KENSINGTON BUSHLAND, KENSINGTON

Boundary Definition: bushland (part taken to cadastre and zoning) boundary

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 48
Area (ha): bushland: 9.1
Map no. 47
Map sheet series ref. no. 2034–II SE
Other Names: Submission Area 212
Local Authorities (Suburb): Town of Victoria Park (Kensington)

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS
Bassendean Dunes
Bassendean Sands (Qpb: S8)
VEGETATION AND FLORA
Vegetation Complexes
Bassendean Dunes
Bassendean Complex — Central and South
Floristic Community Types
Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
23a Central *Banksia attenuata — B. menziesii* woodlands
WETLANDS
No wetlands mapped
THREATENED ECOLOGICAL COMMUNITIES
Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated uplands
Vegetation and Flora: limited survey (DEP 1996 (Kens 01)); detailed survey (Cranfield and Parker 1992)
Structural Units: mapping (Cranfield and Parker 1992)
Uplands: *Eucalyptus marginata*, *B. menziesii* and *B. attenuata* Forest to Woodland; *Banksia menziesii* and *B. attenuata* Woodland; mixed Low Shrubland
Vegetation Condition: >75% Excellent to Very Good, <25% Good to Degraded
Total Flora: 146 native taxa, 60 weed taxa (Cranfield and Parker 1992) (estimated >90% expected flora)
Significant Flora: Cranfield and Parker 1992 — *Dodonaea hackettiana* (4); *Conostylis aculeata* subsp. *cygnorum*
Fauna: structured survey for birds (20 species), reptiles (14 species) and amphibians (1 species) (Turpin 1990, 1991). Significant bird species: category 1 (2) and category 4 (2). One of only two known localities south of the Swan River for the gecko *Diplodactylus alboguttatus*
Linkage: no adjacent bushland
Other Special Attributes: managed by the City of Victoria Park as a bushland reserve

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Subject to protection under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Rarity, Scientific or evolutionary importance, Criteria not relevant to determination of regional significance, but which may be applied when evaluating areas having similar values
Recommendation: Proposed Parks and Recreation Reservation (see Table 3, Volume 1).

KENSINGTON BUSHLAND, KENSINGTON

Boundary Definition: bushland (part taken to cadastre and zoning)boundary

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 48 **Map no.** 57 **Map sheet series ref. no.** 2034–II SE

Other Names
Submission Area 212

Area (ha): total: 9.2; bushland: 9.1

Local Authorities (Suburb)
Town of Victoria Park (Kensington)

Zoning
MRS: Urban
TPS: Landscape

Ownership Categories
Local Government

Lot/Location/Reserve numbers (Purpose), Street name
705 Anketell St
Crown Reserve

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Bassendean Dunes
Bassendean Sands (Qpb: S8)

VEGETATION AND FLORA

Vegetation Complexes

Bassendean Dunes
Bassendean Complex — Central and South

Floristic Community Types

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
23a Central *Banksia attenuata — B. menziesii* woodlands

WETLANDS
No wetlands mapped

THREATENED ECOLOGICAL COMMUNITIES
Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated uplands
Vegetation and Flora: detailed survey (Cranfield and Parker 1992); limited survey (DEP 1996 (Kens 01))
Structural Units: mapping (Cranfield and Parker 1992)
Uplands: *Eucalyptus marginata, B. menziesii* and *B. attenuata* Forest to Woodland; *Banksia menziesii* and *B. attenuata* Woodland; mixed Low Shrubland
Vegetation Condition: >75% Excellent to Very Good, <25% Good to Degraded
Total Flora: 146 native taxa, 60 weeds (estimated >90% expected flora) (Cranfield and Parker 1992)
Significant Flora: Cranfield and Parker 1992 - *Dodonaea hackettiana* (4)

Fauna: multiple and structured survey by Turpin (1990, 1991) for birds (20), reptiles (14) and amphibians (1). Significant bird species: category 1 (2) and category 4 (2). One of only two known localities south of the Swan River for the gecko *Diplodactylus alboguttatus*
Linkage: no adjacent bushland

Other Special Attributes: managed by the City of Victoria Park as a bushland reserve

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

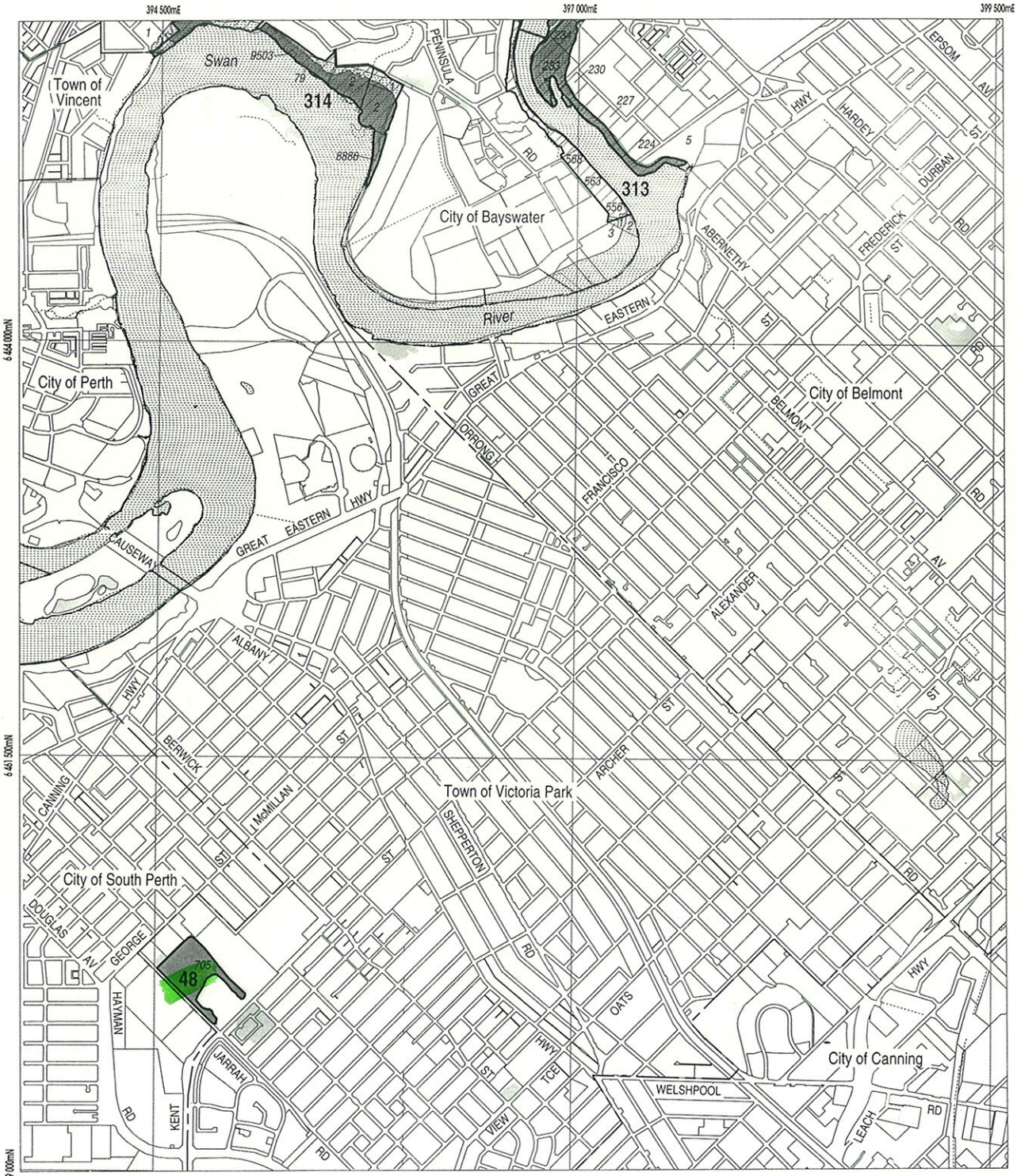
Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Rarity, Scientific or evolutionary importance, 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 subject to Swan and Canning Rivers EPP; location of Scheduled Fauna; Crown Reserve
Constraints: under MRS Urban Zoning

Recommendation: The most appropriate mechanism for the protection of this Bushplan Site be considered through the public comment period in consultation with the land owner(s). This may include — The existing care, control and management intent of the reserve is endorsed. Long-term security and support for conservation management of the Bushplan Site to be enhanced by: amending the purpose of the reserve to include conservation; and applying appropriate mechanisms in consultation with the reserve management body.



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 SE

IV | I
2034
III | NW | NE
SW | SE | 57

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

PERTH'S BUSHPLAN MAP INDEX

1 2
3 4 5
6 7 8 9 10 11
12 13 14 15 16
17 18 19 20 21 22 23
24 25 26 27 28 29 30
31 32 33 34 35 36
37 38 39 40 41 42
43 44 45 46 47 48
49 50 51 52 53 54
55 56 57 58 59
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65 66 67 68 69 70
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78 79 80 81 82 83 84
85 86 87 88 89 90 91
92 93 94 95 96 97
98 99 100 101 102
103 104 105 106

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_57.dgn

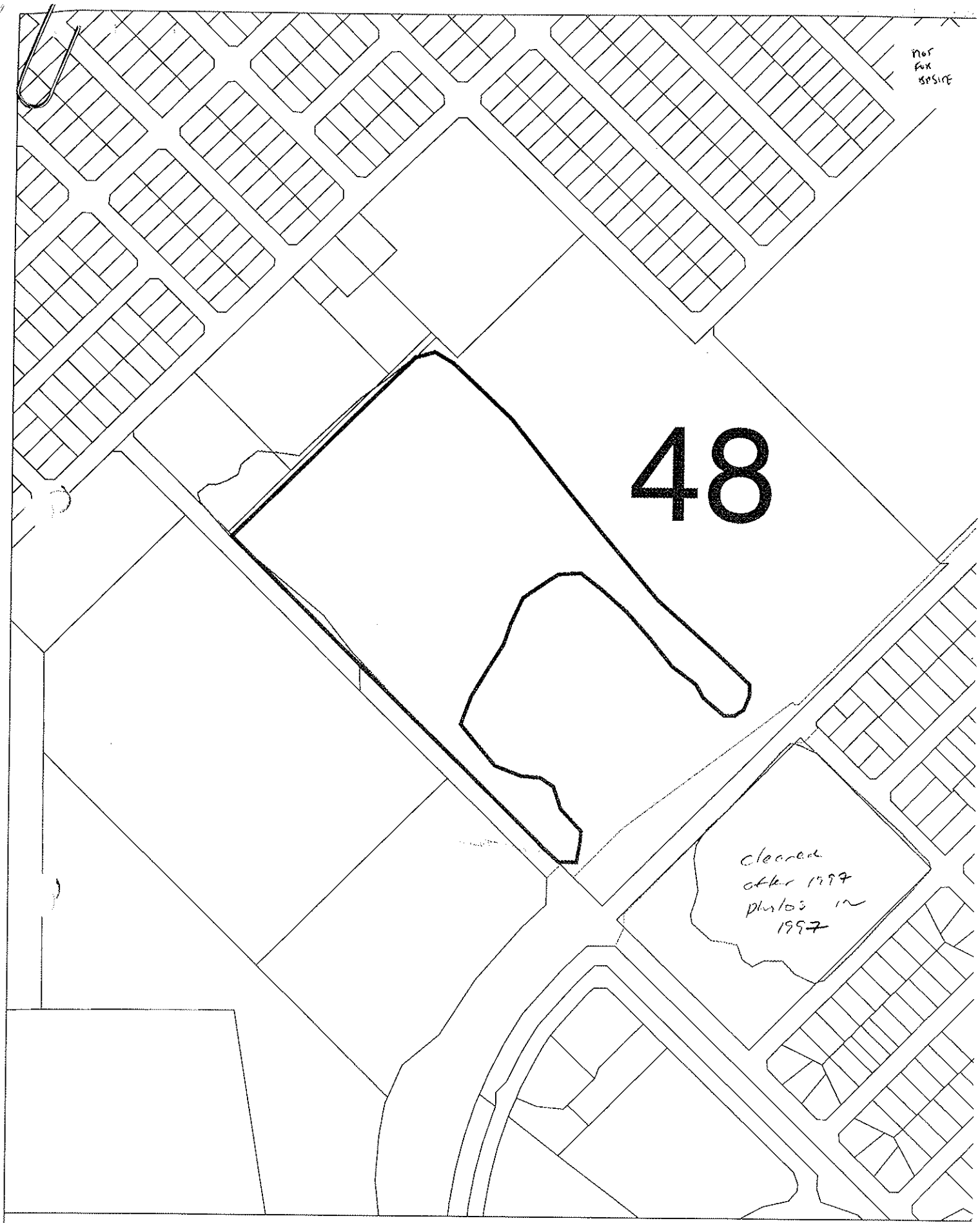
Cadastral Data supplied by Department of Land Administration, W.A.

Wetlands Data supplied by Water and Rivers Commission

Native Vegetation Extent for Study Area supplied by Agriculture Western Australia

