalyptus decipiens* is a regionally significant species, poorly represented in protected areas over its range on the Swan Coastal Plain (ECOS Consulting Pty Ltd 1999).

The mapping by Mitchell McCotter and Ecoscape (1993) also included the vegetation along the northern boundary of the school site. In the area of the development this vegetation was described as (see Map 4):

- *Banksia* Woodlands
- Dune Heath – dominated by either *Olearia axillaris, Allocasuarina humilis, Dryandra sessilis* or *Chamelaucium uncinatum*
- *Eucalyptus gomphocephala* Woodlands

Inspection of the northern boundary vegetation on 6/6/00 was made difficult by the occurrence of a very recent fire (February 2000). Little natural regeneration had occurred at the time of inspection. However, a small unburnt patch in the area of the proposed development (Figures 3 and 4) revealed that the vegetation was in Very Good condition prior to the fire. This unburnt area was dominated by *Dryandra sessilis* var. *cygnorum* indicating another fire had affected the area in the last five-ten years. Regeneration in this area was very good with very little weed invasion except for the presence of some **Pelargonium capitatum.* Therefore, it would be expected that the recently burnt area will regenerate well and return to close to its original condition. A detailed description of the area missed by the recent fire is given below:

- Site 3 – Mid-slope (Map 5, Figure 3): *Dryandra sessilis* var. *cygnorum* Tall Open Shrubland over *Templetonia retusa* Open Shrubland over mixed Low Shrubland over *Austrostipa flavescens* Very Open Grassland and *Lepidosperma squamatum* Very Open Sedgeland.
  Condition: Very Good to Good.

This area equates to the Dune Heath mapped by Mitchell McCotter and Ecoscape (1993) and most closely matches plant community 6a as described by ECOS Consulting Pty Ltd (1999), Tall Closed Heath dominated by *Dryandra sessilis*, with occasional emergent trees on grey sand (Map 3). The mapping of vegetation in the northern section of Lot 8424 was difficult due to the recent fire, therefore this section of Map 5 is primarily based on 1999 aerial photography (Map 2) and the mapping of Mitchell McCotter and Ecoscape (1993) (Map 4).

VALUES OF LOT 8424 IN RELATION TO BOLD PARK

Lot 8424 is part of the escarpment that runs north-south down the eastern side of Bold Park with the southern area of school bushland designated a Landscape Character Area in the Draft Bold Park Environmental Management Plan (PPK 2000).

The area of bushland immediately surrounding Lot 8424 is one of the areas of high conservation value Spearwood vegetation identified by Mattiske Consulting Pty Ltd (1998) in Bold Park (see Map 6). There is no naturally occurring boundary between Lot 8424 and Bold Park but the Lot boundary is clearly evident on the ground (survey points have been established). Inspection of the site on 6/6/00 revealed no difference in the condition of the vegetation on the Bold Park side of the boundary compared with the school side. Therefore, the Spearwood vegetation within the school site can also be classified as of high conservation value.

Twenty nine native plant communities were identified in Bold Park by ECOS Consulting Pty Ltd (1999) and the extent of each of these communities was calculated. The values for the communities occurring within the proposed development area of Lot 8424 are shown below:

Plant community(ECOS Consulting Pty Ltd 1999)	Total Area (Ha)*
Woodland of *Eucalyptus gomphocephala* over a variable understorey on grey sand (plant community 1a)	7.86
Closed Shrubland of *Acacia xanthina* over mixed shrubs and herbs on pale grey sand, often underlain by limestone (plant community 5b)	5.63
Tall Closed Heath dominated by *Dryandra sessilis*, with occasional emergent trees on grey sand (plant community 6a)	7.6
Low Heath dominated by *Acacia* spp. and *Melaleuca* spp. on shallow soils with limestone outcropping (plant community 7a)	9.03

*NB: these area calculations *include* the communities in the southern area of the school site

These area figures clearly show that the plant communities present at the school are not widespread throughout Bold Park and that the 3.3 ha of school bushland does contribute significantly to the conservation of these communities. In addition, the school bushland is particularly valuable because its plant communities are in very good condition.

Of the eighteen regionally significant species identified in Bold Park (ECOS Consulting Pty Ltd 1999; Mattiske Consulting Pty Ltd 1998, Keighery *et al.* 1990), two are present in the school bushland, *Acacia xanthina* and *Eucalyptus decipiens.* These species are either poorly represented in their range or within the Perth Metropolitan Region and need to be conserved.

GENERAL COMMENT/CONCLUSION

The vegetation on the school site is of regional significance and is an integral part of the conservation values of one of Perth's largest regional reserves. Any development at the school site must occur outside of the Bushplan boundaries.

The previous advice by the DEP dated 30/3/00 (see Appendix 3) acknowledges that several degraded areas occur within the boundaries published in Draft Perth's Bushplan. However, as discussed above mature *Eucalyptus decipiens* occur in one of these areas and this is a regionally significant species that should not be cleared. The only area that could be removed from the within the Bushplan boundary on the site is the area of non-native plantings shown as P on Map 5.

REFERENCES

(Unlisted references can be found in Draft Perth's Bushplan Volume 2B)

NB:This is informal advice and should not be regarded as formal Section 38 advice under the Environmental Protection Act but represents DEP Bushplan advice subject to ratification through Coordination Group sign off.

DEP (2000) Perth's Bushplan Survey 2000. Unpublished bushland plot and area records. Department of Environmental Protection, Perth Western Australia

ECOS Consulting Pty Ltd (1999). Flora and Vegetation Survey – Spring 1998, Bold Park Reserve – A45409. Unpublished report prepared for Kings Park and Botanic Garden.

Mattiske Consulting Pty Ltd (1998). Bushland Condition Survey of Bold Park, Town of Cambridge. Unpublished report prepared for the Friends of Bold Park Bushland (Inc.).

PPK Environment and Infrastructure Pty Ltd (2000). Draft Bold Park Environmental Management Plan 2000-2005. Botanic Gardens and Parks Authority.