Bushplan Site Map

Map 57



BUSHPLAN SITES CORRECTED

THE GOVERNMENT OF WESTERN AUSTRALIA

WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS WESTERN AUSTRALIA

B Bt/TG 22/10/98

N

SCALE 1:2500

0 50m

Metres

BUSHPLAN SITES CORRECTED

THE GOVERNMENT OF WESTERN AUSTRALIA

WESTERN AUSTRALIAN PLANNING COMMISSION

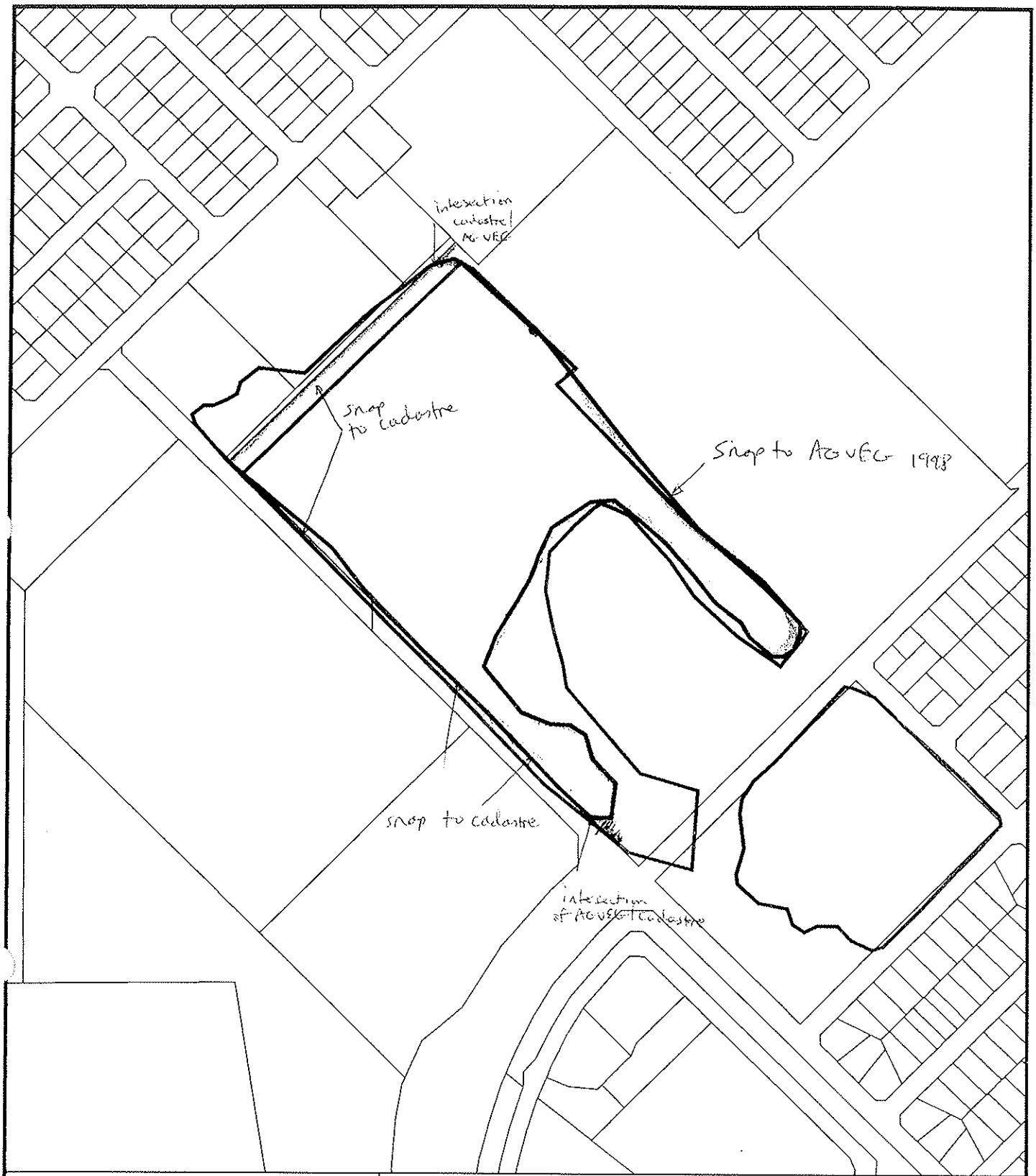
CUSTOMER FOCUS WESTERN AUSTRALIA

N

SCALE 1:2500

0 50m

Metres



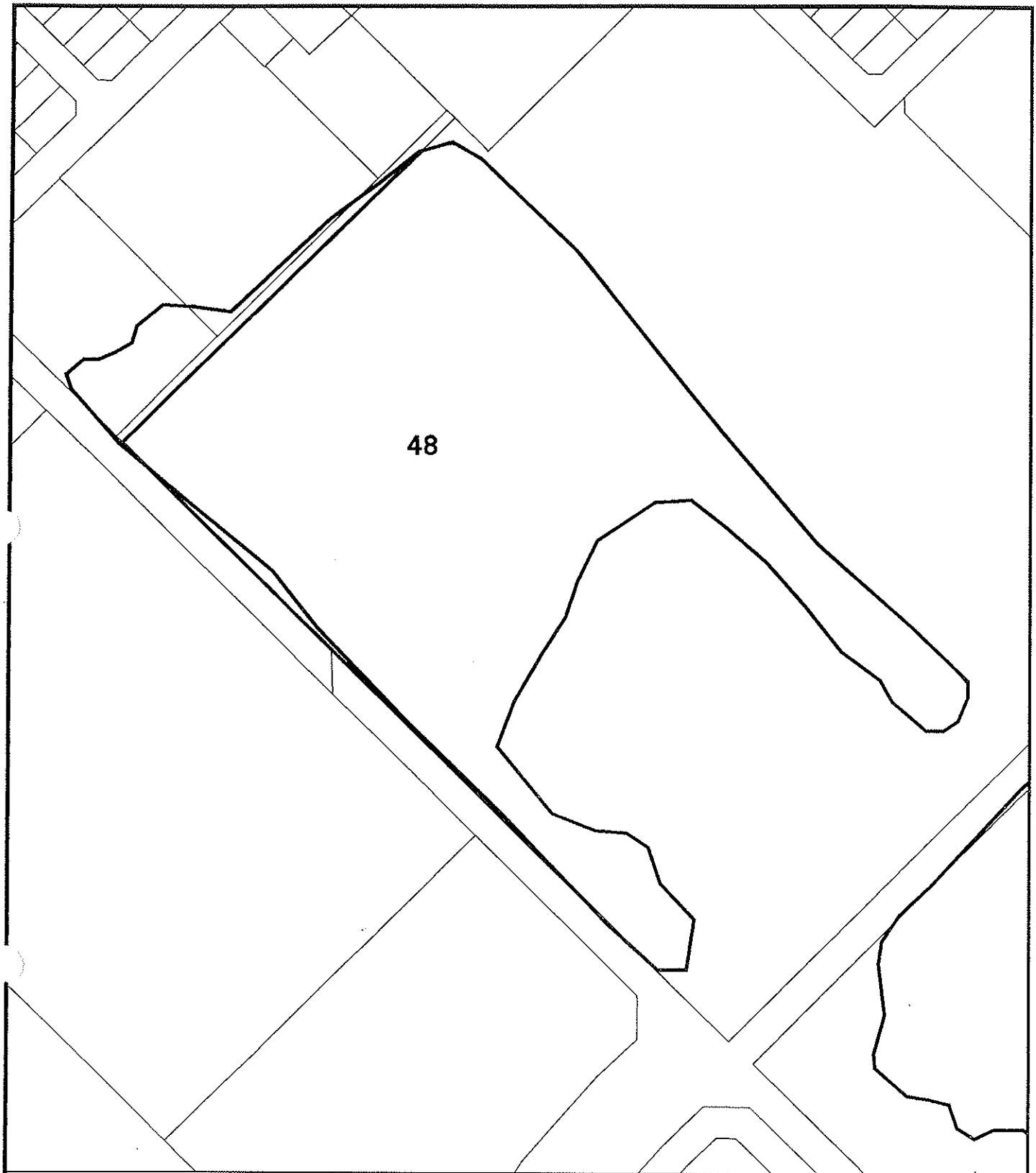
bp site 48

AG VEG 1998 BOUNDARY THEME

Bushplan sites refno 1-500 SCP BOUNDARY THEME

Cadastre

MFP INTERNAL USE ONLY
Prepared By: Andrea Zappacosta
Prepared For:
Map Ident: plot980515_1
Date: 15 May 98
Scale 1:5085



bp site 48
amended

AG VEG 1998 BOUNDARY THEME

Cadastre

Bushplan sites refno 1-500 SCP BOUNDARY THEME

MFP INTERNAL USE ONLY

Prepared By: Andrea Zappacosta

Prepared For:

Map Ident: plot980522_1

Date: 22 May 98

Scale 1:3435

Bush Forever Sites
Local Government Authority Boundaries
Geomorphic Wetlands Feb04 by Evaluation
Conservation
Resource Enhancement
Multiple Use
Floristic Survey Sites of the Southern Swan Coastal Plain
GJKENV (Keighery 1996)
GRIFFIN (Griffen 1994)
SCP (Gibson et al 1994)
SYS6ENV (DEP 1996 and Trudgen & Keighery 1995)
SYS6ENV2 (DEP 1996 and Trudgen & Keighery 1995)
CALM Threatened Ecological Communities 2002
Roads - Perth Metropolitan

Bush Forever Site 48: Kensington Bushland, Kensington

N

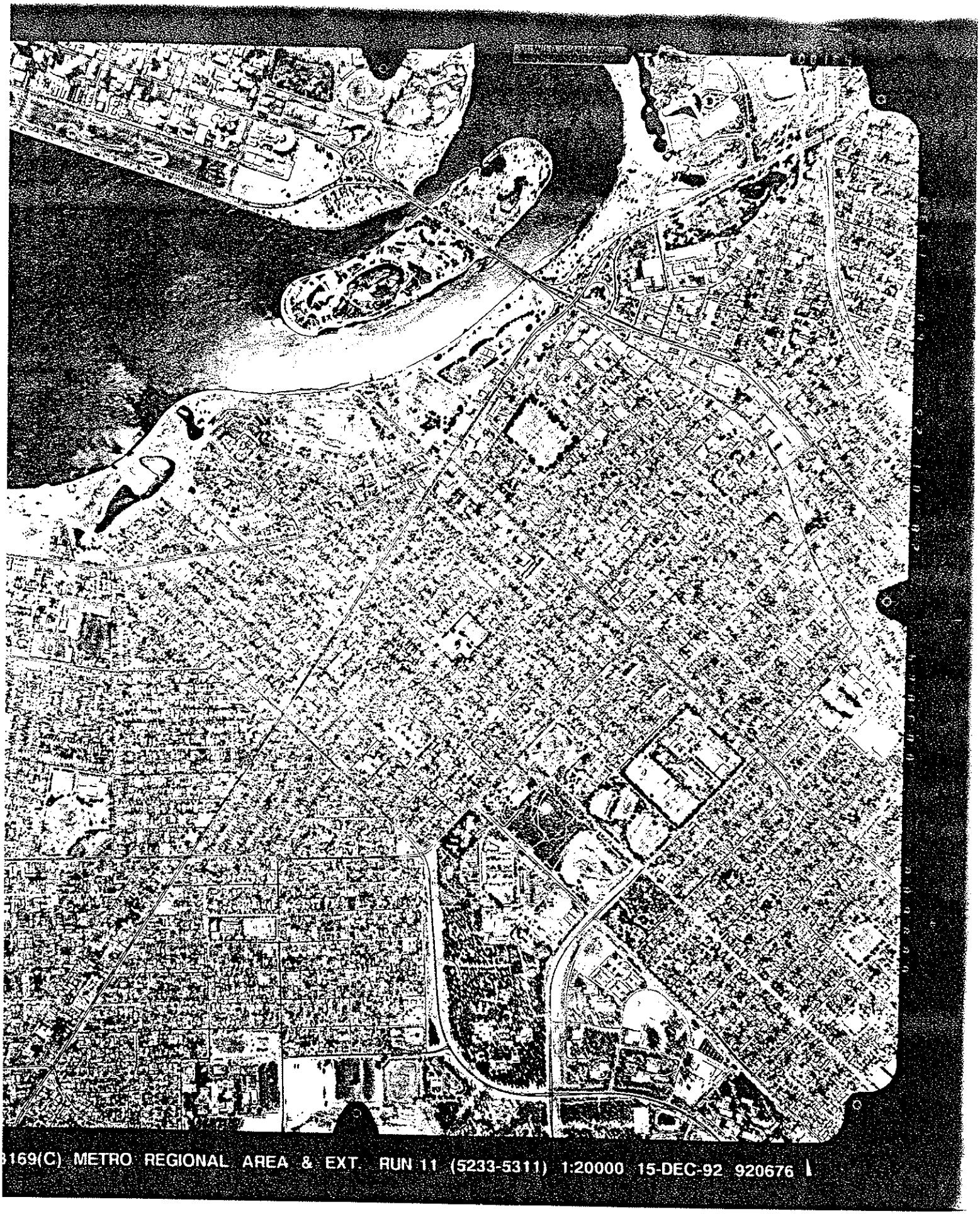
0 50 100 150 200 Meters

1:2500

Datum: GDA - Projection: MGA Zone 50

Department of Environment

Data Sources:
Cadastre DLI
Aerial Phototography : Skyview DLI


3169(C) METRO REGIONAL AREA & EXT. RUN 11 (5233-5311) 1:20000 15-DEC-92 920676

Subm 1805 BS 48

263

PB011

Kensington Bushland, Kensington
Bushplan Site [redacted] Vol. 2 Part B, page 173; Map 57.

Re: Zoning

We see the MRS Urban Zoning as totally inappropriate for a Bushplan site. Amending the purpose of the reserve to include conservation should be a priority.

Re: Vegetation complexes

The importance of preserving this bushland includes the fact that so little of the "Bassendean Complex - Central and South" remains in the PMR. Also, it is the last reasonably intact bushland between the Swan and Canning Rivers west of Perth Airport. (Note that there is an error on Map 57 in that the bushland shown across Kent St from Kensington Bushland no longer exists, having been cleared for housing in 1998).

Re: Vegetation and Flora

By world standards, 146 native taxa in 9.1 ha is exceptional, but in Perth this kind of figure is taken for granted. Our floral diversity should be one of the major reasons for protecting reserves such as this.

In the case of this reserve, it is stated that >75% of the reserve is in "Excellent to Very Good" condition. Away from the edges of the reserve, this figure is closer to 100%. This alone should be enough reason to include the reserve as a protected Bushplan site.

Re: Recommendations

We agree with your recommendations, and have the following comments in addition:

- In providing on-going protection for Kensington Bushland, negotiations with the Town of Victoria Park should be conducted over preventing the future expansion of their adjoining waste dump further into the Bushland.

  Secondly, the Town is hoping to sell off the adjoining waste dump, and has had several expressions of interest. As the Town does not acknowledge that the eastern-most finger of bushland shown on Map 57 is part of Kensington Bushland, they are likely to entertain the idea of selling off this finger of bush as part of the waste dump sale. This must be prevented.

  Thirdly, the south-western finger of bushland shown on Map 57 is almost wholly within the perimeter fence of the waste dump, and is also not recognised by the Town as being part of Kensington Bushland. Protection of both fingers of land in the Bushplan site is therefore urgently needed.

- There is a significant weed problem developing on the south-western boundary of the Bushland, due in part to pasture species such as lupins and exotic grasses escaping from the adjoining Agriculture WA site. Discussions should be carried out with Ag-WA to reduce this problem.

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- A State Weed Strategy is needed urgently, and should help reduce the weed pressure on this Bushland. Major weed species in the reserve include exotic grasses, gladioli and lupins.

- The reserve is a popular place for exercising dogs. Whilst it would not be productive to try to ban this activity, signage should be put in place informing dog owners of the impact of nutrient-rich faeces on native vegetation.

- Since this land was granted on 999-year lease to the then Municipality of Victoria Park in 1912, most of the land has been sold off and cleared. This highlights the on-going planning problem of successive State and local governments deciding to clear most of a remaining bushland area, with the excuse that some of the original bushland is allowed to remain. This is often called a "win-win" situation by government, in that supposedly the interests of conservation and development are both considered, but neglects the fact that in future years the process is repeated, with most of the remnant being cleared under the "win-win" excuse, leaving even less of the original bush. As time goes on, the remnant becomes smaller and smaller, until the ecosystem is no longer viable, weeds invade, and the land is finally completely cleared. It is now time to put an end to this cycle of destruction, by recognising that there is no longer enough remnant bushland in Perth to allow for any further "partial" clearing. The small size of Kensington Bushland means that any further partial clearance would leave the remainder too small to be viable.

Conclusion

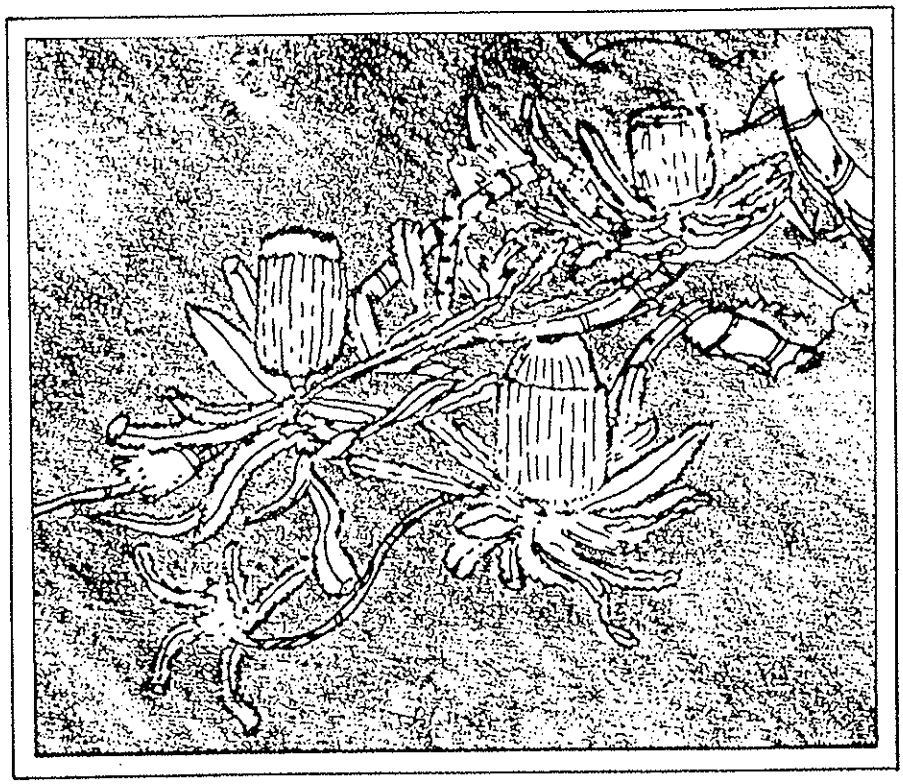
We thank you for the opportunity to participate in Perth's Bushplan and hope that the initiatives outlined in the plan are taken as an important challenge with which to face the next century.

Yours sincerely

File BS 48

ATTACHMENT II

KENSINGTON BUSHLAND MANAGEMENT PLAN



PREPARED BY
THE DEPARTMENT OF PARKS GARDENS AND LANSCAPE
PERTH CITY COUNCIL
DECEMBER 1993

KENSINGTON BUSHLAND MANAGEMENT PLAN

PREPARED BY

THE DEPARTMENT OF PARKS GARDENS AND LANDSCAPE

PERTH CITY COUNCIL

DECEMBER 1993

KENSINGTON BUSHLAND MANAGEMENT PLAN

CONTENTS

KENSINGTON BUSHLAND MANAGEMENT PLAN

CONTENTS

WPPGSTD/631/PC:dag
April 1993

1: INTRODUCTION

1.1 Remnant Banksia Woodlands

Banksia woodlands originally covered a large proportion of the Swan Coastal Plain. However, since European settlement, much of this native vegetation has been cleared to cater for urban development and expansion. As a result of urbanisation, the coastal plain now supports only remnants of native vegetation. These act as islands conserving isolated communities of native flora and fauna and provide refuges for migrating bird species.

Remnants of native vegetation in urban areas are subject to a range of external forces which can disturb normal ecological processes and result in the decline in species diversity in the area. Therefore, careful management is essential to maintain the integrity of the natural ecosystem.

There are a number of small Banksia woodland remnants in metropolitan Perth, however, the Kensington Bushland is one of the few good examples left in the older southern suburbs (Figure 1). It supports a wide range of flora and fauna which, although not rare or endangered, have disappeared from much of the metropolitan area.

At present, the bushland reserve is relatively undisturbed, however, it is coming under increasing pressure from surrounding landuses. In recognition of these issues and their implications, the City of Perth has developed this management plan.

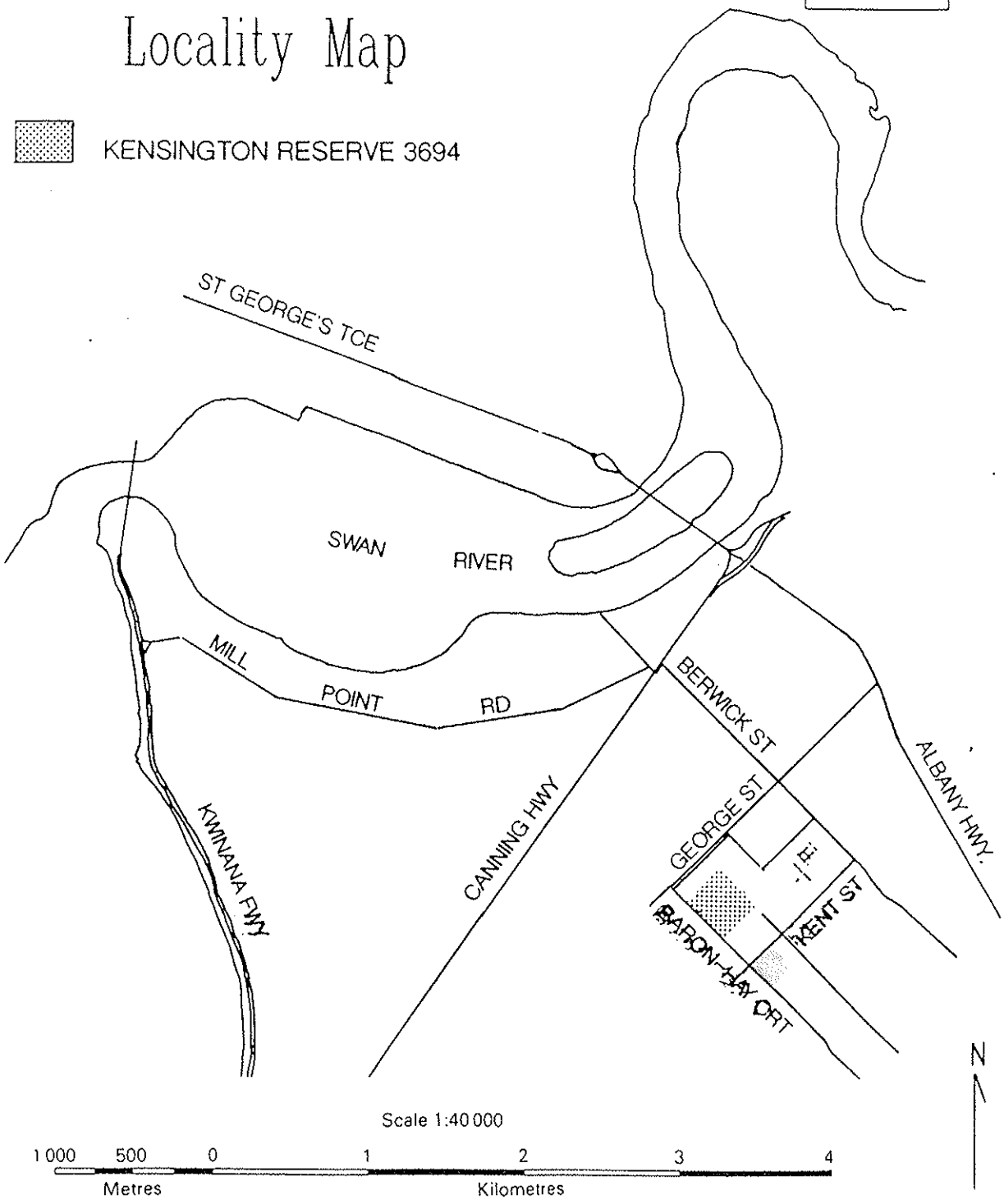
1.2 Management Plan Production

To assist with the management of the Kensington Bushland reserve, the Council established the Kensington Bushland Management Group in February 1991. It was resolved at subsequent meetings to approach various tertiary institutions to prepare a management plan for the reserve. As a result, two honours students from the Geography Department of the University of Western Australia, Peta Sanderson and Eleanor Bruce, under the supervision of Associate Professor A.J. Conacher, prepared the orignal document on which this management plan is based.

FIGURE 1

Locality Map

KENSINGTON RESERVE 3694



The following organisations were consulted during the research phase of the management plan and provided the majority of information required:

City of Perth: Peta Cameron (Research Officer - Environment)
Don Maskew (Director: Land Information Systems)
Peter Waey - Supervisor, Parks Gardens and Landscape Department
Water Authority of Western Australia: Groundwater Division
Western Australian Herbarium: Ray Cranfield
Western Australian Museum: Margaret Turpin
Department of Conservation and Land Management: Penny Hussey
Kensington Fire Brigade: Mr O'Brien
Kings Park Board: Bob Dickson
Kensington Special School: Mr Phillips (Headmaster)
Amatek Quarry Industries Ltd: Stephen Elliot
Kensington Bushland Management Group: Catherine Taylor

A survey of local residents was also conducted to ensure the management plan addressed both the community's needs and the environmental requirements of the reserve. The survey and its results are presented in Appendices 1 and 2.

1.3 Management Objectives

The aim of the management plan is to develop strategies to protect, maintain and enhance the natural conservation value of the reserve.

Within this aim, the overall objectives are:

1. To detail aspects of the reserve which influence management objectives.

2. Identify areas of concern.

3. Develop strategies for the future management of the bushland reserve.

4. Determine methods for the implementation of management strategies.

BARON-HAY COURT RESERVE

2 The Reserve

2.1 Natural Aspect

2.1.1 Physical Features

Banksia woodlands and allied plant associations colonise the extensive sandy soil of the Bassendean and Spearwood Dune systems of the Swan Coastal Plain of southwest Australia (Semeniuk & Glassford, 1989). These soils are generally very porous and, having a low potential to retain nutrients, are usually infertile. The nature of habitats and understorey assemblages found in Banksia woodlands are influenced by a number of environmental factors, such as: location within the dune system; aspect; depth to water table; soil moisture content; and the nutrient and water retention ability of the soil.

The Kensington Bushland reserve is located on the Swan Coastal Plain close to the border of the Bassendean and Karrakatta Dune systems. Research conducted by Cranfield and Parker (in press) indicates the dominant soil type in the area is Bassendean sand which consists of grey humic sands overlying deep yellow sand with some limestone development. These sands are remnants of old Pleistocene dunes which have been well leached leaving them both chemically and physically infertile.

Elevation and depth to groundwater vary marginally across the reserve in a west-east direction (Figure 2). The elevation varies from 26 m to 18 m above sea level on the eastern boundary, while the depth to groundwater increases by 1 m to 8 m to the east. Localised variations in topography have been caused by the dumping of sand around the reserve.

2.1.2 Groundwater Quality

During the preparation of the management plan, borewater at the reserve was tested for nitrate, nitrite, phosphate, pH and salinity. The results indicated significant, although not harmful, levels of nitrate in the water which is probably due to fertiliser applications on nearby recreation ovals. All other parameters tested were within normal levels. This indicates the

groundwater in the area does not present a threat to the bushland reserve.

Annual monitoring by the Perth City Council indicates a tendency for groundwater quality to fluctuate overtime. Therefore, it is advisable to continue regular monitoring of borewater on the reserve.

2.1.3 Flora and Fauna

By 1986, an estimated 55% of the Banksia woodland complexes on the Bassendean and Spearwood dunes from Lancelin to Capel had been cleared entirely of their native vegetation (Hopper and Burbidge, 1989). Although they contain few localised endemic species, the extensive clearing has resulted in the decline of a number of species of flora and fauna to the point that they are now considered highly vulnerable. In spite of this, only 7% of the original 281000 ha of Banksia woodlands are protected on conservation reserves, few of which are in urban areas.

The flora of the bushland reserve was studied in detail by the Western Australian Herbarium in 1980/81 (Cranfield and Parker, in press). A total of 206 indigenous and exotic species were identified (Appendix 3). These were grouped into three basic vegetation types (Fig 3):

1. Low Woodland - composed mainly of Banksia species, (B. attenuata, B. menzeisii, B. ilicifolia.)

2. Low Open Woodland in the north and north-east of the reserve. This vegetation type contains the above mentioned Banksia species as well as a variety of Eucalyptus species (i.e. E. marginata, and E. todtiana) and Allocasuarina fraseriana.

3. Low Shrubland - present in the lower central area of the block.

A 1990 study by Turpin (1991) documented the vertebrate and selected larger invertebrate fauna in the bushland reserve. Twelve species of reptiles and seventeen bird species were recorded in the area (Appendix 4). In Turpin's opinion, the species diversity indicated by the study may have been underestimated by: the time of the

survey - Autumn instead of Spring; the trap sizes which may have excluded snakes and domestic cats; and seasonal variations in bird behaviour which would influence the species present at the reserve in Autumn.

Twelve reptile species were identified, two of which were of conservation importance: the Small Spotted Gecko (Diplodactyles alboguttaulus), which has not previously been recorded south of the Swan River; and the Slender Legless Lizard (Pletholax gracilis), which is rarely recorded south of the Swan River. One species of frog, the Banjo Frog (Limnodynastes dorsalis), was recorded following rainfall. Numerous invertebrates, including spiders, millipedes, beetles, cockroaches and carnivorous insects were also identified.

No native mammals were found within the bushland reserve, however, the introduced House Mouse (Mus musculus) was recorded. Seventeen species of birds were identified, including 3 species of diurnal birds of prey which are becoming scarce in urban environments. One bushland species which does not occur in urban gardens was the Rufous Whistler (Pachycephela rufiventris). Turpin concluded that the bushland reserve provided both a food source and nesting place for birds frequenting urban gardens and may be a valuable area for migratory birds of the Swan Coastal Plain in winter and spring.

The bushland reserve's high conservation value is attributed to the rich and diverse community of plants and animals it supports, most of which have disappeared from or are rare in the urban areas south of the Swan River. The role of remnant native vegetation in urban areas has not been fully researched, however, the fact that most of the native vegetation in the region has been cleared to make way for human development, places a considerable conservation value on these areas.

The bushland reserve also provides a valuable scientific and educational resource due to the few native reserves in the older southern suburbs. The ecology of Banksia woodlands may be studied in order to gain an understanding of their importance, their response to urban pressures and the natural interactions within the ecosystem.

The bushland reserve is ideally located to provide both a scientific and educational facility to local residents and tertiary educational institutions. It is easily accessible to groups from Curtin University, Bentley TAFE, Kent Street Senior High School, the Department of Conservation and Land Management, the Department of Agriculture and local primary schools.

2.1.4 Introduced Species

Introduced flora and fauna were identified by Cranfield and Parker (in press) and Turpin (1991). The exotic flora identified are indicated on the species list in Appendix 3. The House mouse (Mus musculus) and two species of Dove were the only exotic fauna identified on the block.

Introduced flora poses a greater threat to the conservation value of the bushland reserve than introduced fauna. Weeds, such as Veldt grass (Ehrharta sp.), have colonised the road verges, fire breaks, paths, soil disturbed by off road vehicles and trail bikes and areas in which fires have occurred. The weeds compete successfully with the native species preventing regeneration. As a result, exotic species have spread throughout disturbed areas causing the degradation of the reserve and loss of conservation value.

2.2 Cultural Aspect

2.2.1 History and Tenure

The Kensington Bushland reserve is part of the Municipal Endowment Lands of Victoria Park which were vested in the municipality of Victoria Park on 1 July 1912 for 999 years. When the municipality joined with the City of Perth in 1916, the lease was transferred to the Perth City Council. The bushland reserve is zoned Parks and Recreation in the City Planning Scheme, however still classified Urban under the Metropolitan Region Scheme.

Since 1912, various portions of the endowment lands have been transferred, resumed or surrendered. The land surrounding the Kensington Bushland is now used for a variety of landuses including a recreation reserve (Harold Rossiter Reserve), Police and Citizens Youth Club (PCYC), St John's Ambulance Depot, Kensington Fire

Brigade, Kensington Special School, and a City of Perth sand quarry (Figure 4). The clearing of native bushland in these areas and the development of landscaped areas has affected bushland reserve in a variety of ways, such as:

1. the introduction of exotic flora;

2. the quarrying of sand has:

   (a) created steep pit faces which threaten the stability of the soil;

   (b) changed the hydrology of the soils in close proximity to the quarry; and

3. the increase in human activity in nearby areas (eg. Harold Rossiter Reserve and the PCYC), also creates increased pressure by trampling of the remaining bushland.

Although development proposals have been received by the Perth City Council, the bushland reserve has remained undeveloped. This restriction on development has minimised the changes to the natural state of the ecosystem and, therefore, the conservation value of the reserve has remained high.

2.2.2 Access

Access to the bushland reserve is shown in Fig. 5. The reserve can be accessed by foot at any point on both the northern and southern boundaries. To the east, the quarry is separated from the reserve by a 'cyclone' fence topped with barbed wire. To the west, the bushland is bounded by a fence and the grounds of the Kensington Special School.

Car parks are located on Baron-Hay Court and at Harold Rossiter Reserve on Etwell Street.

In February 1990, a Federal grant of $15,960.00, under the "Save the Bush" programme, was received by the City of Perth. As a result, pine fencing was installed on the northern and southern boundaries denying access to off road vehicles and trail bikes.

Under the Federal grant, limestone paths were also constructed. The first joins Baron-Hay Court with Etwell Street and forms a T-intersection with a second path which runs the length of the northern boundary. These paths provide access to both pedestrian and cyclist use without the threat of extensive damage to the bushland. However, unrestricted access by trail bike riders through the vacant block on the corner of George Street and Anketell Street and the PCYC is still causing damage to the reserve.

Numerous small tracks cross the block. These paths, which are used by pedestrians, trail bikes and bicycles, are becoming increasingly overrun by weeds. The abundance of these paths within the reserve is indirectly responsible for the damage to the natural ecosystem.

3.2.3 Fire

A number of small "spot" and grass fires have occurred in the reserve, however, the area in which the fires occurred and their extent have not been recorded by either Kensington Fire Brigade (George Street) or the City of Perth. In March 1993, fire destroyed approximately 20% of the bushland. All the groundcover was burnt and scorching has affected the majority of trees in the area of the fire.

Records of the Kensington Fire Brigade indicate when they attended a fire, but give no further relevant details. Therefore, an accurate fire history for the block could not been drawn up.

Fuel levels in the bushland reserve are not high as previous fires have cleared much of the litter material. The level, however, is increasing with the spread of weeds through the area. These species are very flammable when dry causing the rapid spread of a fire front within the reserve.

Inspite of the high fuel loads caused by weeds and its location, in the midst of urban development, the fire risks associated with the bushland reserve are considerably reduced by the proximity of the Kensington Fire Brigade. Response time to a fire in the bushland reserve is a matter of a few minutes.

2.2.4 Human Activity

The bushland holds a high recreational value for nearby residents. The area provides the opportunity to experience the natural bushland close to an urban environment, as well as providing an alternative area for exercising. The impacts on the bushland reserve arising from recreational activities are:

1. increased soil disturbance, weed invasion and trampling of native vegetation by people running and cycling off the main trails; and

2. disturbance of native fauna by humans and domestic and feral animals.

3: AREAS OF CONCERN

The bushland ecosystem has been damaged by a variety of disturbances which have implications for the ongoing management of the reserve. Areas of concern were identified through field observations, consultation with experts and responses from local residents.

3.1 Weeds

The predominant weed in the reserve is Veldt grass (Ehrharta sp.). At present it is confined to disturbed areas such as fire breaks, the reserve boundary and main paths which it has rapidly colonised, effectively excluding native species. The weed invasion poses a serious problem by increasing the fire hazard and reducing the regeneration of native species. This could ultimately lead to a loss of the native conservation value of the area.

3.2 Rubbish

Non-biodegradable rubbish from both industrial and domestic sources have been disposed of on the reserve over the years. Although mainly confined to areas near the reserve boundaries, some larger pieces have been carted to the central areas, probably by children building 'cubbies'. The larger industrial rubbish, consisting of concrete girders and pipes, bricks and iron sheets provides shelter for the smaller fauna. In early 1993, these were removed and replaced with logs of similar size to ensure habitats for the fauna were still available.

In other areas of the reserve, smaller logs have been placed near other rubbish, again to provide shelter. This rubbish will be removed later in 1993.

4.3 Tracks

An extensive network of "goat tracks" exists in the reserve. Although these tracks are relatively narrow, less than 1 metre in width, they encouraged people to wander off the limestone paths and increase disturbance of the soil and the spread of weeds. In early 1993, many of these were blocked with logs to discourage access.

3.4 Domestic Animals

The exercising of dogs in the reserve is a problem as many are not kept on a leash. Dogs are responsible for damaging native flora and frightening smaller native animal species away from the area.

Domestic cats were sighted in the bushland reserve and have been cited by Turpin (1991) as a possible cause for the absence of native mammals in the reserve. They also pose a major threat to the diverse bird population present in the area.

3.5 Fire

One overwhelming problem evident since the European settlement of the Swan Coastal Plain is the weed infestation of areas damaged by fire. At the Kensington block, the large weed population has added to the fuel loading which in turn increases the fire hazard to nearby properties.

The fire-weed interaction is cited as the most important issue to be taken into account in the development of any fire management strategies in the future.

3.6 Plant Diseases

The reserve provides a potential site for the introduction of Phytophthora sp., however, the site has not been inspected for the presence of the pathogen. The introduction of forest diseases, such as Phytopthora pathogens, would devastate the bushland reserve as the majority of native species present are highly susceptible to the fungal disease.

The presence of growths on Banksia plants provides evidence of insect pests, although these do not appear to have had a major impact on the health of the plants.

3.7 Sand Quarry

The extraction of sand from the Council quarry adjacent to the bushland reserve has recently ceased. However, Council activities involving the discharge of solid waste from road drains and the dumping of construction materials still

continues. The working face is approximately 20-30m from the reserve boundary and stabilisation of the 12m face involving battering would further encroach on the reserve. The depth of the excavation may affect the shallow groundwater levels in the immediate area. Future use of the quarry site will also have implications for the maintenance of the conservation values of the reserve.

3.8 Removal of Native Species

It has been reported to Council that firewood and wildflowers are being removed from the reserve and that attempts have been made to remove Zamia palms (Macrozamia riedlei) close to the Baron-Hay Court road verge. It has also been noted that young children are collecting small lizards for pets.

The removal of both flora and fauna from the bushland leads to the disturbance of the ecology of the area and the destruction of habitats for other fauna.

3.9 Social Problems

There is significant concern among the local residents about the safety of the bushland reserve, in particular, the fact that it provides a haven for derelicts.

It is considered that the natural conservation value of the reserve will be lost unless each of these issues are addressed as a matter of urgency.

4: RECOMMENDATIONS AND MANAGEMENT STRATEGIES

This section outlines the recommendations for the management of the bushland reserve. Each issue is briefly introduced, the management objectives and the recommendations to achieve them are then stated, followed by the rationale and the management strategies.