APPENDIX 1: DESCRIPTION FOR BUSHPLAN SITE 312 - BOLD PARK & ADJACENT BUSHLAND, CITY BEACH

Boundary Definition: protected area/management/bushland boundary

SECTION 1: CADASTRAL INFORMATION

(Lots, locations and derived information to be updated in the public submission period)

Bushplan Site no. 312 **Map no.** 49, 55 **Map sheet series ref. no.** 2034–II SW

System 6 (1983): M47 part System area bushland and part scattered native plants (canopy), all vegetation described

Other Names: not known

Area (ha): total 511.1 (includes open water); bushland 362.1

Local Authorities (Suburb)
Town of Cambridge (City Beach, Floreat), City of Nedlands (Mt Claremont)

Zoning
MRS: Parks and Recreation, Urban, Important Regional Roads, Public Purposes-High School
TPS: Development, Landscape, Special Use

Ownership Categories
Local Government, State Government, Private (commercial organisation)

Lot/Location/Reserve numbers (Purpose), Street name
0, 1 Brockway Rd; 0 The Boulevard; 1, 8424 Kalinda Dr; 1 Elphin St; 1911 Stephenson Ave; 1 Yaringa Way; 1 Alderbury St; 1911 street not identified
Crown Reserve

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Spearwood Dunes
Sands derived from Tamala Limestone (Qts: S7)
Tamala Limestone (Qtl: LS1)
Quindalup Dunes (Holocene dunes)
Safety Bay Sands (Qhs: S2)
Wetlands (within the Quindalup/Spearwood Dunes)
Holocene Swamp Deposits (Qhw: Cps)

VEGETATION AND FLORA

Vegetation Complexes
Spearwood Dunes (near the interface with the Quindalup Complex)
Karrakatta Complex — Central and South
Cottesloe Complex — Central and South

Floristic Community Types

Supergroup 2: Seasonal Wetlands
S7 Northern woodlands to forests over tall sedgelands alongside permanent wetlands

Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes
24 Northern Spearwood shrublands and woodlands
25 Southern *Eucalyptus gomphocephala* — *Agonis flexuosa* woodlands
27 Species poor mallees and shrublands on limestone
29b *Acacia* shrublands on taller dunes
30a2 Woodlands and shrublands on Holocene dunes
S11 Northern *Acacia rostellifera* — *Melaleuca acerosa* shrublands

WETLANDS

Wetland Types: lake, sumpland
Natural Wetland Groups
Spearwood Dunes
Balcatta (S.2)

Wetland Management Objectives: Conservation (12ha)
Swan Coastal Plain Lakes EPP: 18.2ha

THREATENED ECOLOGICAL COMMUNITIES

Not assessed, Not determined

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: coastal dunes, inland dunes, limestone ridge, open water, vegetated wetlands

Vegetation and Flora: detailed survey (part Bushplan Site – [Keighery, 1990 #241; Keighery, 1993 #247; Kinhill Engineers Pty Ltd, 1987 #256; Mitchell McCotter, 1993 #301]); limited survey (part Bushplan Site — [Dames and Moore, 1986 #83; Griffin, 1993 #163; Griffin, 1994 #164] (plots SW 01–11), [Gibson, 1994 #139] (plots Bold 01–04), [Keighery, 1996 D #447] (plots M46 01–02))

Structural Units: mapping [Keighery, 1990 #241; Mitchell McCotter, 1993 #301; Kinhill Engineers Pty Ltd, 1987 #256]

Spearwood Dunes

Uplands - Sands derived from Tamala Limestone: *Eucalyptus gomphocephala* Open Forest to Woodland; *Banksia attenuata* and *B. menziesii* Low Woodland; *Eucalyptus decipiens* Low Woodland; *Eucalyptus gomphocephala* and *E. marginata* Woodland; *Eucalyptus marginata* and *E. calophylla* Woodland; Closed Low Heaths and Closed to Open Heaths dominated by *Acacia truncata, Melaleuca acerosa, Calothamnus quadrifidus, Allocasuarina humilis* and combinations of these

Uplands - Tamala Limestone: Closed Low Heaths, Closed to Open Heaths and Tall Scrub dominated by *Acacia truncata, Melaleuca acerosa, Calothamnus quadrifidus, Dryandra sessilis* var. *cygnorum, Grevillea crithmifolia, Acacia lasiocarpa*; *A. xanthina* and combinations of these; *Eucalyptus foecunda* Closed Shrub Mallee

Wetlands: *Eucalyptus rudis* Woodland; *Bolboschoenus caldwellii* Sedgelands; Mixed Herblands (on dry lake bed)

Quindalup Dunes

Uplands - Safety Bay Sands: Oldest dunes — Open Heaths dominated by *Melaleuca acerosa, Acacia rostellifera, Chamelaucium uncinatum, Calothamnus quadrifidus, Olearia axillaris, Acacia xanthina* and combinations of these over Herblands dominated by *Lomandra* sp.; *Agonis flexuosa* Low Closed Forest

Scattered Native Plants: *Eucalyptus gomphocephala* Woodland; *Eucalyptus marginata* and *E. calophylla* Woodland — regionally significant vegetation recognised as being included in the area of Bushplan Site in need of protection

Vegetation Condition: >60% Very Good to Excellent, <40% Good to Degraded

Total Flora: 268 native taxa, 134 weeds (compilation by [Gibson, 1994 D #445; Keighery, 1990 #241; Keighery, 1993 #247; Mitchell McCotter and Ecoscape, 1993 #301]) (estimated 90% expected flora)

Significant Flora: *Beyeria cygnorum* (2), *Jacksonia sericea* (3), *Hibbertia spicata* subsp. *leptotheca* (3), *Stylidium maritimum* (3); [Keighery, 1990 #241] — most southern populations of *Chamelaucium uncinatum, Melaleuca cardiophylla, Allocasuarina lehmanniana, Gyrostemon ramulosus* (uncommon on the Plain, poorly reserved), most northern population of *Agonis flexuosa*; *Fimbristylis vittata* (uncommon on the Plain, a species of the dry lake bed community), typical of Tamala Limestone taxa: *Astroloma microcalyx, Grevillea crithmifolia, Grevillea preissii, Beyeria cygnorum, Melaleuca cardiophylla, Trymalium ledifolium* subsp. *ledifolium, Diplopeltis huegelii* var. *huegelii, Stylidium junceum* (limestone variant), *Pimelea calcicola*

Fauna: multiple and structured surveys by Western Australian Museum of Natural Science for birds (106), native mammals (1), reptiles (33) and amphibians (3) [How, 1990 #485; How, 1996 #186]. Significant populations of Blue-billed Duck, Musk Duck, Hardhead, Splendid and Variegated Fairy-wrens and a large assemblage of honeyeaters. Significant bird species: category 1 (1), category 2 (6), category 3 (13) and category 4 (8). Many burrowing and fossorial reptiles including five species of snakes of the genus *Simoselaps*

Linkage: adjacent bushland to the south (BS315, part across road); part of proposed Greenways 19, [Tingay Alan & Associates, 1997 #378]; part of a regionally significant fragmented bushland/wetland linkage (Volume 2A, Map 8)

Other Special Attributes: Quindalup/Spearwood Dune System interface, significant fauna habitat, rich in reptiles and birds; National Trust of Australia (WA) Classification

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed; Indicative Place of the Register of the National Estate; Location for JAMBA/CAMBA species

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation, Criteria not relevant to determination of conservation value, but which may be applied when evaluating areas having similar values

Opportunities and/or Constraints

Opportunities: Bushplan Site/part Bushplan Site subject to Swan Coastal Plain Lakes EPP; location of Scheduled Fauna, conservation category wetland; under MRS Parks and Recreation Reservation and TPS Landscape Zoning, Crown Reserve

Constraints: private land; under MRS Urban Zoning, MRD regional road requirements

Recommendation: The existing purpose, care, control and management of this Bushplan Site is endorsed.

APPENDIX 2: SITE DESCRIPTIONS

Southern Boundary

Site 1 (SaMhH on Map 5, Figure 1) – *Scaevola anchusifolia* and *Melaleuca huegelii* Closed Low Heath over *Desmocladus flexuosus* Very Open Sedgeland. Limestone outcropping at surface, light grey fine sands, very shallow.
Condition: Excellent to Very Good, burnt several years ago but regenerating very well, no obvious weeds present, few minor tracks.

Site 2 (AxS on Map 5, Figure 2) – *Acacia xanthina* Tall Open Scrub over *Scaevola crassifolia* Shrubland over *Scaevola anchusifolia* Low Shrubland over *Opercularia vaginata* Very Open Herbland. Scattered limestone at surface, light grey fine sands deeper than Site 1.
Condition: Very Good to Good, some **Pelargonium capitatum* present and a number of tracks through the area.

Northern Boundary

Site 3 (DsS on Map 5, Figure 3) – *Dryandra sessilis var. cygnorum* Tall Open Shrubland over *Templetonia retusa* Open Shrubland over mixed Low Shrubland over *Austrostipa flavescens* Very Open Grassland and *Lepidosperma squamatum* Very Open Sedgeland. Light coloured sand.
Condition: Very Good to Good, difficult to assess due to very recent fire and too early to accurately determine quality of regeneration. Diversity of species burnt and weed occurrence indicate vegetation in Very Good condition prior to fire. **Pelargonium capitatum* only serious weed present and primarily around edges. Site now prone to erosion due to fire removing vegetation cover. Site very fragile.

APPENDIX 3: DEP ADVICE ON THE FIRST VERSION OF THE INTERNATIONAL SCHOOL DEVELOPMENT PROPOSAL

Memorandum

Department of Environmental Protection

ATTENTION:	Sean Collingwood
FROM:	Jacinta Christie
DATE:	March 30, 2000
SUBJECT:	Proposed Development at City Beach High School
FILE NO:	PB 127 Vol 1

BUSHPLAN ADVICE

Following a visit to Proposed Development at City Beach High School Reserve No. 29923, part of Bushplan Site No. 312 on the 28th of February 2000, it is our opinion that although some of the Bushplan Site is degraded, the majority of the area is in good condition. One area to the north of the site was also burnt by a fire which occurred on the site the day before our visit, burning one of the sections where clearing has been proposed making it difficult to determine the condition of the vegetation. However, from aerial photography, this area appeared in very good condition.

It is recommended that the proposed development should be reconsidered and condensed into the existing area with the areas set aside for teacher and student residences to be developed at a higher density to maximise use of the available space. There is some opportunity to incorporate the narrow corridor of vegetation to the south of the site which encroaches into the school ground (see enclosed map) into the area to be cleared as these areas are very degraded and support a largely non native overstorey.

For any further questions or advice, please contact me on (08) 9222 7090.

NB: This is informal advice and should not be regarded as formal Section 38 advice under the Environmental Protection Act or as a final Bushplan sign off

Appendix 3 (cont.)