4.1 Introduction

The bushland reserve provides an important resource for recreational, educational and scientific purposes. In order to maintain and enhance the natural conservation value of the area, two important aspects must be taken into consideration in the management recommendations. Firstly, the role of the reserve as a remnant of native bushland and secondly, its value as a passive recreation facility. The purpose for which the reserve was designated in the Lease from the Crown must be carefully planned for, at the same time ensuring a native ecosystem of the Swan Coastal Plan is preserved for future generations.

4.2 Provision of Facilities

Objectives:

(i) To provide facilities to improve visitor enjoyment of the reserve while preserving its conservation value.

(ii) To inform users of the reserve's natural values.

Recommendations:

R1. Extend limestone paths, provide seating and rubbish bins.

R2. Upgrade reserve fencing to prevent continued access for trail bikes and four wheel drive vehicles.

R3. Install a sign at each access point to the reserve, providing information on the ecology of the Banksia woodland community and the importance of remnant bushland areas.

R4. To identify flora species of significance within the reserve on interpretive signs.

R5. Upgrade limestone parking on Baron-Hay Court near the entrance to the bushland reserve.

Rationale

Kensington bushland is an important conservation and recreation resource. The provision of various facilities such as bins, seats, formal paths and signs, will encourage use of the reserve, whilst restricting it to certain areas, therefore, allowing the bushland to accommodate both activities with minimal conflict.

Increasing public awareness of the values of the area through appropriate signs will help to reduce inappropriate use of the reserve.

Management Strategy

The recommended locations for the limestone path extension, seating, bins and information signs are shown in Fig 6. Entry points are also shown. Rubbish bins should only be placed at the Etwell Street and Baron-Hay Court entrances as these access points are easily serviced by vehicles.

Those species of flora recommended for identification are shown in Appendix 5.

Pine fencing should continue along the southern boundary to join with the fence around the sand quarry.

4.3 Weed Eradication

The introduction of exotic flora to the bushland reserve is detrimental to the native ecology of the Banksia woodland. Weeds compete with native species, especially in disturbed areas, such as paths and firebreaks which they rapidly colonise. Weeds also increase fire fuel levels and, consequently, the fire hazard to nearby areas. Eradication of weeds will improve the conservation status of the bushland reserve.

Objective:

To limit the invasion, extent and impact of weeds in the reserve.

Recommendations:

R6. Implement a spraying programme to eradicate introduced flora.

R7. Manually remove broad leaf weeds adjacent to paths.

Rationale

Weeds not only reduce the value of the reserve, but also reduce its aesthetic value. In an area of 7.84 hectares, the eradication of weeds is a feasible operation. Manual weeding is not recommended for veldt grass due to the disturbance to the soil this would create and the seeds would still be present on the block.

Management Strategy

The herbicide "Fusilade" has been recommended by the Kings Park Board for the eradication of veldt grass because it does not affect non-target species. "Assure" was also recommended as a similar though cheaper product. A spraying programme can only be conducted from mid-June to August (Dickson, pers comm.) as spraying outside of this period is ineffective.

Initially, efforts must be concentrated along road verges, firebreaks, areas adjacent to limestone paths and goat tracks which extend throughout the reserve. Eventually, veldt grass in all areas of the bushland should be sprayed. Eradication must be monitored carefully and progress recorded. It is anticipated that spraying will need to continue for several years.

Manual removal of broad leafed weeds is feasible with the assistance offered by the Kensington Bushland Management Group. This programme would be undertaken along areas adjacent to paths.

The "Castor Oil" trees on the vacant block, adjacent to the reserve should be removed. Monitoring and removal of regrowth should continue.

4.4 Rehabilitation

In order to increase the reserve's scientific, educational and conservation value, rehabilitation of the native flora is necessary. Following the eradication of weeds in degraded areas, open areas are to be rehabilitated.

Objective:

To maintain the reserve's values by rehabilitating degraded areas.

Recommendation:

R8. Rehabilitate degraded areas, including unnecessary tracks and road verges.

Rationale

Rehabilitation of degraded areas and small goat tracks will reduce the likelihood of weed colonisation and discourage reserve users from wandering off the main limestone paths. Rehabilitation of native species will also maintain and enhance the conservation value of the area.

The Baron-Hay Court road verge has been used as an informal car park for many years and, as a result, is badly degraded and supports a large weed population. In its present condition, it is a source of weeds which threaten the conservation value of the bushland and detracts from the area's aesthetic quality.

Management Strategy

Major degraded areas, such as the wider tracks, road verges and areas of exposed sand should be rehabilitated using a brushing programme. Branches with fruiting bodies should be laid in the areas to be rehabilitated. These branches would ideally be obtained from within the reserve, where feasible. This method will stablilise the soil and provide a native seed stock for the regrowth of the plants. Direct seeding on top of the brushing for species such as Banksias, heath species and ground covers is recommended.

Goat tracks which have been blocked with logs should be planted with seedlings to discourage use of the track and to encourage regrowth of natives following the spraying of weeds.

To reduce the impact of the Baron-Hay Court road verge on the reserve, vehicles should be prevented from parking on the verge and the area rehabilitated. The preferred management approach is to move the post and rail fence closer to the road to reduce vehicle access and to rehabilitate the area with groundcover, after spraying to kill weeds.

4.5 Rubbish Removal

Both household and small amounts of industrial rubbish are strewn throughout the bushland reserve. Much of the rubbish is not biodegradable and, therefore, reduces the aesthetic value of the reserve. Rubbish is not restricted to access routes, but is littered over much of the reserve.

Objective:

To limit the extent and impact of rubbish on the reserve's environmental and cultural values.

Recommendations:

R9. Remove both household and industrial rubbish.

R10. Proper disposal of rubbish should be encouraged using signs at access points.

Rationale

Rubbish detracts from the aesthetic qualities of the bushland reserve thus reducing user enjoyment in the area. Rubbish such as plastics and larger objects (eg. carpet or tin sheeting), kills underlying vegetation and prevents regrowth. Broken glass can be dangerous and may also be responsible for starting fires.

Management Strategy

Household rubbish should be removed manually. Members of the Kensington Bushland Management Group and students from local education institutions could assist in the operation.

Industrial rubbish should be replaced by logs and rocks to provide alternative shelter for the fauna inhabiting the area.

The information signs (as described in Recommendation R3) are to include a notice encouraging proper disposal of rubbish, while rubbish bins are to be emptied regularly.

4.6 Fire Management

Fires in areas such as the bushland reserve threaten the safety of nearby residences. The intensity of a fire is dependent on fuel levels

in the area, the season of year and weather conditions. Naturally occurring fires in native woodlands are not frequent (Hopkins and Griffin, 1989) and may have varying natural effects, which may be adverse or beneficial to the different components of the ecosystem. In the presence of weeds such as veldt grass, severe fires are cumulatively detrimental.

Objective:

To reduce the fire hazard within the reserve and the risk to nearby properties whilst maintaining the reserve's conservation value.

Recommendation:

R11. No planned control burns will occur for the life of this management plan. The possibility for burning for ecological reasons will be considered in the review of this plan, in consultation with the Kensington Bushland Management Group.

Rationale

Following a fire in the presence of veldt grass, increased light penetration both vertically and laterally encourages strong regeneration of weeds from ground rhizomes. Therefore, increased root competition for moisture and nutrients occurs, reducing the regeneration of the tree canopy. Repeated fires cause progressive damage to trees, soil deterioration, reduction or elimination of poorly regenerating native species and an increase in the weed species colonisation. In addition to the weed problems, the size of the area (7.84 hectares) does not facilitate restriction of a fire to a designated area.

Management Strategy

Banksia woodlands are naturally adapted to fires occurring every 20-25 years (Hussey, pers comm). Fire is discussed as being an important management consideration for the Banksia woodlands of the Swan Coastal Plain (Hopkins and Griffen, 1989; Robley, 1983; and Wycherley, 1983). The plant communities that now make up the Banksia woodlands contain very few long-lived perennial plant species that regenerate only from seed following 100% crown scorch. The general observation that significant areas of Banksia woodlands, apparently in good condition, still exists, indicates that the present day plant communities must be tolerant of a wide range of fire regimes.

Since fires have occurred in the bushland reserve in the past, it is not a priority to burn the area for the benefit of native regrowth. A successful weed eradication programme must be carried out, in conjunction with rehabilitation through seeding, to stabilise the soil. The area should then be reassessed in 5-6 years to determine if a suitable burning programme should be implemented.

Following a controlled fire to reduce fuel loads, remove senile and diseased branches, destroy insect and fungus pests and rejuvenate sprouting shrubs, a monitoring programme must be implemented. Birds and lizards which nest on the reserve are threatened by fire and, therefore, their recovery following a burn should be monitored. Quantitative research, in which careful monitoring of plant regeneration is carried out (i.e. abundance of species and structure of assemblage), is important.

4.7 Plant Diseases

Forest diseases threaten the ecology of native plant communities throughout the Swan Coastal Plain. Infection of the bushland would severely reduce the conservation, scientific and educational values of the reserve.

Objective:

To detect the presence of forest diseases in the reserve.

Recommendation:

R12. Engage experts to test for forest diseases in the reserve.

Rationale

The reserve, consisting of predominantly Banksia woodland species, is susceptible to infection by a number of fungal forest diseases, which have the potential to devastate the area. Therefore, it is important that any pathogens present be identified.

Management Strategy

To reduce the likelihood of infection, strict hygiene procedures should be followed when undertaking routine reserve maintenance and rehabilitation activities.

If the bushland is infected, a strict quarantine programme, developed in consultation with experts, must be implemented. When providing paths for the bushland users, it is important that limestone is used as this does not harbour Phytophthora sp (Hussey, pers comm.).

4.8 Domestic Animals

Domestic dogs and cats are regular visitors to the bushland reserve, however, controlling their access is difficult. There is no doubt that, when unrestrained, their presence affects both the flora and fauna of the reserve. However, when compared with the damage caused by other activities, such as trail bikes and four-wheel drive vehicles, the impact of these animals is minimal.

Objective:

To reduce the impact of domestic animals on the reserve environment.

Recommendation:

R13. Dogs to be kept on a leash while in the reserve.

Rationale

Many of the local residents who use the reserve for recreation, exercise their dogs while in the area. This aspect of the reserve is crucial in their decision to use the bushland. If dogs are kept on a leash, damage to flora and the frightening of smaller fauna are all but eliminated. A dog exercise area is provided on Harold Rossiter Reserve where dogs can be exercised unrestrained.

Cats pose a threat to the bird population of the reserve. However, by their very nature, they are not easily controlled. Incentives for having domestic cats sterilised would help reduce the threat, as dumping of unwanted animals may not be as frequent.

Management Strategy

Signs at access points should indicate that dogs must be kept on the leash while in the reserve.

4.9 Community Involvement Programme

The involvement of educational bodies, the Kensington Bushland Management Group and the local users in the management of the bushland will promote a greater community appreciation of the values of the reserve and help foster a sense of ownership.

Objectives:

(i) To encourage the local community to become actively involved with the management of the reserve.

(ii) To inform users of the reserve's values and ways to minimise the impact of their activities on the area.

Recommendation:

R14. Use signage to advise people entering the reserve that limestone and not sand paths are to be used for access.

Rationale

The provision of limestone paths and their use by reserve visitors will reduce the disturbance of the soil which promotes the spread of weeds and reduces the regeneration of native plants.

Recommendation:

R15. The Kensington Bushland Management Group should liaise with the City of Perth to monitor the implementation of planned improvements and to report observed problems.

Rationale

Community members who are interested and concerned in the preservation of the area should continue to be involved in the ongoing maintenance of the bushland reserve.

Recommendation:

R16. Signs at access points should encourage users to become actively involved in the maintenance and monitoring of the bushland reserve.

Rationale

Local residents who use the bushland reserve more frequently will be encouraged to participate in the preservation of the native ecosystem, thus increasing community awareness of the value of the reserve.

Recommendation:

R17. Involve educational institutions in the ongoing monitoring and maintenance of the bushland reserve.

Rationale

This would provide the youth of the community with an understanding of the conservation value of remnant bushland areas and would assist in maintaining the values of the area.

Management Strategies

Signs installed at access points should provide information on the Kensington Bushland Management Group and contact telephone numbers eg. Department of Parks Gardens and Landscape, City of Perth and the Kensington Bushland Management Group.

The Kensington Special School and Kent High School have indicated an interest in the propagation of native plants and involvement in rehabilitation programmes at the reserve. Bentley TAFE (Horticulture Department) would be a willing participant in the maintenance of the area. It may be feasible to incorporate the bushland reserve in the Horticulture programme with such activities as the monitoring of native regrowth following fire or rehabilitation.

4.10 Monitoring

The need for an ongoing programme to monitor the status of the reserve and all aspects of its management cannot be over emphasised.

Objective:

To monitor the effectiveness of management strategies at the reserve.

Recommendations:

R18. Monitor rubbish disposal and the progress of rehabilitation of degraded areas.

R19. Document the regrowth of weeds following eradication programmes.

R20. Monitor the regrowth of both exotic and native plants following either a managed or wild fire.

Rationale

Ongoing monitoring of the effectiveness of management practices will enable appropriate changes to be made to future management strategies.

Management Strategies

Experienced personnel must be appointed to record the species density and diversity of regeneration following weed eradication and rehabilitation of open areas. These records should be updated regularly (twice yearly) and used as a basis for the future management of the reserve and, possibly, adjacent land such as the quarry and vacant area on the corner of George and Anketell Streets.

4.11 Formal Naming

Formal naming of the bushland reserve is an issue that has been raised by the Kensington Bushland Management Group.

Objective:

To foster a sense of ownership among the local community by the formal naming of the reserve.

Recommendation:

R21. The Kensington Bushland Management Group to recommend to the City of Perth a formal name for the bushland reserve.

Rationale

Formal naming of the area would assist in increasing community awareness of the reserve. Ultimately, this may lead to increased local pride in the conservation of the reserve.

Management Strategy

The name of the reserve should be displayed on the information signs provided at the entry points to the reserve.

4.12 Future Considerations

To ensure the bushland reserve is maintained as a viable ecological system, the future of the reserve must be considered. It may well be too small to retain as a viable ecosystem. The future uses of both the sand quarry and the adjacent vacant block were concerns raised by the Kensington Bushland Management Group and in response to the questionnaire. Increasing the size of the reserve would improve the prospects of maintaining and enhancing its natural conservation value.

Objective:

To ensure the reserve can be maintained as a viable ecological system by managing adjacent areas in a way which is sympathetic to the reserve's values.

Recommendations:

R22. Consideration should be given to extending the reserve to include the adjacent area of vacant land.

R23. The future use of the sand quarry is to take account of the values of the bushland area.

Rationale

Extension of the bushland reserve would increase the conservation value of the area. It would also assist in the preservation of the native flora and fauna. Both of these projects would add excitement to the overall maintenance of the reserve and would help to involve the community in management activities.

Management Strategy

The vacant area could be subject to a rehabilitation programme, in which seed stock, solely from the bushland reserve, is used. The regeneration would take several years and community involvement in the maintenance of the area should be encouraged.

5: PLAN IMPLEMENTATION

This Management Plan for the Kensington Bushland reserve presents a number of recommendations for the ongoing management of the area through direct measures, such as weed eradication and rehabilitation, as well as a number of indirect measures which are based on education and involvement of members of the community.

The primary responsibility for the implementation of the plan lies with the Perth City Council. However, the overall success of the management strategies will depend on the assistance and co-operation of the community.

The following table outlines the recommendations, the type of work to be carried out, either capital or administrative works; and the year of implementation.

The plan will be reviewed five years after adoption by the Perth City Council. The review will identify the extent to which the management strategies have been implemented; the success of the strategies when viewed against the overall objectives of the plan; and summarise any factors which may alter the direction of future management and review the recommendations accordingly.

RECOMMENDATION IMPLEMENTATION PRIORITIES

General Heading	Recommendation	Type	Keyword	Year
Facilities	R1	C	Paths, Seating, Bins	1-2
	R2	C	Fencing	
	R3	C	Signs-Vegetation	2
	R4	C	Signs-Species	2-3
	R5	C	Parking	3
Weeds	R6	C/L	Spraying	1
	R7	C/L	Manual Removal	2
Rehabilitation	R8	C	Degraded Areas	1-5
Rubbish	R9	C	Household/Industrial	1
	R10	C	Signs	1
Fire	R11	C	Fire Management	L
Disease	R12	C	Identification	1-2
Domestic Animals	R13	C	Dogs on Leashes	1
Community Involvement	R14	A	Local Sporting Group	1
	R15	A	KBMG - Liaison	L
	R16	C	Signs	2
	R17	A	Educational Institutions	L
Monitoring	R18	C	Rehabilitation/ Rubbish	L
	R19	C	Regrowth Documented	L
	R20	C	Past fire regrowth monitoring	
Formal Naming	R21	A/C	Name	1
Future Considerations	R22	C	Reserve Extension	1-5
	R23	C/A	Sand Quarry	1

C: Funding Required
A: Administration Works
L: Ongoing Until Management Plan Review

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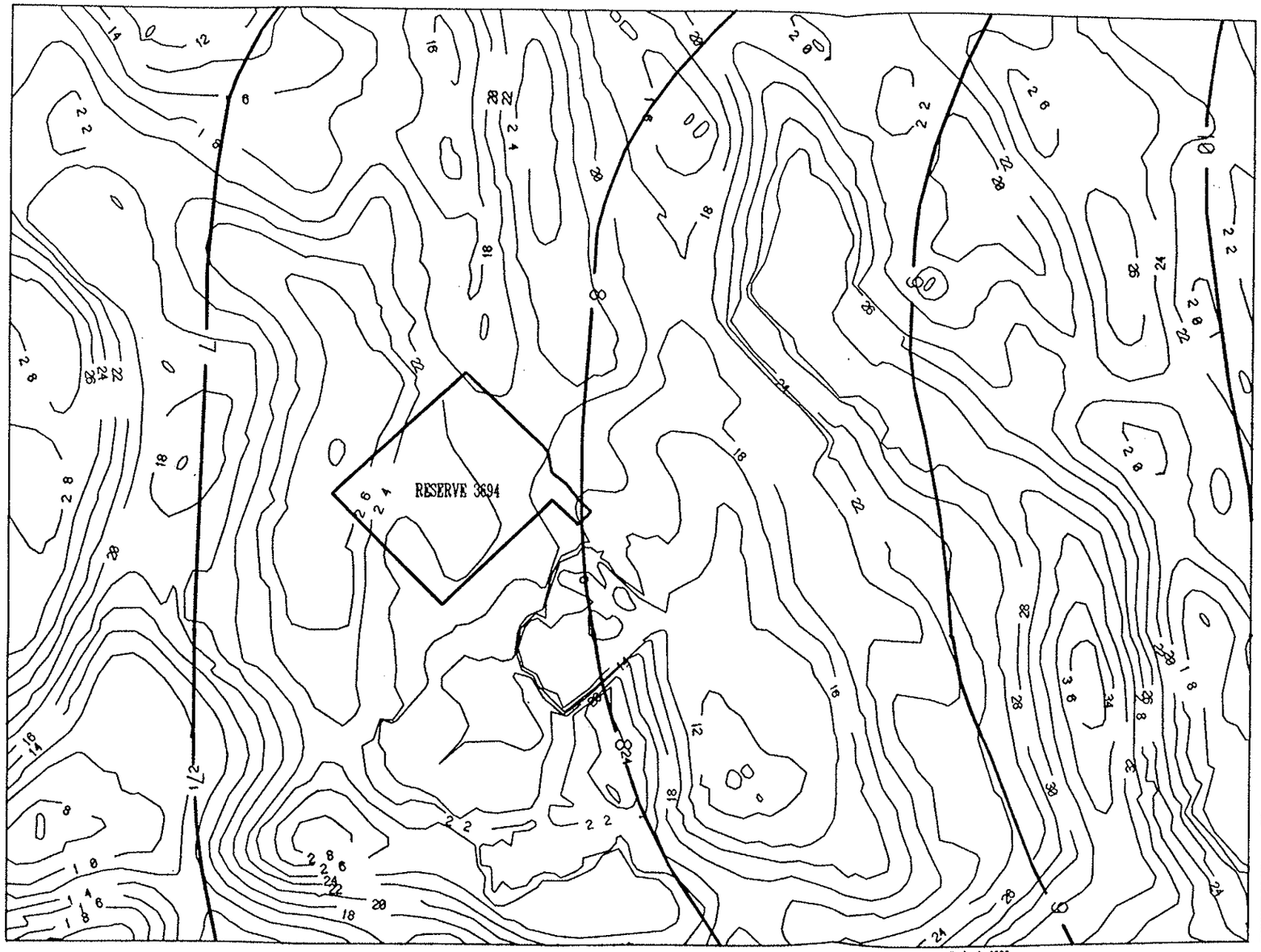
WPPGSTD/631/PC:dag
April 1993

FIGURE **2**

TOPOGRAPHY AND DEPTH TO GROUNDWATER OF THE AREA SURROUNDING RESERVE 3694



LEGEND

- Contour Line AHD
- Reserve Boundary
- Groundwater Contour Line AHD

DATA SOURCE

Surface Contour Data: Department of Lands and Surveys
Western Australia, 1993
Orthophotomap, Perth 5000
BG 34/ 06.08E
BG 34/ 06.09E

Groundwater Contour Data: Western Australian Water Authority

Compiled by Eleanor Bruce and Peta Sanderson
GIS Centre, Department of Geography, UWA
May 1992

Scale 1: 4000
0 50 100 150 200 metres

FIGURE **3**

Vegetation Map

RESERVE 3694

LEGEND

- FIRE BREAK OR DISTURBED AREA
- LOW SHRUBLAND – Dominant on an area comprising a drainage line. Common species include *Pattersonia occidentalis*, *Stirlingia latifolia*, *Allocasuarina humilis* and *Petrophile macrostachya*.
- LOW OPEN WOODLAND – Dominated by Banksia and Eucalyptus species. Common species include *Eucalyptus marginata*, *E. todtiana* and *Allocasuarina fraseriana*.
- LOW WOODLAND – Composed mainly of Banksia species. Common species include *Banksia attenuata*, *B. menziesii* and *B. ilicifolia*.

Data Source: Cranfield & Parker in press 1980–81
March 1992 Field Studies conducted by E. Bruce and P. Sanderson.

Compiled by Eleanor Bruce and Peta Sanderson
GIS Centre, Department of Geography, UWA
May 1992

ADJACENT LANDUSES

FIGURE 4

LEGEND

- Bushland Reserve
- School
- St John's Ambulance Depot
- Kensington Fire Station
- Vacant Lot
- Harold Rossiter Park
- Sand Quarry
- Police & Citizens Youth Club
- Woodland Private
- Residential
- No Data
- City of Perth Boundary

N

Scale 1: 7000

0 100 200 300 400 metres

Data Source
Cadastral Information: Land Information Systems
City of Perth

Compiled by Eleanor Bruce and Pete Sanderson
Department of Geography, UWA
May 1992

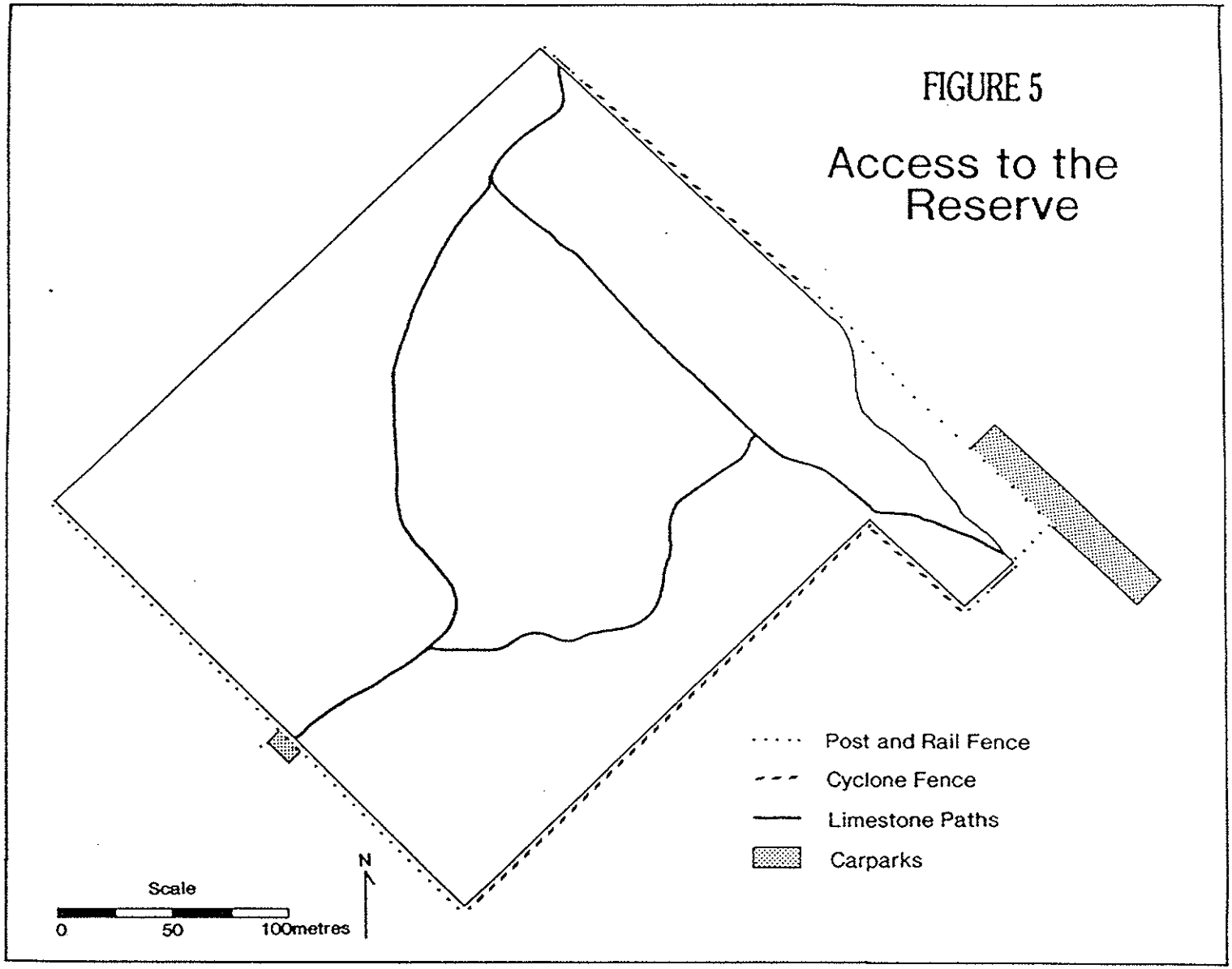


FIGURE 5
Access to the Reserve
Post and Rail Fence
Cyclone Fence
Limestone Paths
Carparks
N
Scale
0
50
100metres

Appendix 1

RESIDENT SURVEY

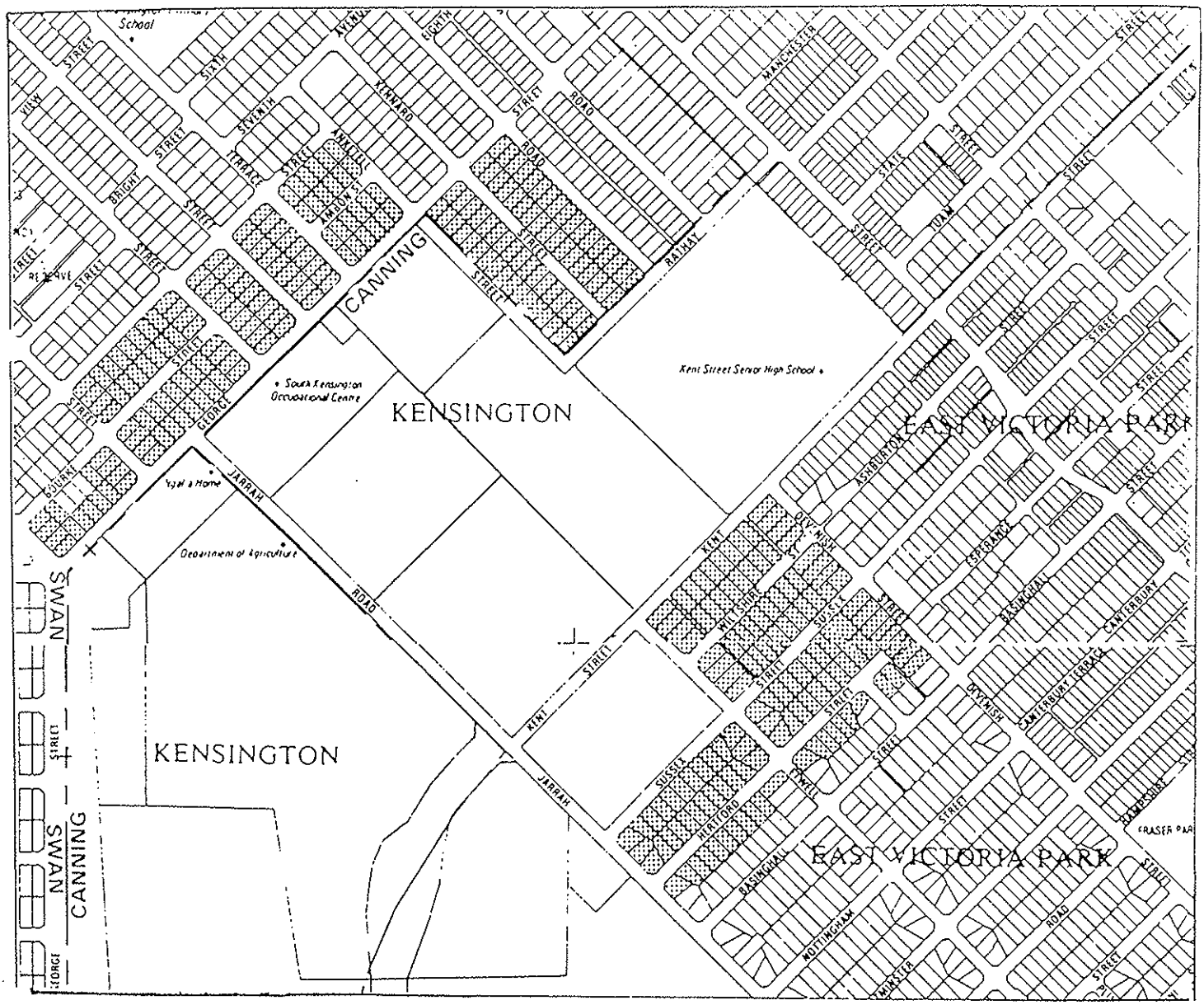
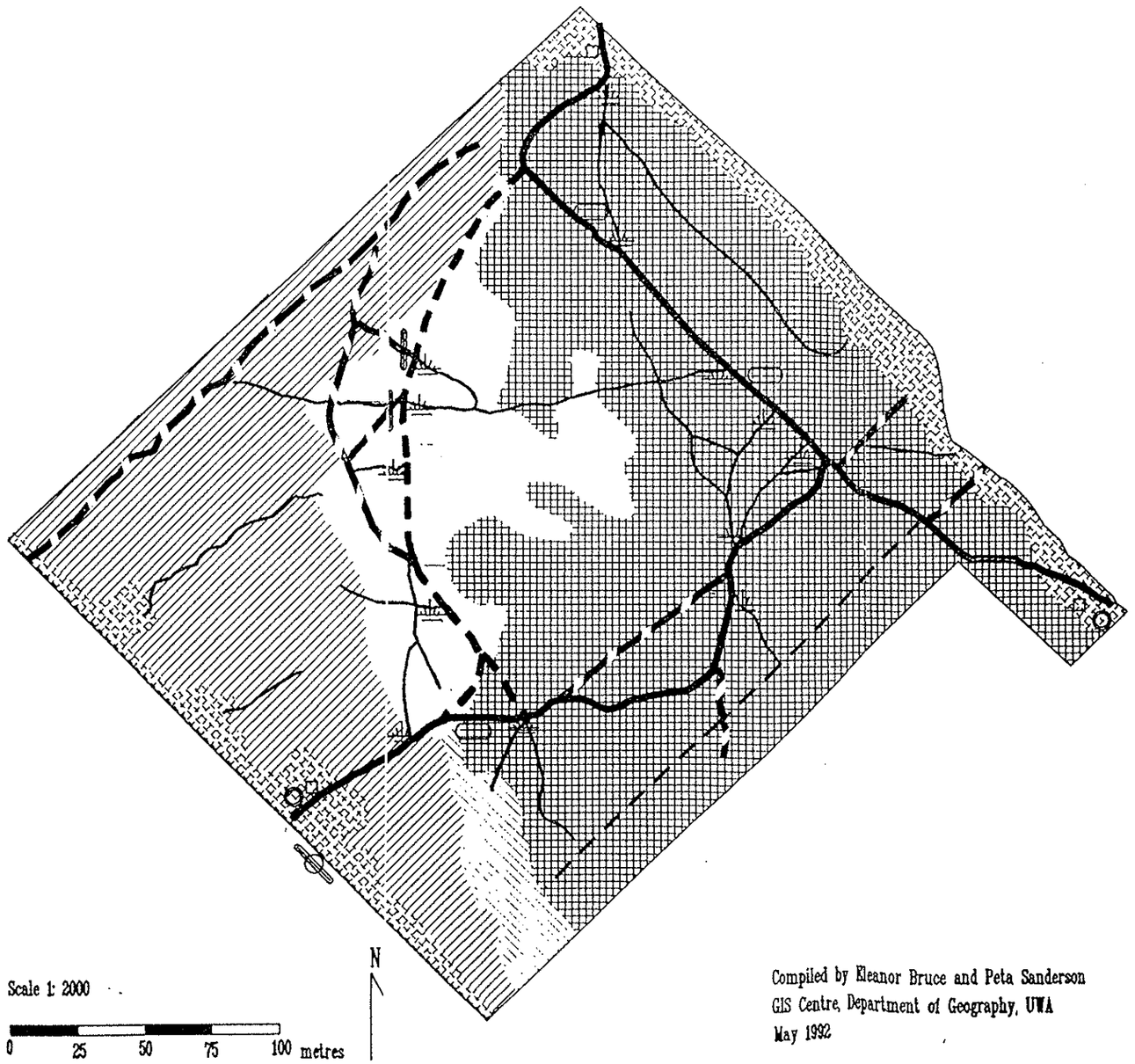


FIGURE 6

Management Recommendations



Scale 1: 2000

0 25 50 75 100 metres

N

Compiled by Eleanor Bruce and Peta Sanderson
GIS Centre, Department of Geography, UWA
May 1992

LEGEND

- Existing Limestone Path
- Proposed Limestone Path
- Major Track - rehabilitation required
- Minor Track
- Previous Fence Line - area of linear disturbance
- Site identified for planting of native vegetation to prevent the use of minor tracks.
- Location of pine log barrier required for restricting access into degraded areas.
- Nature Information Sign
- Seating
- Rubbish Bin
- Area proposed for extension of limestone to prevent disturbance from parked cars.
- FIRE BREAK OR DISTURBED AREA
- LOW SHRUBLAND - Dominant on an area comprising a drainage line.
- LOW OPEN WOODLAND - Dominated by Banksia and Eucalyptus species.
- LOW WOODLAND - Composed mainly of Banksia species.