Department of Environmental Protection

Head Office:
Westralia Square
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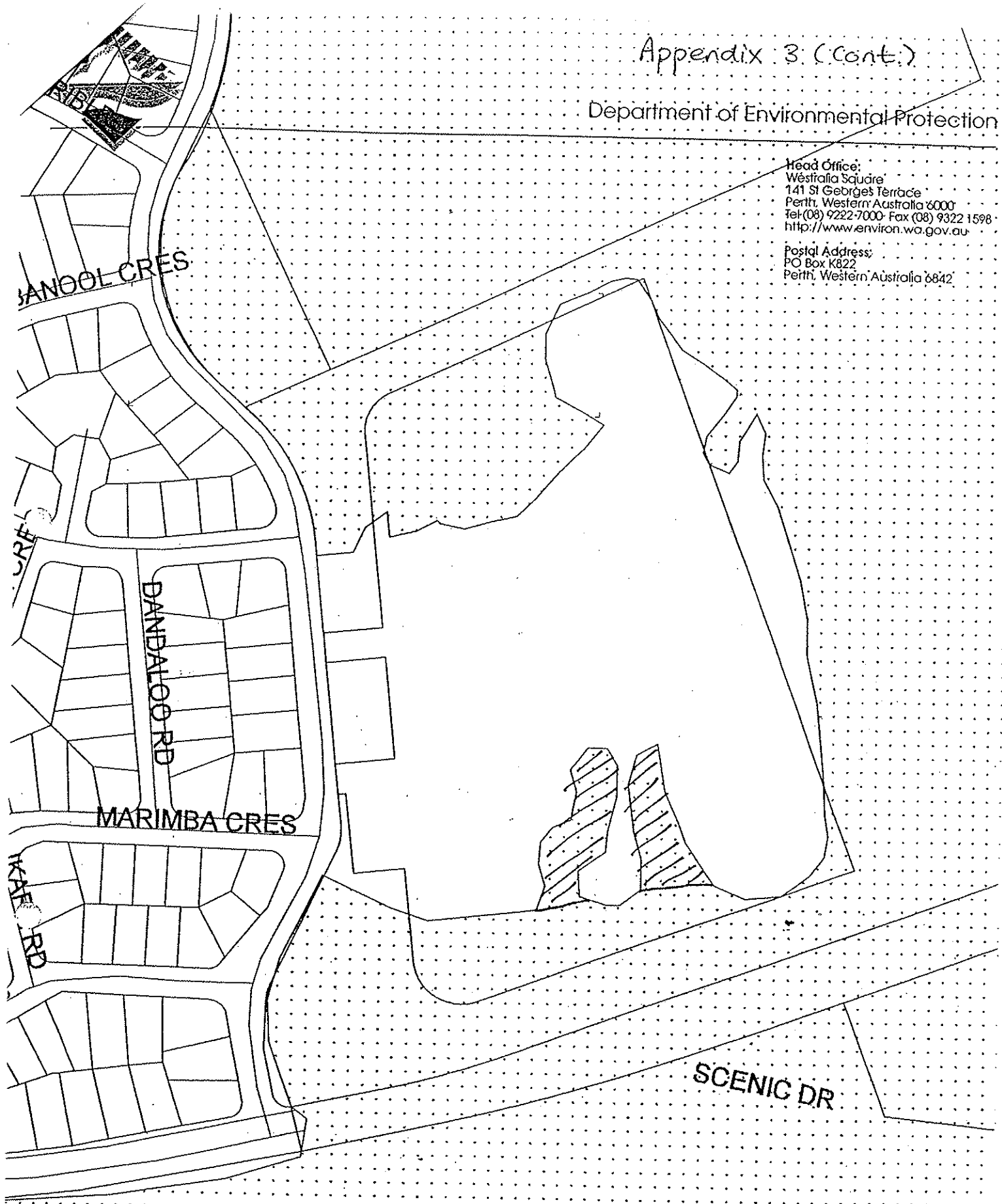
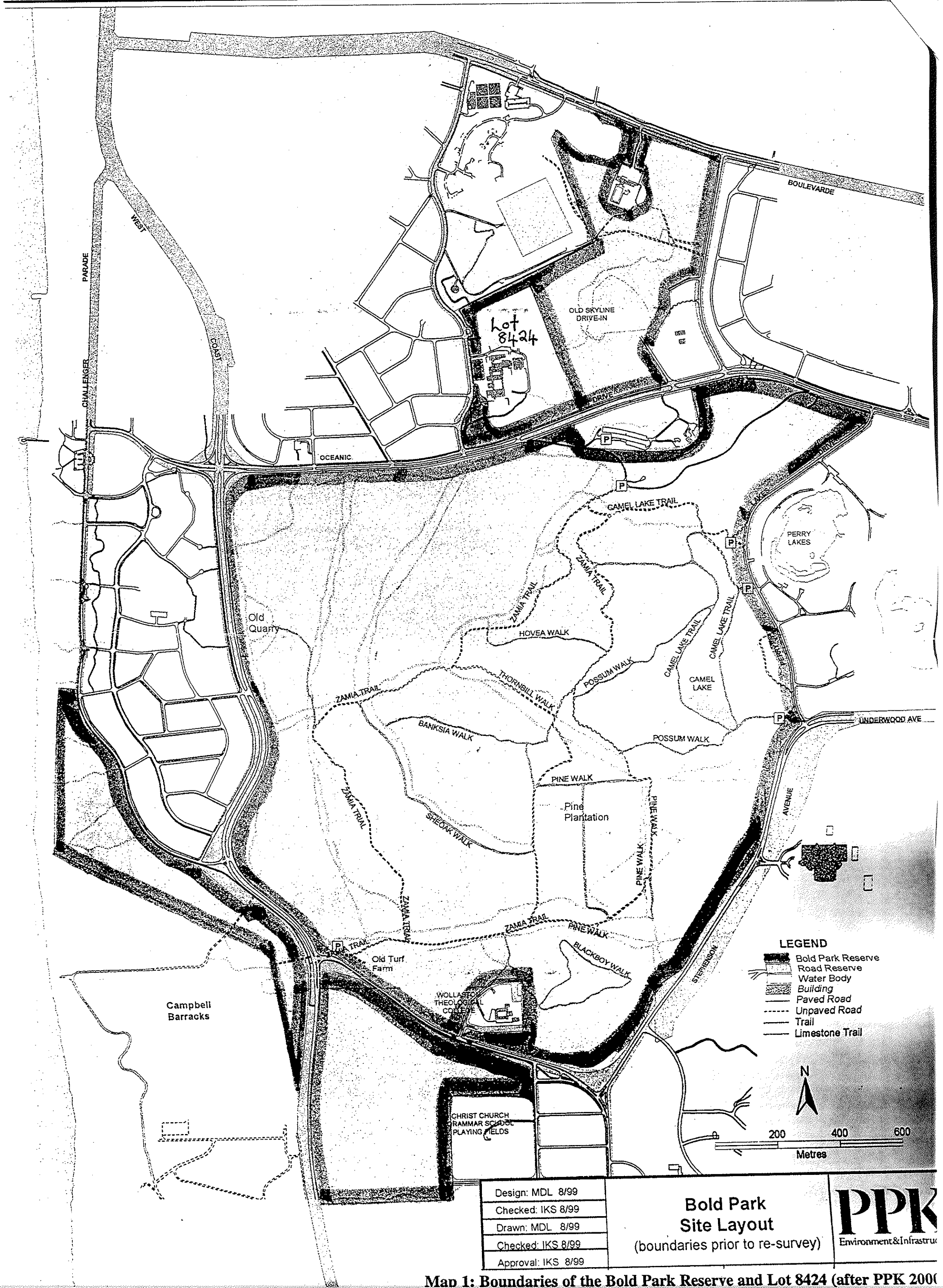
Perth, Western Australia 6000
Tel (08) 9222 7000 Fax (08) 9322 1598
http://www.environ.wa.gov.au

Postal Address:
PO Box K822
Perth, Western Australia 6842



▨ area which may be cleared.



Map 1: Boundaries of the Bold Park Reserve and Lot 8424 (after PPK 200(

1a Woodland of *Eucalyptus gomphocephala* over a variable understorey on grey sand.

1b Woodland of *Eucalyptus gomphocephala* over an understorey dominated by *Allocasuarina humilis* on grey sand

1c Open Woodland of *Eucalyptus gomphocephala* , *Allocasuarina fraseriana* and *Banksia* spp. over mixed low shrubs on grey sand.

1d Open Woodland of *Eucalyptus gomphocephala* , with occasional *Banksia attenuata* and *Banksia menziesii* , over shrubs dominated by *Macrozamia riedlei* , *Xanthorrhoea preissii* , *Acacia rostellifera* and *Jacksonia* spp. on grey sand.

1e Woodland of *Corymbia calophylla* , with *occasional Eucalyptus gomphocephala* and *Banksia* spp. over tall shrubs on grey sand.

1f Woodland of *Eucalyptus marginata* and *Corymbia calophylla* over a variable, often disturbed, understorey on grey sand.

1g Woodland to Open Woodland dominated by *Eucalyptus marginata* over a variable understorey on grey sand.

1h Woodland of *Eucalyptus decipiens* over *Melaleuca scarosa* , *Hardenbergia comptoniana* , *Xanthorrhoea preissii* and mixed low shrubs and herbs on pale grey sand.

1i Open Woodland of *Eucalyptus decipiens* , *Banksia attenuata* and *Banksia menziesii* over mixed shrubs dominated by *Calothamnus quadrifidus* and *Stirlingia latifolia* on grey sand.

2 Open Eucalypt Woodlands over Heath

2a Open Woodland of *Eucalyptus gomphocephala* over low to medium shrubs generally associated with heath communities, on grey sand.

3 *Agonis flexuosa* Woodlands

3a Woodland of *Agonis flexuosa* and *Eucalyptus gomphocephala* over mixed shrubs and *Lepidosperma gladiatum* on yellow-grey sand.

3b Low Woodland of *Agonis flexuosa* over *Acacia rostellifera* on grey sands on the lower slopes and valley floors.

4 Woodlands dominated by *Banksia* species

4a Woodland of *Banksia attenuata* and *Banksia menziesii* , with emergent *Eucalyptus gomphocephala* , over a variable understorey on grey sand.

4b Woodland of *Banksia prionotes* , *Banksia menziesii* and *Banksia attenuata* over a variable understorey on yellow-grey sand.

5 Shrublands

5a Closed Shrubland of *Acacia rostellifera* over mixed shrubs and herbs on pale grey sand.

5b Closed Shrubland of *Acacia xanthina* over mixed shrubs and herbs on pale grey sand, often underlain with limestone.

5c Open Shrubland dominated by *Allocasuarina lehmanniana* on grey sand

6 Heaths on sand

6a Tall Closed Heath dominated by *Dryandra sessilis* , with occasional emergent trees on grey sand.