APPENDIX 1 - RESIDENT SURVEY

7/4/91

Dear Resident,

The following questionnaire is being conducted as part of a short term project on the Baron-Hay Court bushland area. We are fulltime students studying Environmental Management at the University of Western Australia, and as part of our honours course, we are preparing a management plan for this bushland block (opposite the Agricultural Department - see attached map). The aim of the plan is to develop strategies to maintain and enhance the natural nservation value of the reserve.

We feel that community involvement is important in considering the future of this bushland block. Would you please complete this attached questionnaire this week as we will collect them on Saturday 11th April. In case you are not home when we visit, please leave the completed questionnaire in your meter box. If you have any further queries regarding either the survey or the bushland block please contact Associate Professor Arthur Conacher (project supervisor) Tel: 380 2705 during office hours.

Your participation would be appreciated, please tick the appropriate boxes.

SECTION A : Baron - Hay Court Bushland Block

1. a.) Do you use the bushland block even occasionally?

Yes No

b.) If yes, how often do you use the reserve ?

Daily Weekly Fortnightly

Monthly Seasonally Very occasionally

2. While on the bushland block do you

Walk Jog Cycle

Other - please specify

3. a.) Do you have children who use the bushland block?

Yes No

b.) If you have children who visit the area, what do they do while on the bushland block?

4. If you exercise your dog or dogs on the bushland block,

a.) do you keep them on a leash? Yes No

b.) would you support an effort to:

i.) keep dogs from frightening native animals by keeping them on a leash? Yes No

ii.) place their excreta in provided bins?

Yes No

5. What do you like or enjoy about the bushland block?

Provides a natural setting

Good for children

Allows for the preservation of native plants and animals

Relaxing to visit

Offers peace and quiet in the urban area

Other - please specify

6. a.) What do you not like about the bushland block?

b.) What problems have you observed on the bushland block?

Presence of weeds

Dumped rubbish

Potential fire hazards

Trail bike activity

Presence of many unnecessary tracks

Domestic animals

Others (please specify)

7. If you have never visited the bushland block, is it because
   you did not know of its existence
   you did not want to visit
   you are happy using other recreational facilities
   other - please specify

8. a.) What other nearby areas do you use for recreation purposes?

   .) What do you do in these areas?

9. What would you like to see improved about the bushland block?

SECTION B : Adjacent Land Areas

1. a.) Do you believe that the quarry which lies to the east of the bushland block is having an adverse effect on the native bushland area? Yes No

   b.) If yes, in what way?

   c.) Do you have any suggestions as to how these problems can be overcome?

2. a.) In your opinion is the vacant lot on the corner of Anketell St. and George St. having any impact on the native bushland block? Yes No

b.) If yes, in what way?

c.) Have you any suggestions on how to minimise the impact of this vacant lot on the bushland?

Thank you for completing this survey. If you have any further comments you would like to make on either the bushland block or the adjacent areas please do so below.

APPENDIX 2 - RESULTS OF RESIDENT SURVEY

USE OF THE BUSHLAND RESERVE:

Question	Response	Count
Q 1. a)	yes	47
	no	44
Q 1. b)	daily	11
	weekly	8
	fortnightly	2
	monthly	5
	seasonally	7
	very occasionally	15
Q 2.	walk	43
	cycle	6
	jog	3
	other: kick football	1
	admire wildflowers	4
Q 3. a)	yes	21
	no	33
Q 3. b)	appreciate wildlife and flora	5
	play	3
	exercise dog	2
	jog	2
	walk	2
	climb trees	1
	bushwalk	1
	play in bushes	1
	kick football	1
Q 4. a)	yes	19
	no	12

Q 4. b) i)	yes	30
	no	11
Q 4. b) i)	yes	22
	no	10
Q 5.	provides a natural setting	53
	good for children	22
	preservation of native plants & animals	42
	relaxing to visit	33
	offers peace and quiet in the urban area	45
	other: soft sand track for jogging	1
	doesn't use large amounts of water	1
	good for exercising the dog	1
	it exists	1
	a country area	1
Q 6. a)	sand quarry	3
	rubbish	3
	too many limestone paths	1
	child safety	1
	derelicts	1
	four wheel drive vehicles	1
	not large enough	1
	the area harbours rats and feral cats	1
	degraded and damaged	1
	disappearance of wildflowers	1
	weeds	1
	no seating	1
	dogs not on leash	1
Q 6. b)	presence of weeds	16
	dumped rubbish	37
	potential fire hazards	7
	trail bike activity	21
	presence of many unnecessary tracks	12
	domestic animals	7
	others: use of vegetation for fire wood	3

	4WD access and usage	2
	use of archery equipment	1
	no police patrolling	1
	tracks too wide	1
	no respect for existence	1
	picking of wildflowers	1
	destruction of flora by cyclists	1
	barbed wire fence	1
Q 7.	did not know of its existence	11
	did not want to visit	7
	happy using other recreational facilities	8
	other: not aware access permitted	3
	new to area	2
	no reason to visit	1
	no time	1
	old age prevents exercise	1
	too far away	1
	safety concerns	1
	use Mofflyn bush area	1
Q 8. a)	Harold Rossiter Reserve	22
	nearby parks	15
	South Perth Foreshore	11
	Kent St Oval	8
	Morris Mundy reserve	5
	cycle tracks	5
	streets	3
	swimming pool	1
	tennis courts	1
	children's play equipment	1
	vacant lot	1
	Victoria Park Recreation Centre	1
	Mofflyn Bush	1
	backyard	1
	Curtin University	1
	PCYC	1

Q 8. b)	walk	25
	walk dogs	17
	run / jog	11
	cycle	9
	play with children on equipment	6
	play ball sports (netball, cricket, football)	4
	throw frisbee / boomerang	3
	feed and watch birds	2
	meditate	1
	mow the lawn	1
	collect pine cones	1
	fishing	1
	relax	1
	enjoy bushland	1
	swim	1
	play tennis	1
	have BBQ's	1

Q 9.	tracks / paths	9
	rehabilitate flora / fauna	8
	prevent rubbish dumping	6
	seating	5
	clear weeds	5
	play areas / equipment	2
	increase size (include vacant lot and quarry)	2
	plant more trees	1
	improve safety	1
	improve accessibility	1
	picnic areas / BBQ's	1
	levelled for ball sports areas	1
	housing	1
	nursing / retirement home	1
	administrative buildings	1
	provide bins	1
	police complex	1
	reduce number tracks	1
	"don't pick wildflowers" signs	1
	"take rubbish home" signs	1

	provide dog faeces disposal	1
	police the area	1
	maintain the bushland	1
	ban dogs	1
	ban trail bikes	1
	eradicate domestic cats	1
	educational information	1
	fencing	1

ADJACENT LAND AREAS:

Question	Response	Count
Q 1. a)	yes	28
	no	27
Q 1. b)	eyesore	8
	blowing sand / erosion	7
	size of area is increasing	5
	noise pollution / unwanted trucks	4
	danger of the steep quarry faces	2
	removal of native vegetation	2
	rubbish dumping	2
	sterile	2
	discourages natives	1
	inaccessible	1
	weeds	1
	lowering water table	1
	no plant regeneration	1
Q 1. c)	rehabilitation by natives	8
	fill the quarry	6
	stop quarrying	6
	rehabilitate with trees	1
	clean up the area	1
	build a high-technology building	1
	recontour	1
	create amphitheatre	1

	nothing	1
Q 2. a)	yes	10
	no	41
Q 2. b)	weeds spreading	4
	vacant for too long	3
	access to bushland block	2
	police station	1
	swimming pool	1
	basketball stadium	1
	space for bird movement	1
	degraded and neglected	1
	better than other alternatives	1
Q 2. c)	rehabilitate with native / trees	13
	topdress and maintain	3
	limit entry to bushland to walkways only	2
	children's play equipment	2
	swimming pool	2
	volunteer weeding	1
	housing	1
	recreational oval	1
	retirement village	1
	shopping centre	1
	police station	1
	seating	1
	keep off road vehicles out	1

20

APPENDIX 3

SPECIES LIST

FLORA

N.B. * denotes exotic species

FAMILY	SPECIES
ANTHERIACEAE	1 Arnocrinum preissii
	2 Chamaescilla corymbosa
	3 Corynotheca micrantha
	4 Johnsonia pubescens
	5 Laximannia squarrosa
	6 Sowerbaea laxiflora
	7 Thysanotus manglesianus
	8 T. sparteus
	9 Tricoryne elatior
APIACEAE	10 Trachymene pilosa
	1 Xanthosia huegelii
ASTERACEAE	2 Angiozanthos humilis
	Arctotheca calendula*
	4 Brachycome bellidioides
	Conyza bonariensis*
	C. sp.*
	Cynodon dactylon*
	Hedypnois rhagadioloides*
	Hellanthus sp.*
	5 Helipterum cotula
	Hypochaeris glabra*
	6 Lagenifera huegelii
	7 Olearia paucidentata
	Osteospermum clandestinum*
	8 Podotheca angustifolia
	9 P. chrysantha
	Senecio vulgaris*
	20 Siloxerus humifusus
	Sonchus oleraceus*
	Ursinia anthemoides*
	1 Waitzia suaveolens
BRASSICACEAE	Brassica tournefortii*
	2 Heliophila pusilla
	Raphanus raphanistrum*

FAMILY	SPECIES
CAMPANULACEAE	Wahlenbergia capensis*
	W. gracilenta
CARYOPHYLLACEAE	Petrorhagia velutina*
	Silene gallica*
CASUARINACEAE	Allocasuarina fraseriana
	A. humilis
COLCHICACEAE	Burchardia umbellata
CRASSULACEAE	Crassula glomerata
CYPERACEAE	Isolepis marginata
	Lepidosperma angustatum
	Mesomelaena pseudostygia
	Schoenus curvifolius
	S. latitans
DASYPOGONACEAE	Calectasia cyanea
	Dasypogon bromeliifolius
	Lomandra caepitosa
	L. hermaphrodita
	L. nigricans
	L. preissii
	L. suaveolens
DILLENIACEAE	Hibbertia huegelii
	H. hypericoides
	H. racemosa
DROSERACEAE	Drosera huegelii
	D. macrantha
	D. menziesii
	D. stolonifera
EPACRIDACEAE	Astroloma pallidum
	Conostephium pendulum
	C. preissii
	Leucopogon conostephioides
	L. parviflorus
	Lysinema ciliatum
	Styphelia tenuifolia
EUPHORBIACEAE	Euphorbia peplus
	E. terracina*
	Monotaxis grandiflora
	Poranthera microphylla
	Stachystemon vermicularis

FAMILY	SPECIES
FUMARIACEAE	Fumaria capreolata*
GERANIACEAE	Erodium botrys*
	Pelargonium capitatum*
GOODENIACEAE	8 Dampiera linearis
	9 Scaevola canescens
	60 S. paludosa
HAEMODORACEAE	1 Conostylis aculeata
	2 C. ssp. aculeata
	3 C. aurea
	4 C. juncea
	5 C. setigera
	6 Haemodorum spicatum
	7 Phlebocarya ciliata
IRDACEAE	Babiana stricta*
	Freesia leichtlinii*
	Gladiolus caryophyllaceus*
	8 Patersonia occidentalis
	Romulea rosea*
	Sparaxis grandiflora*
	Watsonia meriana*
	W. pyramidata*
LAMIACEAE	9 Hemiandra pungens
	Stachys arvensis*
LAURACEAE	70 Cassytha racemosa
LOBELIACEAE	1 Lobelia tenuior
LORANTHACEAE	2 Nuytsia floribunda
MELIACEAE	3 Eriostemon spicatus
MIMOSACEAE	4 Acacia huegelii
	5 A. pulchella
	6 A. sphacelata
	7 A. stenoptera
	8 A. willdenowiana
MOLLUGINACEAE	9 Macarthuria australis

FAMILY	SPECIES
MYRTACEAE	80 Calothamnus sanguineus
	1 Calytrix angulata
	2 C. flavescens
	3 C. fraseri
	Chamelaucium uncinatum*
	4 Eremaea pauciflora
	5 Eucalyptus todtiana
	6 E. marginata
	7 Hypocalymma robustum
	8 Leptospermum spinescens
	9 Melaleuca scabra
	10 Scholtzia involucrata
	1 Verticordia densiflora
NYCTAGINACEAE	1 Mirabilis jalapa*
ORCHIDACEAE	2 Caladenia discoidea
	3 C. flava
	4 C. huegelii
	5 C. longicauda
	6 Pterostylis vittata
	7 Thelymitra nuda
OROBANCHACEAE	8 Orobanche minor
OXALIDACEAE	Oxalis pes-caprae*
PAPILLIONACEAE	9 Bossiaea eriocarpa
	100 Daviesia divaricata
	1 D. nudiflora
	2 D. triflora
	3 Gompholobium tomentosum
	4 Hardenbergia comptoniana
	5 Hovea trisperma
	6 Isotropis cuneifolia
	7 Jacksonia furceolata
	8 J. lehmannii
	9 J. stembergiana
	110 Kennedia prostrata
	Lupinus spl*
	L. sp2*
	Medicago polymorpha*
	1 Oxylobium capitatum
	Trifolium angustifolium*
	T. arvense*
	T. campestre*
	T. tomentosum*
PHORMIACEAE	2 Dianella revoluta

FAMILY	SPECIES
PITTOSPORACEAE	3 Pronaya fraseri
	4 Sollya heterophylla
POACEAE	Aira caryophyllea*
	Avena barbata*
	Briza maxima*
	B. minor*
	Bromus diandrus*
	B. rubens*
	Digitaria sanguinalis
	Ehrharta calycina*
	E. longiflora*
	Eragrostis curvula*
	Hordeum leporinum*
	Hyparrhenia hirta*
	Lagurus ovatus*
	Lolium perenne*
	5 Neurachne alopecuroidea
	Pentaschistis airoides*
	Poa annua*
	6 Stipa mollis
	Vulpia bromoides*
POLYGALACEAE	7 Comesperma calymega
PORTULACEAE	8 Calandrinia corrigioloides
	9 C. granulifera
PRIMULACEAE	Anagallis arvensis*
PROTEACEAE	120 Adenanthos cygnorum
	1 Banksia attenuata
	2 B. ilicifolia
	3 B. menziesii
	4 Persoonia sulcata
	5 Petrophile macrostachya
	6 P. linearis
	7 Stirlingia latifolia
	8 Synaphea spinulosa
RESTIONACEAE	9 Alexgeorgea arenicola
	130 Lepidobolus preissianus
	1 Loxocarya flexuosa
	2 Lyginia barbata
SANTALACEAE	3 Leptomeria cunninghamii
SAPINDACEAE	4 Dodonaea hackettiana
SOLANACEAE	Solanum nigrum*

FAMILY		SPECIES
STACKHOUSIACEAE	5	Triptercoccus brunonis
STYLIDIACEAE	6	Levenhookia stipitata
	7	Stylidium brunonianum
	8	S. calcaratum
	9	S. carnosum
	140	S. piliferum
	1	S. repens
	2	S. schoenoides
THYMELAEACEAE	3	Pimelea sulphurea
VALERIANACEAE		Centranthus macrosiphon*
VIOLACEAE	4	Hybanthus calycinus
XANTHORRHOEACEAE	5	Xanthorrhoea brunonis
ZAMIACEAE	6	Macrozamia riedlei
ZYGOPHYLLACEAE		Tribulus terrestris*

After Cranfield and Parker (1990)

146 native taxa

206
146
60 weed taxa.