6b Tall Heath dominated by *Chamelaucium uncinatum* on pale grey sand.

6c Closed Heath dominated by *Olearia axillaris* , *Acacia lasiocarpa* , *Calothamnus quadrifidus* and *Melaleuca scarosa* on grey sand.

6d Closed Heath of mixed, low shrubs with *Clematis pubescens* on grey sandy-loam.

7 Heaths on shallow sand underlain by Limestone

7a Low Heath dominated by *Acacia* spp. and *Melaleuca* spp. on shallow soils with limestone outcropping.

7b Low Heath under *Eucalyptus foecunda* on shallow soils over limestone.

7c Low woodland with *Eucalyptus petrensis* on shallow soils over limestone.

8 Coastal Dune Communities

8a Sparsely vegetated foredunes dominated by *Spinifex longifolius* and *Spinifex hirsutus* .

8b Sparsely vegetated foredunes dominated by low herbs and shrubs.

8c Mobile dunes of low shrub, sedge and grass species, with occasional dwarf *Agonis flexuosa* , on eastern side of foredunes.

9 Wetlands and Drainage Lines

9a Closed Shrubland of *Acacia* spp., *Templetonia retusa* and *Santalum acuminatum* over sedges in a drainage line on grey sandy-loam.

9b Woodland of *Eucalyptus rudis* on brown sandy-loam on fringes of Camel Lake.

9c Seasonally inundated area of Camel Lake, dominated by *Typa orientalis* .

Modified Areas

P Pine Plantation

D Disturbed Ground

Notes:

Horizontal Datum: AMG84
Vertical Datum: AHD

Topographical detail compiled by Whelans from digital photogrammetric methods. (1:40,000 aerial photography dated 13.1.97 - Job No 45452A)

Legend:

- Bitumen road
- Gravel road
- Track
- Cleared line
- Oval
- Scrub boundary
- Tank
- Building
- Swimming pool
- Fence
- Retaining wall
- Coastline

Wembley Golf Complex
Floreat
City Beach
Perry Lakes
Swanbourne
Mt Claremont
Ocean
Indian
The Boulevard
Drive
Kalinda Drive
Bold Park Drive
Oceanic Drive
West Coast Highway
Challenger Parade
Perry Lakes Drive
Underwood Ave
Challenge Stadium
Stephenson Avenue
Rochdale Road

6467000mN
6466500mN
6466000mN
6465500mN
6465000mN
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6463500mN
6463000mN
382000mE
382500mE
383000mE
383500mE
384000mE
384500mE
385000mE

0 100 200 300 400 500 600 700m
SCALE

KINGS PARK & BOTANIC GARDEN

VEGETATION MAPPING
BOLD PARK
SPRING 1998

ecos CONSULTING (AUST) PTY LTD
Resource & Environmental Management
Suite 6, 3 Lawrence Avenue
West Perth, WA, 6005
Tel: +61 8 9481 5456 ~ Fax: +61 8 9481 5006

Author: D. Woodman	Date: Dec 98	ECOS Ref: ENV192
Drawn: CAD Resources ~ 9246 3242	Scale: 1 : 12,500	Figure: 1
CAD Ref: \ecos\job41698\j416vca3.dgn	A3 Rev: B	

Map 3: Vegetation Map of ECOS Consulting Pty Ltd (1998)

BS No. 312
City Beach HS
Aerial 1999

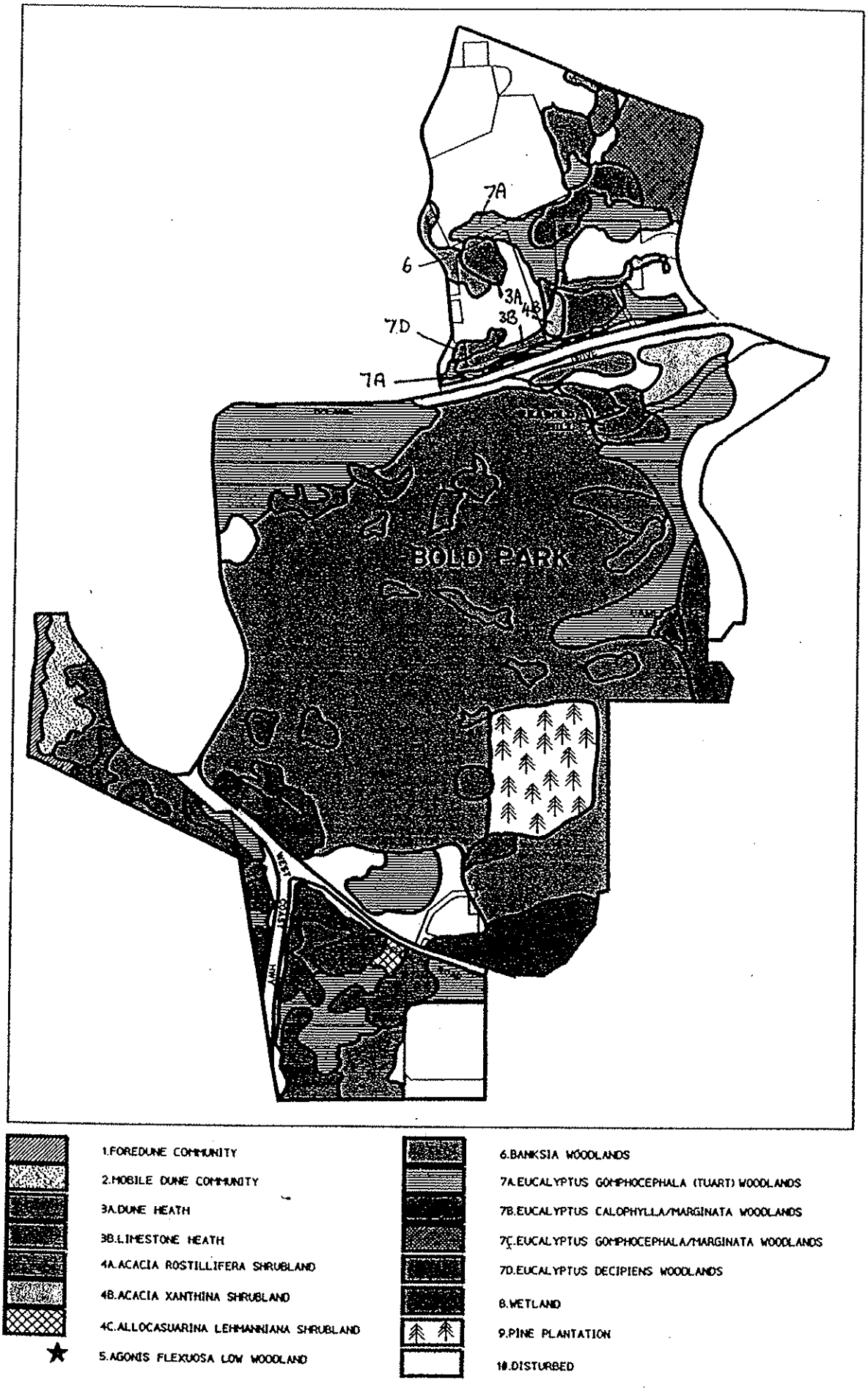
Cadastre with Lot Numbers Blue - Overlay Images