APPENDIX 4

SPECIES LIST

VERTEBRATE FAUNA

N.B. * denotes exotic species

AMPHIBIANS	
	Limnodynastes dorsalis
REPTILES	
Agamidae	
	Pogona minor
Gekkonidae	
	Dipludacylus alboguttatus
	Phyllodactylus marmoratus
Pypopodidae	
	Lialis burtonis
	Pletholax gracilis
Scincidae	
	Cryptoblepharus plagiocephalus
	Ctenotus fallens
	C. lesueurii
	Hemiergis quadrilineata
	Lerista elegans
	Menetia greyii
	Tiliqua rugosa
MAMMALS	
	Mus musculus*
ARACHNIDS	
	Wolf spiders
	Trapdoor spiders
MYRIOPODA	
	Centipedes
	Millipedes

APPENDIX 5

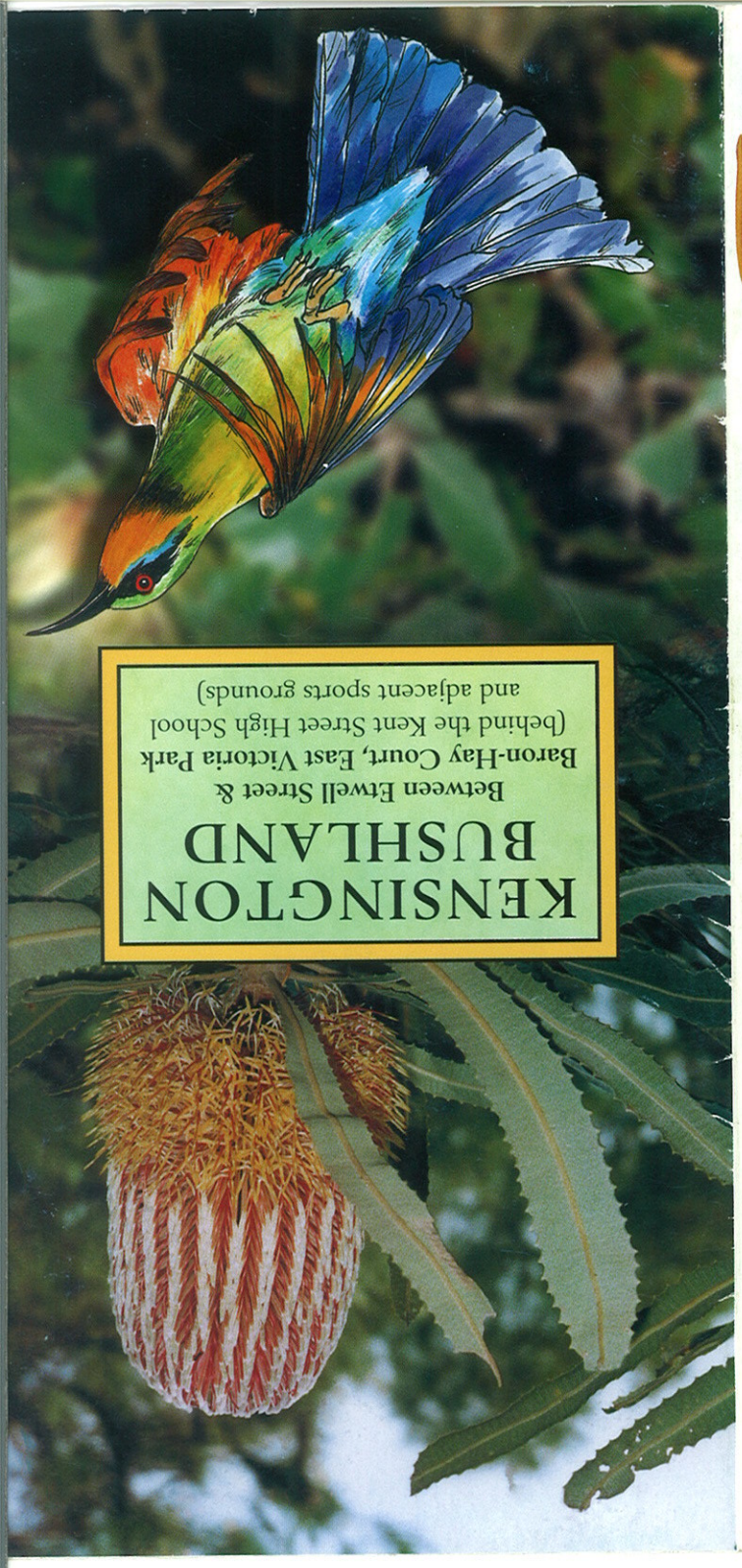
SPECIES OF FLORA RECOMMENDED FOR INDENTIFICATION BY SIGNS

Family	Species Name	Common Name
Casuarinaceae	Allocasuarina fraseriana	Common Sheoak
	A. humilis	Dwarf Sheoak
Mimosaceae	Acacia sp	
Loranthaceae	Nuytsia floribuda	WA Christmas Tree
Myrtaceae	Eucalyptus todtiana	Prickly Bark
	E. marginata	Jarrah
Proteaceae	Banksia attenuata	Slender Banksia
	B. ilicifolia	Hollyleaf Banksia
	B. menziesii	Firewood Banksia
	Petrophile macrostachya	Conebush
Xanthorrhoeaceae	Xanthorrhoea brunonis	Blackboy
Zamiaceae	Macrozamia riedlei	Zamia

INSECTS
Bettles
Carabs
Teneb
Weevils

Crickets/Grasshoppers
Bees/Ants/Wasps
Earwigs
Cockroaches
Praying mantis

from Turpin (1990



KENSINGTON BUSHLAND

Between Etwell Street & Baron-Hay Court, East Victoria Park
(behind the Kent Street High School and adjacent sports grounds)

INTRODUCTION

Kensington Bushland is an area of Jarrah-Banksia Woodland of approximately 9 hectares, with access from Etwell Street and Baron-Hay Court (formerly Jarrah Road). It is abutted by the Kensington Sandpit (now closed to sand extraction), Kensington Police & Citizens Youth Club, playing fields and other sites such as the Kensington Secondary School.

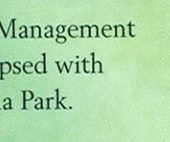
It is a "Bush Forever" site, managed by the Town of Victoria Park for conservation, passive recreation and education. It acts as a 'living laboratory' for studies by scientists, schools and amateur groups.

HISTORY

Indigenous people are sure to have used this area, which contains the Firewood Banksia *(Banksia menzeisii)*, the Pearl Flowers for making necklaces and water tubers of the Greenhood Orchids an acknowledged "bush tucker". It is also thought that early European settlers used the bushland as a source of timber.

As sections of this once large bushland area were excised for schools and other purposes, the remaining bushland was reduced to its present size.

The City of Perth Kensington Bushland Management Group was established in 1991, which lapsed with the establishment of the Town of Victoria Park.



LANDSCAPE

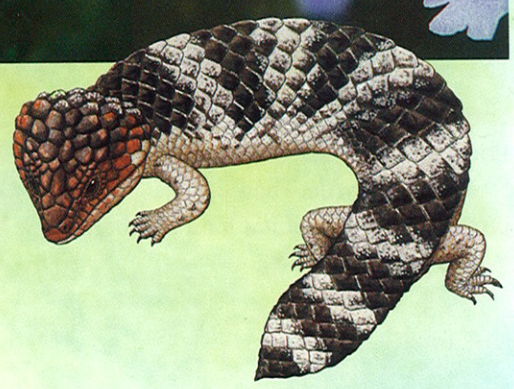
The Kensington Bushland is a relatively level area of Bassendean Sand. Main vegetation types include Jarrah *(Eucalyptus marginata)*, Sheoak *(Allocasuarina sp.)*, Woollybush *(Adenanthos cygnorum)*, and three types of Banksia which provide nectar for pollinating birds (e.g. Red Wattlebird). Vegetation of the large open areas includes small shrubs such as Swan River Myrtle *(Hypocalymma robustum)* and Yellow Buttercups *(Hibbertia hypericoides)*.

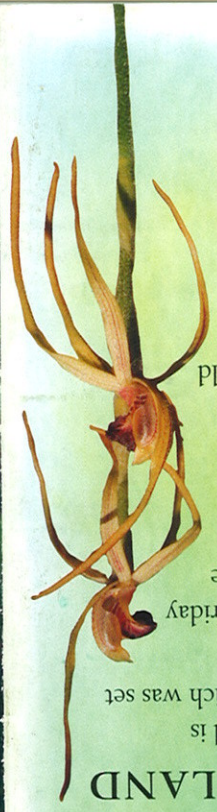
The Bushland is also home to many smaller flowers, 19 different orchid species, including spider varieties, Greenhoods and Sun Orchids.

For the most part, the bushland is in good to excellent condition, warranting its ongoing care, protection and preservation for current and future generations.

The present Friends group was formed in 1999, followed by the Town of Victoria Park Environmental Liaison Advisory Group (ELAG) in 2001 – both currently active (2003).

Significant conservation activities have included fencing of some paths to deter the use of damaging 'goat tracks', establishment of an attractive entry area, weeding programmes and local species plantings.





FRIENDS OF KENSINGTON BUSHLAND

The Friends group was begun in 1999 and is represented on the ELAG committee which was set up by the Town of Victoria Park in 2001.

The Friends group meets on the second Friday of each month at the Victoria Park Centre for the Arts at 12 Kent Street, East Victoria Park. For further details contact the Friends Group Co-ordinator, Gwynth Schlipalius, on 9361 8674.

The Friends of Kensington Bushland would like to thank the Town of Victoria Park for the funding required to produce & publish this brochure.

TOWN OF VICTORIA PARK

HOW YOU CAN HELP

The Friends of Kensington Bushland group and the Town of Victoria Park Environmental Liaison Advisory Group (ELAG) are both very active in promoting the successful management of the Bushland.

Local residents and users of the reserve can help preserve the area's heritage by:

- attending ELAG meetings
- joining the Friends group activities – weeding, walks, childrens activities
- observing and learning about the bushland
- keeping to the designated paths
- reporting misuse or vandalism
- keeping dogs on leads
- reporting fire immediately (dial 000)

MANAGING THE BUSHLAND

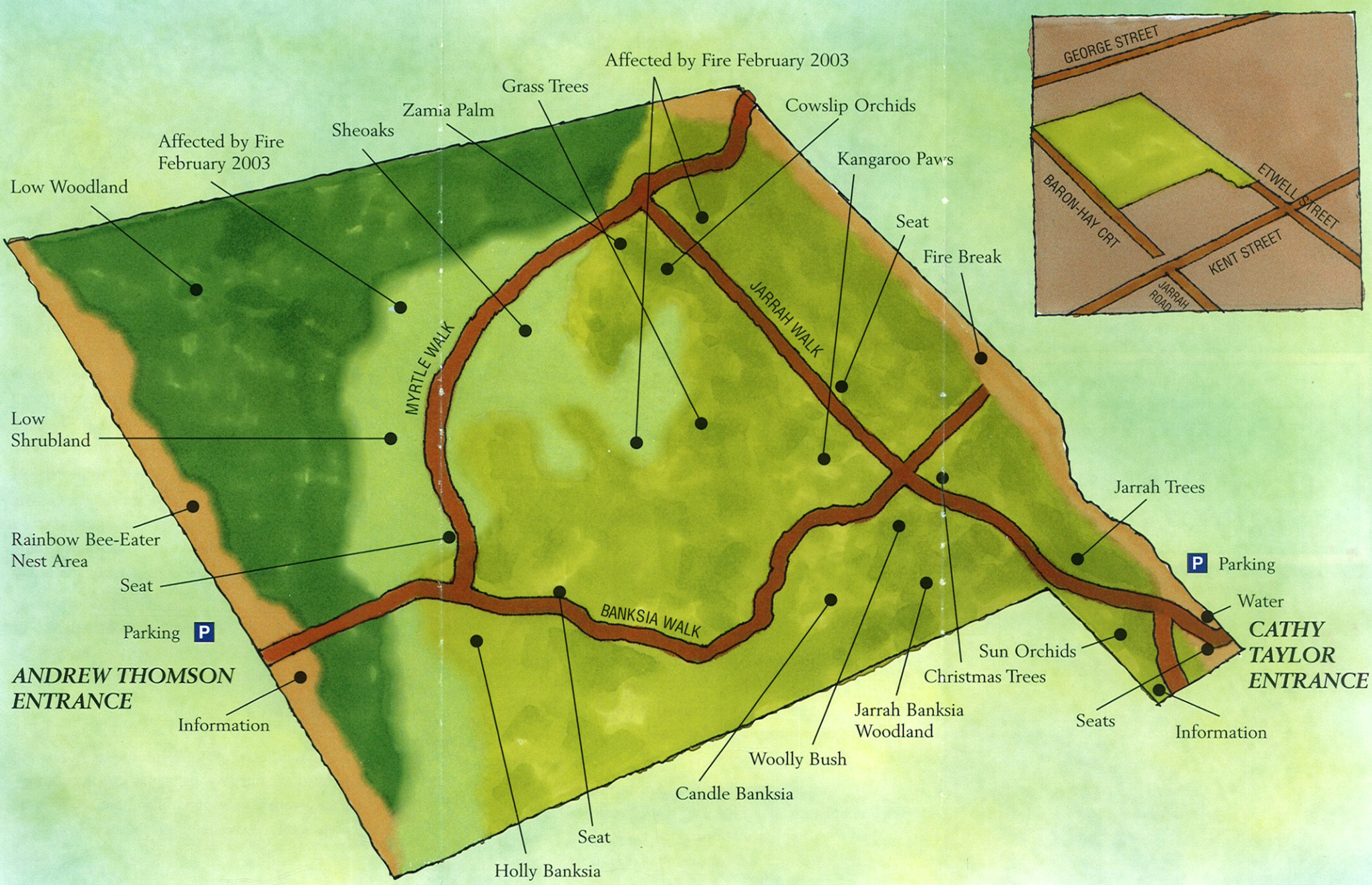
The 2003 Management Plan incorporates all areas of remnant vegetation within the Town of Victoria Park, of which the Kensington Bushland is the largest and most significant component.

The plan addresses issues such as

- weed control
- rehabilitation of degraded areas
- fencing
- fire management
- access

A fire in February 2003 severely burned a large area of bushland. This had a significant effect on the reptiles, insects and birds which inhabit this area, as well as the vegetation.

Fencing of the central area was undertaken to prevent damage to regenerating plants and new seedlings. The fire also stimulated the growth of many weeds, including the bright pink Gladioli *(Gladiolus caryophyllaceus)* which will need to be controlled to prevent further damage to the fire affected area. Observations since the fire show that a number of native vegetation species are now re-establishing themselves.



VEGETATION

Kensington Bushland is a typical Jarrah-Banksia woodland. The major tree species are *Eucalyptus marginata*, *Eucalyptus todtiana*, *Banksia menzeisii*, *Banksia attenuata* and *Banksia ilicifolia*. There is also a beautiful stand of *Nuytsia floribunda* and scattered *Allocasuarina fraseriana*.

Nineteen species of orchids grow here, many discovered by members of the Friends group. These include a number of Spider Orchids, Cowslip and Donkey Orchids, Bee Orchids, Greenhoods and Blue Sun Orchids, which are common.

Spring brings displays of Prickly Moses, Native Irises and Swan River Myrtle. These provide food and habitat for a number of insect and bird species.

WILDLIFE

Wattle Birds, Butcher Birds, Magpie larks and several species of honeyeater are commonly seen enjoying the thickets of Woollybush and trees.

Dugites have been seen, as well as Blue Tongue and other Skinks, Little Dragon Lizards, the Small Spotted Gecko and the rare Slender Legless Lizard which inhabit this special place.

A very beautiful bird is the migrating Rainbow Bee-Eater, which nests in the walls of the nearby sandpit and also the sandy tracks of the Kensington Bushland. These have been observed removing the stings from bees before consuming them. Overhead, hovering birds of prey such as the Black Shouldered Kite and the Brown Goshawk may be seen looking for food.

Black Cockatoos, including the Carnaby's Cockatoo (Declared Threatened Fauna) enjoy removing the Banksia flowers to eat beetle larvae. From time to time, Black Faced Cuckoo Shrikes can be observed completely taking over a tree.

IMPORTANCE

There is no other remnant vegetation area of this size available to 'near city' inhabitants. It offers an escape from suburban life – entering a tranquil bushland setting free from the noise of traffic and other sounds of suburbia. Children delight in the discovery of a natural wonderland, with potential for new discoveries around every corner.

EVENTS

In addition to planting and weeding days, the Friends of Kensington Bushland also conduct special guided bushwalks in spring and early summer, where knowledgeable people are on hand to help identify many of the species on display.

From time to time, other events such as an indigenous discovery walk and special interest group activities take place.

Particular events for children are the special "kids only" activities, also undertaken in spring.

For further information on walks and other planned activities, please contact the Friends of Kensington Bushland Co-ordinator on 9361 8674.

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Subm 212 Kensington Bushland (Bassendean S)

Cranfield + Parker, The West Australian Naturalist, Vol 19 No 1, March 30, 1992

FLOWERING CALENDAR FOR RESERVE No. 3694 IN METROPOLITAN PERTH

By R.J. CRANFIELD and C.M. PARKER
Western Australian Herbarium, Department of Conservation and Land Management, P.O. Box 104, Como, Western Australia 6162

ABSTRACT

A species list of vascular plants has been compiled for a 6-hectare area of remnant bushland in inner metropolitan Perth. Flowering periods of native and alien species have been recorded over a two year period with brief notes on vegetation and physical features, the correlation between flowering and rainfall, and the conservation value of the reserve are provided.

INTRODUCTION

During 1980-1981 a monthly survey was made of all vascular plant species (i.e. flowering plants and gymnosperms) conducted on Reserve No. 3694, a vacant

Figure 1: Aerial photograph of Western Australian Department of Agriculture complex and Reserve No. 3694.

block adjacent to the Department of Agriculture, Baron-Hay Court (formerly Jarrah Road) Kensington (Figure 1). Records were made of those species flowering so that a comprehensive flowering calendar could be developed (Table 1).

METHOD

A survey of the reserve was conducted to establish a species list and a route that could be used to ensure a consistent sampling of the flora present. This route was based on existing tracks and fire breaks with transects through portions of the reserve not covered by the established tracks. A monthly record of the observed flowering species was compiled over a two year period with any new species being added as they were located. These recordings were all conducted within the second week of each month to establish a consistent time of observation. A voucher specimen of each species was collected and housed in the Western Australian Herbarium.

DISCUSSION

The reserve covers 6 hectares of remnant *Banksia* woodland which is relatively undisturbed despite its lack of management and its inner metropolitan location. The soils of the area are composed mainly of grey humic Bassendean sands overlying deep yellow sand with some development of deep limestone.

Three basic vegetation types are represented (Figure 2). These are Low *Banksia* Woodland, Low *Banksia/Eucalyptus* Woodland, Low Shrubland.

The Low *Banksia/Eucalyptus* Woodland contains two species of *Eucalyptus* and *Allocasuarina fraseriana*, in addition to *Banksia* species, and it is associated with Low Shrubland in the north and north east of the reserve. The Low Shrubland area may indicate the presence of a dampland (Semeniuk 1987).