Contours - 1m & 2m (DOLA)

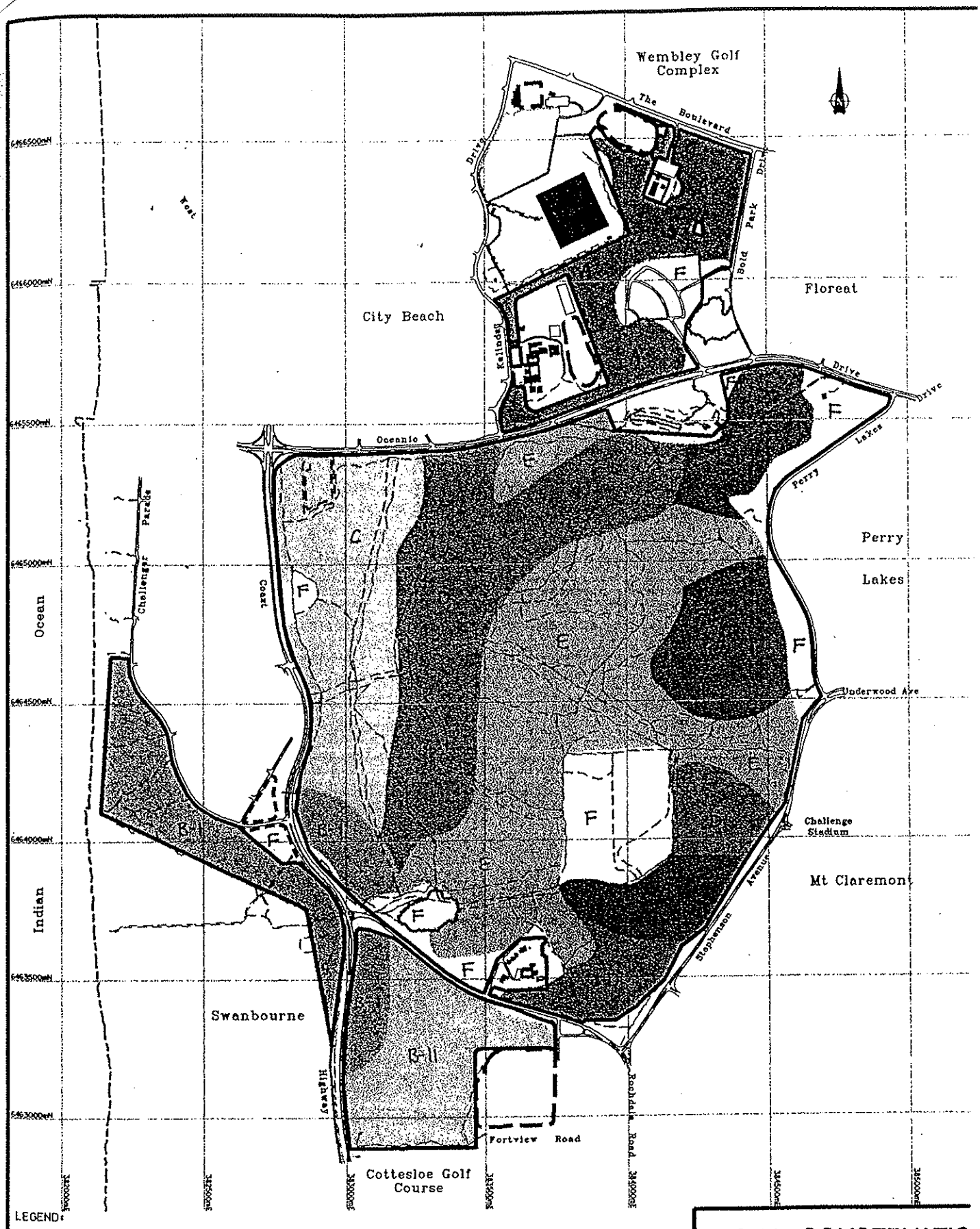
Bushplan Sites (boundaries)

MFP INTERNAL USE ONLY
Prepared By: Sean Collingwood
Prepared For: SPC
Map Ident: plot000601_2
Date: 01 Jun 2000
Scale 1:3000

Map 2: 1999 Aerial Photo of City Beach High School (Lot 8424)



Map 4: Vegetation Map of Mitchell McCotter Ecoscape (1993)



Map 6: Flora Conservation Zones of Bold Park (after PPK 2000)

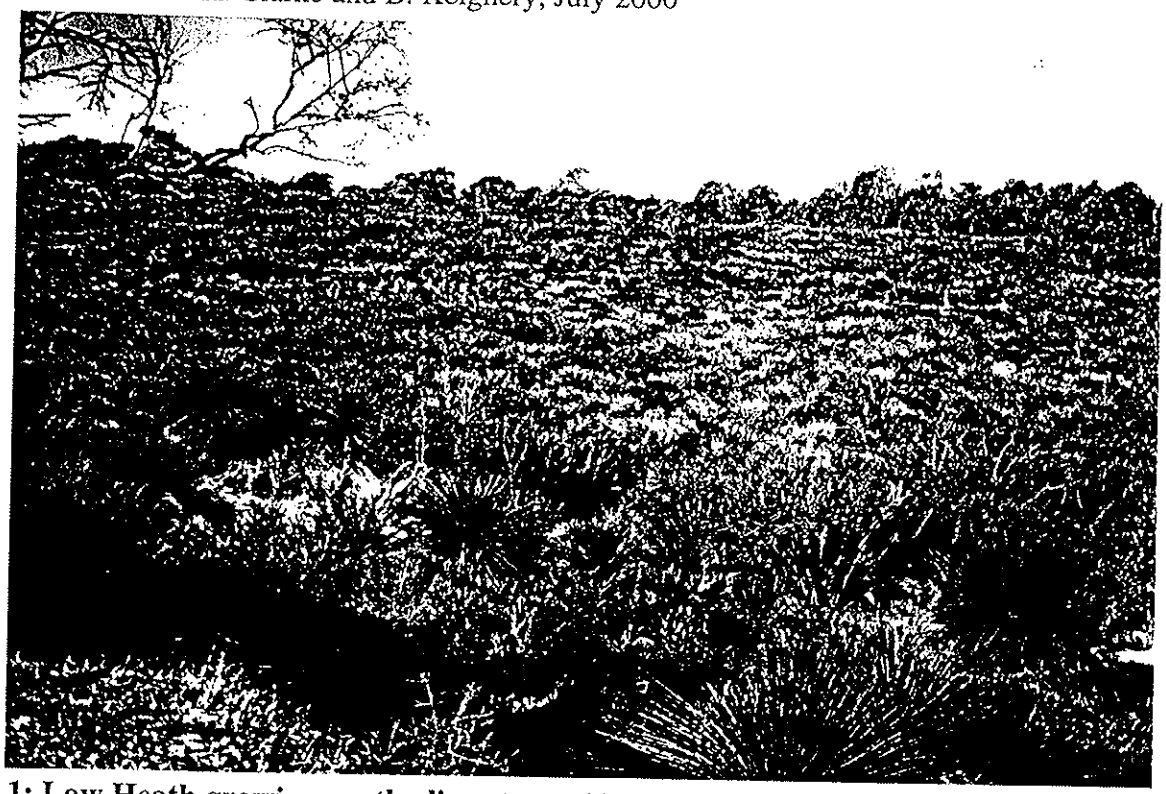


Figure 1: Low Heath growing on the limestone ridge that runs along the southern boundary of the City Beach High School site.

Figure 2: *Acacia xanthina* and *Scaevola crassifolia* shrubland in deeper sands near the base of the limestone ridge.

NB: This is informal advice and should not be regarded as formal Section 38 advice under the Environmental Protection Act but represents DEP Bushplan advice subject to ratification through Coordination Group sign off.

Figure 3: ***Dryandra sessilis*** **Shrubland in the area of the proposed development near the northern boundary of the site**

Figure 4: Recently burnt area looking upslope to the area of the proposed development.

NB:This is informal advice and should not be regarded as formal Section 38 advice under the Environmental Protection Act but represents DEP Bushplan advice subject to ratification through Coordination Group sign off.

Proposed Subdivision Stephenson Avenue, City Beach

(Second Proposal)

Bond Corporation Holdings Limited

Report and Recommendations
of the
Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 362 January 1989

M47

PROPOSED KNIGHTSBRIDGE SUBDIVISION STEPHENSON AVENUE, CITY BEACH

BOND CORPORATION

Report and Recommendations of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 322 March 1988

Karen Clarke

FLORISTICS of RESERVES and BUSHLAND AREAS of the PERTH REGION (SYSTEM 6)

Parts V - IX

G.J. Keighery and B.J. Keighery

The Wildflower Society of Western Australia has published these papers, parts of a continuing series, in the interest of the conservation of our unique flora. The Society considers it essential that decision makers and managers have available the necessary flora information before making irreversible land use decisions.

The Floristic Survey of the Swan Coastal Plain, of which the surveys of the flora of these areas was part, was carried out with the assistance of funds made available by the Commonwealth of Australia under the National Estate Grants Programme, and by the Australian Heritage Commission.

Wildflower Society of Western Australia (Inc.)
PO Box 64 Nedlands WA 6009

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CITY OF PERTH

BOLD PARK AND ENVIRONS
PUBLIC ENVIRONMENTAL REVIEW

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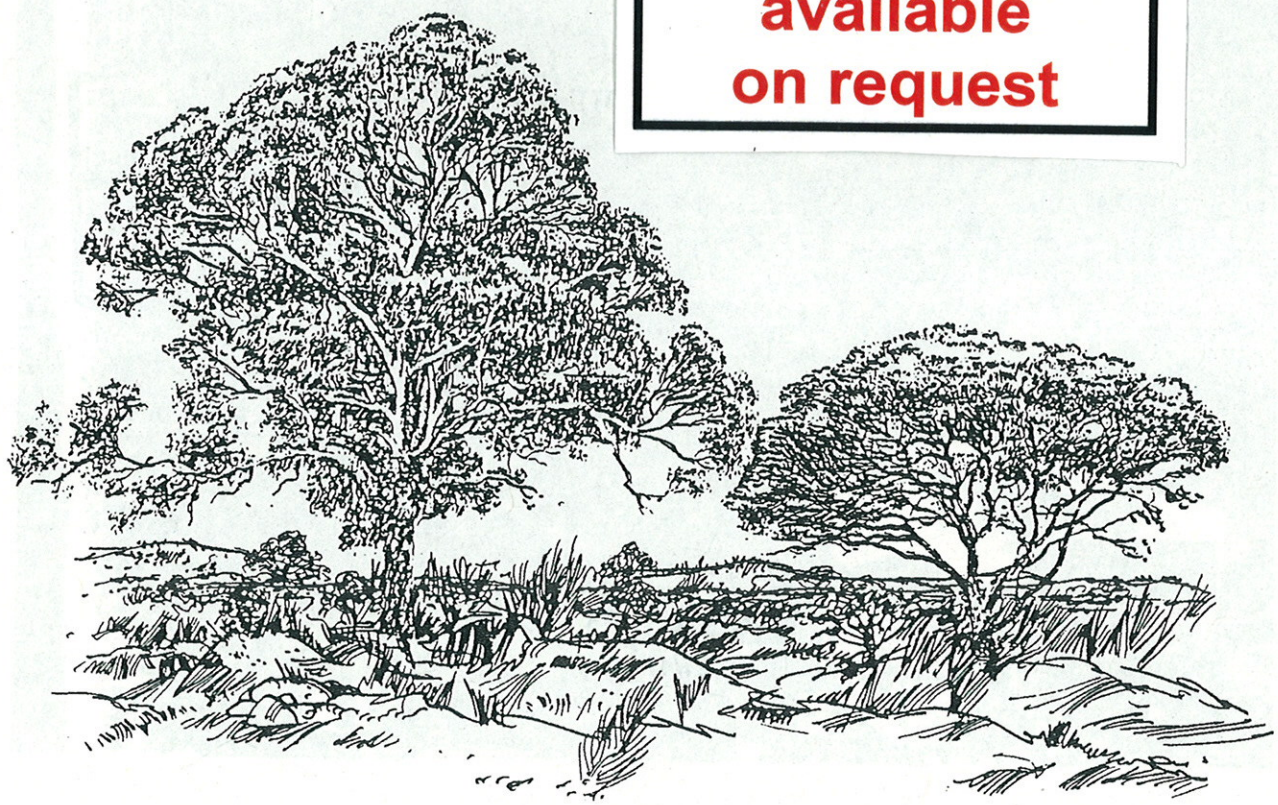