A marked correlation between the number of species flowering each month (Figure 3) and monthly rainfall for the two years (Figure 4) was observed. This apparent relationship between species richness and the availability of moisture is expressed as the spring flush. This flush occurs at a time of warming temperatures and plentiful moisture enabling a large percentage of species to flower and utilise these resources. The rainfall was delayed in 1981: Figure 3 shows the resultant flush occurring later than that observed in 1980. During 1980-1981 the temperature regime was consistent (Figure 4). Although temperature has an effect on the flowering time, it appears the availability of moisture dictates the duration of flowering and level of species richness. As can be noted from Table 1 the number of species flowering during the warmer months is reduced.

The data presented shows that over the two years not all of the recorded species flower annually and that others can flower monthly. Some of the species were not recorded flowering at all during the two year survey, notably *Eucalyptus todtiana* and *Macrozamia riedlei.* Table 2 provides a breakdown of the number of native and naturalised (weedy) species flowering each month over the two years, enabling us to see a variation in the number of flowering species during this time.

Table 3, showing a selection of major families on the reserve and their ratio of

MARK ARMSTRONG
Contract Supervisor P & G.
ph 311 8146

SYSTEM 6 BUSHLAND SUBMISSION FORM
FOR CONSIDERATION IN THE UPDATE PROGRAMME

If you wish to submit more than one area for consideration in the System 6 update, please use a separate form for each area.

Please fill in each section giving as much information as possible.

LOCATION, OWNERSHIP AND ZONING OF THE AREA

1. Location

Please give as accurate and detailed a description as possible of the site location
Please include either a hand drawn or copied map showing the area of the area

a) Bordering Roads: BARON-HAY CRT

b) Nearest Corner: KENT ST

c) Lot Number: RESERVE 3694 Street Number: .....

d) Town/Suburb/Location: VICTORIA PARK

e) Local Council: TOWN OF VICTORIA PARK

f) Site Name (if any): KENSINGTON BUSHLAND RESERVE

g) Approximate size of the area (ha): .....

h) Please locate the area on a map and give us map references if possible:

.....

i) Map: 289 Streetsmart (UBD) Other: .....

j) Map no.: .....

k) Grid Ref: E 12

l) Please give any other information that may help us to find the location:
OPPOSITE AGRICULTURAL PROTECTION BOARD

m) Are you aware of any development proposals that are likely to affect the area?
NIL

.....

NOTE: Areas that have already been given development APPROVAL should not be nominated

Please fill out those questions that you can answer

2. Who owns the area? (If owned by the person/s making the nomination please indicate) ....THE KENSINGTON BUSHLAND RESERVE IS PART OF THE MUNICIPAL ENDOWMENT LANDS OF VICTORIA PARK WHICH WERE VESTED IN THE MUNICIPALITY ON 1 JULY 1992 FOR 999 YEARS.

3. If you own the area, and may be interested in participating in conservation on private land initiatives please indicate (and leave your name and address at the end of this submission form) .....

4 .What is the area zoned? (please indicate whether zoning is Town Planning Scheme or Metropolitan Region Scheme) .....PARKS + RECREATION.....

CAN YOU TELL US A LITTLE ABOUT THE PHYSICAL CHARACTERISTICS OF THE AREA

5. Why do you consider this area important? (Refer to Guiding Issues paper) .....REMNANT BANKSIA WOODLANDS.....

.....

6. What is/are the soil type/s and colours ? THE LOCATION BORDERS BOTH THE BASSENDEAN + KARRAKATTA DUNE SYSTEMS

Type: Sand/Clay/Gravel/Loam/Silt
Colour: White/Grey/Brown/Orange/Yellow/Red/Black

7. Does the area have any special features such as unusual landforms / landscapes that still retain their natural vegetation? Yes/No

If yes, what are they? .....BANKSIA WOODLAND + ALLIED PLANTS ASSOCIATED IN SUCH A PLANT COMMUNITY.....

.....

8. Is the area a wetland or does it include a wetland? .....NO.....

If yes, what kind of a wetlands is it?

a) lake

b) river

c) stream

d) swamp

e) estuary

f) seasonally wet

g) other

9. What percentage of the wetland is open water in summer? .....N/A.....

CAN YOU TELL US A LITTLE ABOUT THE VEGETATION /FAUNA ON THE NOMINATED AREA.

10. What percentage of the area is indigenous vegetation? .....MAJORITY.....

11. If the area includes regions cleared of native bushland please indicate reasons for the inclusion. .....

.....

12. Has any previous flora or fauna survey work been done on the area?
.....YES.....

If yes, please give details of the work ...FLORA OF THE BUSHLAND WAS STUDIED IN DETAIL BY THE WESTERN AUSTRALIAN HERBARIUM IN 1980/81..... (CRANFIELD + PARKER IN PRESS.) A 1990 STUDY BY TURPIN (1991) DOCUMENTED THE VERTEBRATE + SELECTED LARGER INVERTEBRATE FAUNA.

13. How would you rate the condition of the native bushland? (see attached table)

a) pristine
b) excellent
c) very good
d) good
e) degraded
f) completely degraded
g) don't know

14. Please indicate the disturbances affecting the area and where appropriate the percentage of the area disturbed.

a) Partial clearing
b) fragmentation
c) Selective removal of species: timber cutting, wildflower picking, mowing dieback and other plant diseases
d) Fire regime, including intensity, season and frequency
e) 'Enrichment plantings' that is plantings of species not found in that community
f) Weed invasion
g) Animal impact: horses, foxes, rabbits, cats, dogs, camels, goats etc
h) Soil movement, both removal and dumping
i) Changes in water regimes; flooding, drainage and watering
j) Salinity
k) Fertiliser drift and along waterways nutrient influx
l) Mining, including that for road works

m) Grazing: stock, overgrazing by feral or native mammals

n) Proliferation of tracks, fire breaks and walk trails

o) Off-road vehicle use

p) Use as service corridors by the SEC, Main Roads, Water Authority.

(Source: B Keighery. Bushland Plant Survey, September 1994)

15. Does the area contain any plant species of special interest that you know of? (eg. declared rare flora, priority taxa, outlier populations) .....YES.....

Do you know what they are? .....THE LOW OPEN WOODLAND IN THE NORTH + NORTH-EAST SECTION OF THE RESERVE CONTAINS EUCALYPTUS marginata & EUCALYPTUS todtiana.

16. Do you know of any native animals that use the area? ..TWELVE REPTILE SPECIES HAVE BEEN IDENTIFIED, TWO OF WHICH ARE OF CONSERVATION IMPORTANCE - DIPLODACTYLES albogutlatus NOT PREVIOUSLY RECORDED SOUTH OF THE SWAN RIVER & PLETHOLAX gracilis, RARELY RECORDED
Can you list those you know of? (birds, mammals, reptiles, amphibians etc)
.....REFER TO KENSINGTON BUSHLAND MANAGEMENT PLAN ENCLOSED.....

17. Is the area used by any native animals of special interest? (eg. endangered species, large/important populations).....AS ABOVE.....

If yes, please name them and indicate source of information

.....

.....REFER SECTION 12.....

CAN YOU TELL US A LITTLE ABOUT THE SURROUNDING AREA

18. Are there any bushland areas (including wetlands) near to this area?
.....PRIVATE WOODLAND.....

If yes, how close are they ? .....REFER FIGURE 4 SHOWING ADJACENT LANDUSES IN KENSINGTON BUSHLAND MANAGEMENT PLAN.....

.....

Are they already conservation reserves? ....REFER FIGURE 4 OF MANAGEMENT PLAN.....

What is their approximate size? .....

19. Does the submitted area link other bushland areas? .....AS ABOVE.....

.....

.....

Please attach any additional information about the area which may be of use when assessing it.

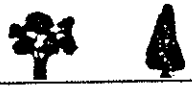
BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

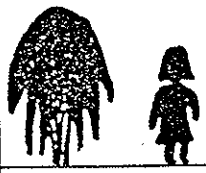
From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6009.

3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below).and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES			MALLEES	
	over 30m	15 - 30m	5 - 15m under 5m	over 8m	under 8m
LIFE FORM			Low Forest A 		30m 10m 
COVER CLASS (%)			30-70		
DOMINANT SPECIES			E. marginata B. menz.		

	SHRUBS				SHRUBS
	over 2m	2m - 1.5m	1.5 - 1m	1 -0.5m	under 0.5m
LIFE FORM					Low Heath D 2m 1m 
COVER CLASS (%)					30→70
DOMINANT SPECIES					Leuc. conostech Hibb hyp.

	GRASSES	HERBS	SEDGES over 0.5m	under 0.5m
LIFE FORM		Open Herbs 		Open Low Sedge 1m 
COVER CLASS (%)		10-30.		10-30
DOMINANT SPECIES		Pat occ		Mesomel. pseudo.

4. VEGETATION CONDITION

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

COMMENTS

abt of tracks, dogs running freely,
*Ursinia x Hyp x Briza in herbaceous
annual layer 2-10%
Pile dumped soil (Oxalis, Anag, Cotula, Clover)

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA KENSINGTON BUSHLAND SITE NUMBER KENS 01

DATE TRIP 20-9-95 RECORDERS BJK NET SAE

DATE TRIP _____ RECORDERS _____

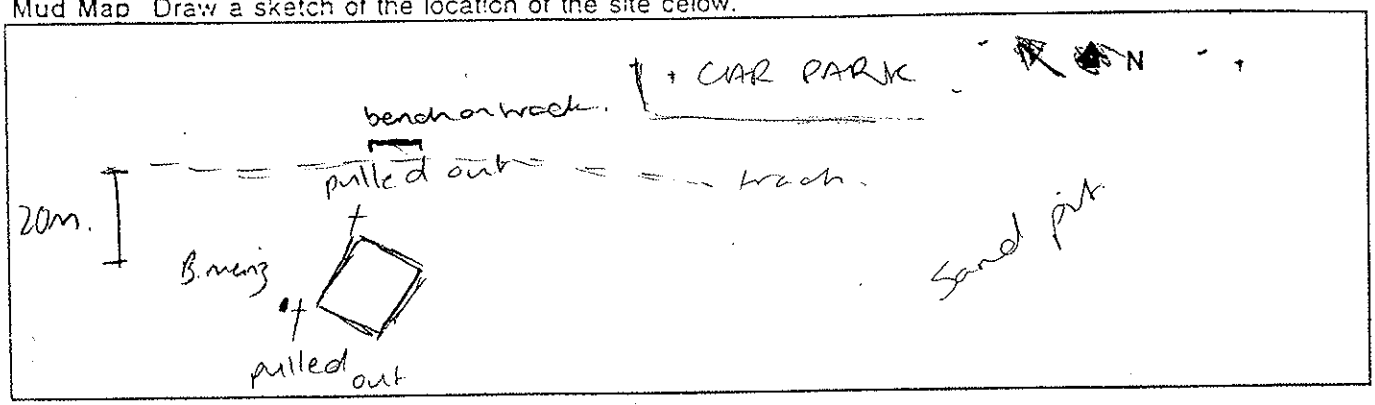
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 34 Nedlands WA 6008.

1. LOCATION of the QUADRAT

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



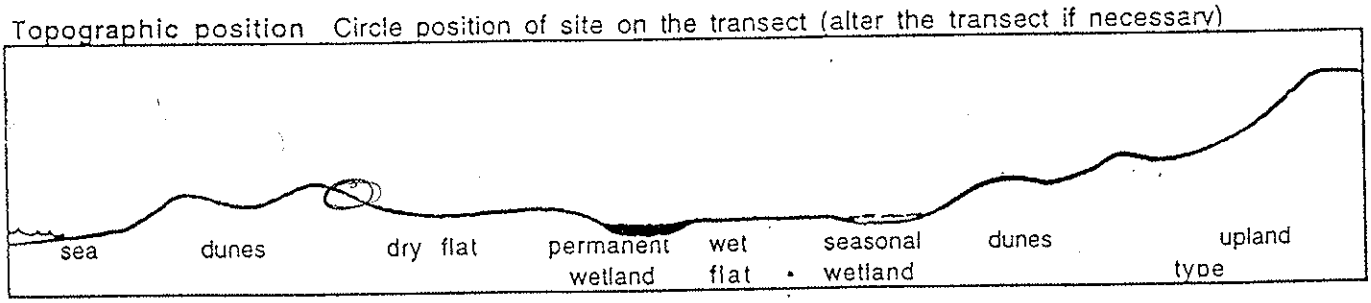
Road Location

Geographic Location Latitude 31°59'28.1" S Longitude 115° 53' 24.5" E Altitude

Reference Map

Photograph Photographer's Name SAE Photo No 11

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 sand *Colour* grey

Exposed rock *type* % surface

Sub-surface Soil sand *Colour* yellow

Rock *type* depth to rock

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

Litter	70+	% cover	*Bare Ground*	<2	%cover
Depth	1	cm			

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No	KENS Ø1
Date	20/9/95

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
Euc. marg.			
Bank. menz.			
~~MALLEES~~ ADJ			
Petrophile macrostachya			
~~Conostylis~~ Synaphaea spinulosa			
SHRUBS			
Allocas humilis			
Eremaea pauciflora			
Leucop. conosteph.			
Scholt. invol (pros)			
Hibb. hyp.			
Stirling lat.			
Calectasia cyanea			
Hemiandra pungens			
Calytrix ? angulata (sterile)			
Hypocalymma ciliatum			
Hovea trisperma var tri			
Bossiaea eriocarpa			
Daviesia triflora			
Conosteph. pendulum			
Gomph. tomentosum			
Eriostem. spicatus			
Hibb. hueg.			
Daviesia nudiflora			
Stylid. schoenoides			
Pimelea sulph.			

SHRUBS (cont.)	No	Fl	ID
Acacia sessilis			
Acacia stenoptera			
Petrophile linearis			
Scaevola repens			
GRASSES			
Amphipog. turbinatus			
* Briza ~~major~~ maxima			
* Aira caryophyllaea			
? Stipa compressa			
* Ehrharta calycina			
HERBS			
* Ursinia anthem.			
Stylid calc.			
Patersonia occidentalis			
* Glad cary.			
Lom herm.			
* Hypochaeris glabra			
Dampiera linearis			
Johnsonia pubescens			
Drosera * menz ssp. pen (pink)			
* Heliophila pusilla			
Tricoryne tenella			
Trachymene pilosa			
Stylid repens			

HERBS (cont.)	No	Fl	ID
Conostylis setigera			
Pat			
Thysanotus patersonii			
Burchardia congesta			
Conostylis juncea			
Pterostylis vittata			
* Oxalis pes-caprae			
* Trifolium dubium / yel. med			
Dasypogon bromeliifolius			
* Anagallis arvensis			
Isotropis cuneifolia			
* Cotula (lawn daisy) turb.			
* ~~Hyp~~ Sonchus oleraceus			
SEDGES			
Meso. pseudostygia			
Schoenus clandest.			
~~Isolepis drum~~			
Centrolepis drummondii			
Alex. nitens			
Isolepis marg.			
Loxocarya flexuosa			
Lepid. squamata			
Lepid. w. ~~terete~~			
Herbs			
Lomandra caespitosa			
Lomandra preissii			
Drosera paleacea			
Conostylis aculeata			
Wahlenb. preissii			

DEP SYSTEM 6 UPDATE SUBMISSION SURVEY SHEET B.J. KEIGHERY 9/95

BUSHLAND AREA KENSINGTON BUSHLAND SITES (YES) NO

DATE 20/9/95 RECORDERS BJK, NT, SE

Observations edge transects

Geographic Location	Latitude	S Longitude	E
Reference Map			

Photograph	Photographer's Name	NT	Photo No

Transect of landscape units

dunes
dry/wet flats
sumplands
uplands
type

See Moffly 2 Bushland

Soil			Colour
Exposed rock	type		% area

VEGETATION

Eucalypts	*E. calophylla*	*E. wandoo*	(*E. marginata*)	(*E. todtiana*)	*E. rudis*	
	E. decipiens	*E. drummondii*	*E. haematoxylon*	*E. lanepoolei*	*E. gomphocephala*	
	E. accedens	*E. patens*	*E. laeliae*	*E. megacarpa*		
Sheoaks	(*Allocasuarina fraserana*)		*Casuarina obesa*			
Banksia	(*B. attenuata*)	(*B. menziesii*)	*B. prionotes*	(*B. illicifolia*)	*B. grandis*	*B. littoralis*
Melaleuca	*M. preissii*	*M. raphiophylla*	*M. lanceolata*	*M. cuticularis*		
Others	*Callitris preissii.*					
Mallees	Eucalypts	*E. argutifolia*	*E. petrensis*	*E. decurva*	*E. foecunda*	*E. latens*

See site and vege map in Management Plan.

Variation in canopy cover from 0 → 70%

apparently some canopy clearance

Vegetation Condition - Keighery 1994 (Trudgen 1993)
1 = 'Pristine' (Excellent)
2 = Excellent (Very Good)
3 = Very Good (Good)
4 = Good (Poor)) particularly on track edges
5 = Degraded (Very Poor)
6 = Completely Degraded

partial clearing						
weeds *Briza maxima *Clod cary *Ehrh calycina (not common in bushland more on edges) Watsonia						
selective removal of species		timber cutting	mowing	% dieback		
fire frequency patches ? deliberate						
'enrichment plantings'						
animal impact	horse	foxes	rabbits	cats	(dogs)	goats	pigs	overgrazing by native mammals
soil movement	mining	(dumping soil)	rubbish dumping	roadworks		
changes in water regimes		flooding	drainage	watering	nutrient influx	
				not planned trails random in bushland.		
Tracks	fire breaks	(walk trails)	(off road vehicle use)	animal tracks		
Service corridors	SEC	Main Roads	Water Authority.	Telecom		
Other Adjacent sand mine						

5258 WA 3169(C) METRO REGIONAL AREA & EXT. RUN 11 (5233-5311) 1:20000 15-DEC-92 920676