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BOLD PARK

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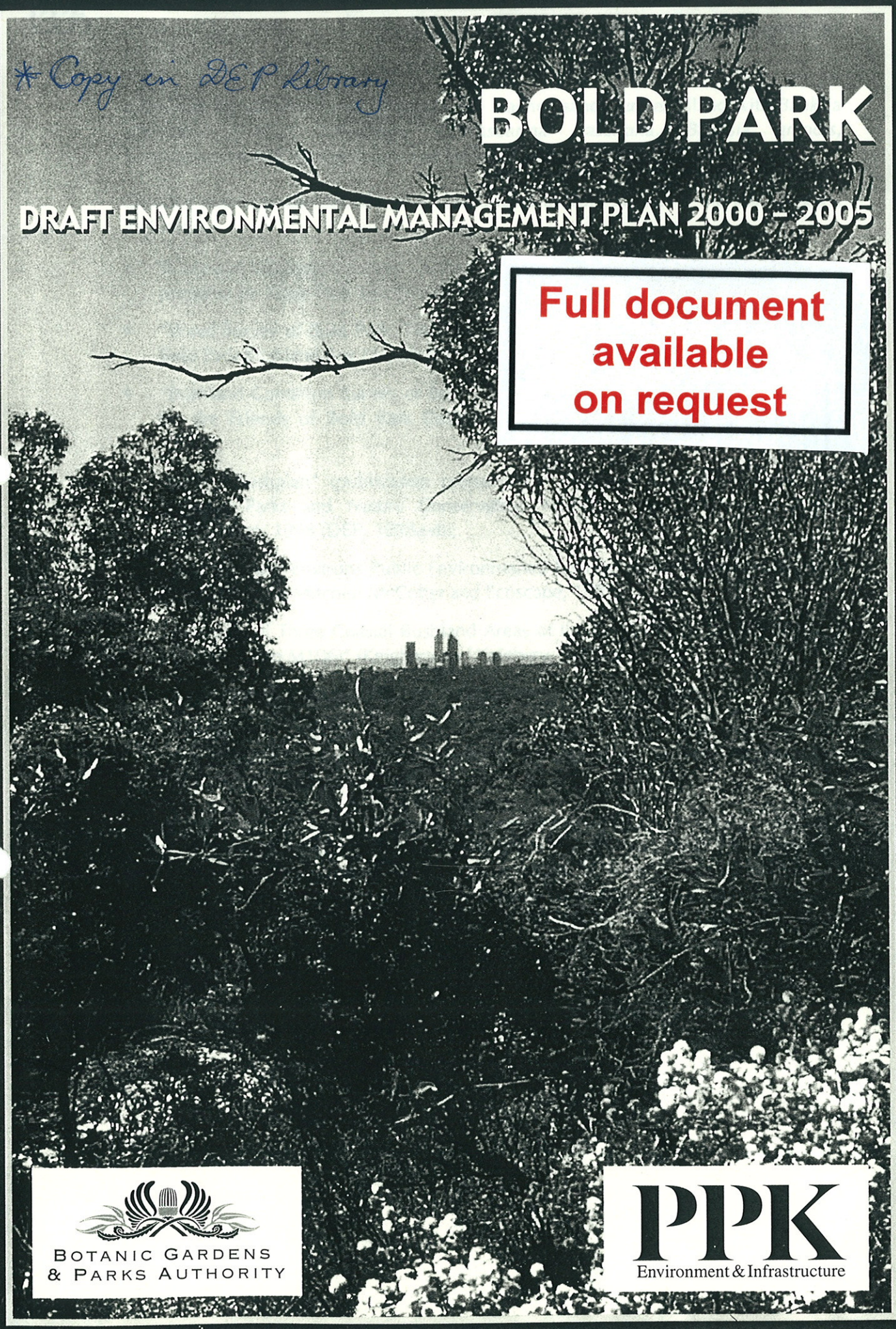

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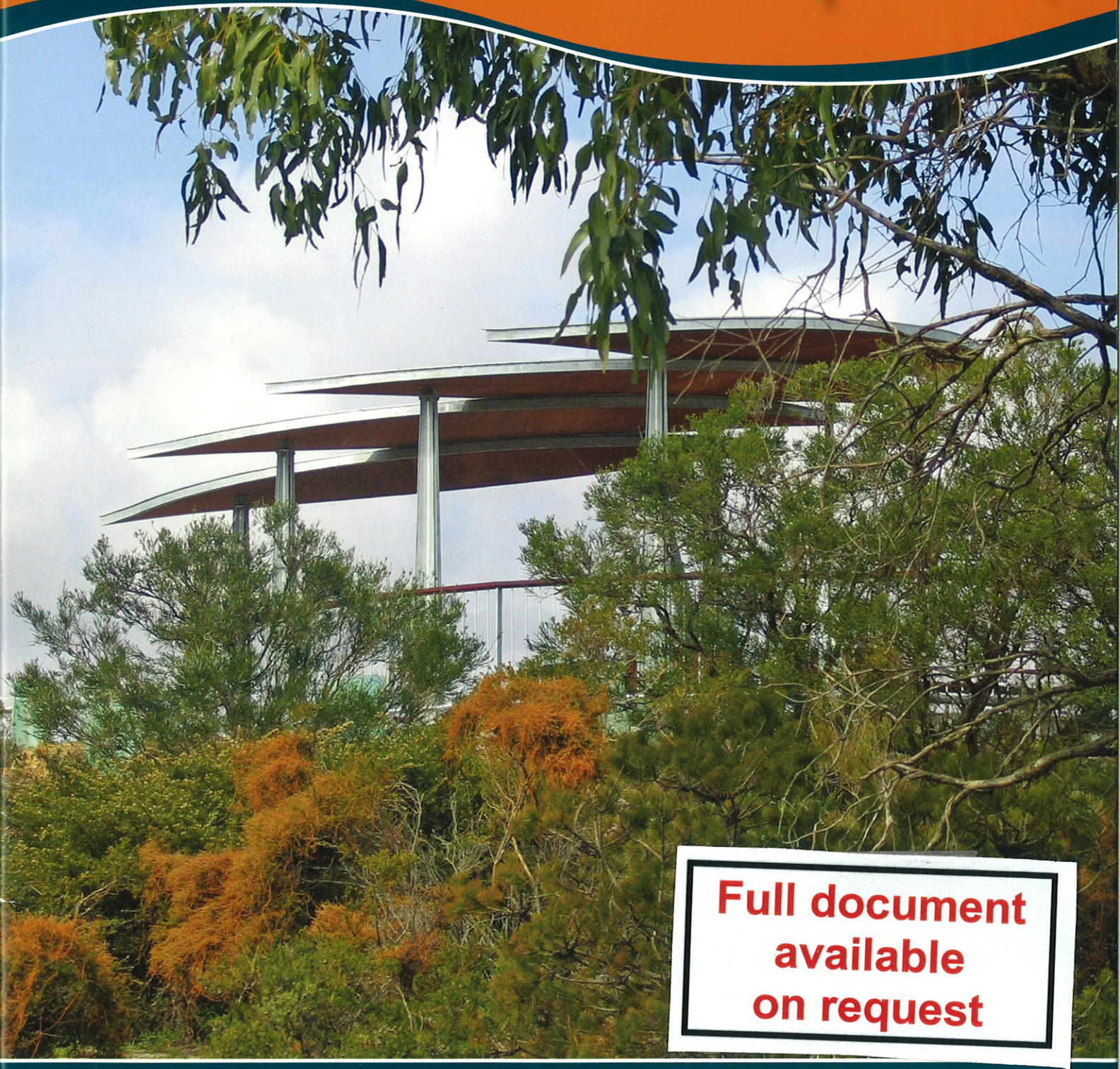

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