ACOURT ROAD BUSHLAND, BANJUP

Boundary Definition: protected area/bushland taken to cadastre and zoning boundary (Areas of bushland within the boundaries of the Site have been recently cleared. The boundary has been drawn to include cleared bushland.)

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 389
Area (ha): bushland 295.2
Map no. 59, 60
Map sheet series ref. no. 2033–I NE
Other Names: Part Submission Area 13
Local Authorities (Suburb): City of Canning (Canning Vale), City of Cockburn (Banjup, Jandakot)

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Bassendean Dunes
Bassendean Sands (Qpb: S8)

Bassendean Dunes/Pinjarra Plain
Bassendean Sands over Guildford Formation (Qpb/Qpa: S10)

Wetlands (within the Bassendean Dunes)
Holocene Swamp Deposits (Qrw: Sp1, Sp2)

VEGETATION AND FLORA

Vegetation Complexes

Bassendean Dunes
Bassendean Complex — Central and South

Floristic Community Types: *not sampled, types inferred

Supergroup 2: Seasonal Wetlands
*5 Mixed shrub damplands
*11 Wet forests and woodlands
*12 *Melaleuca teretifolia* and/or *Astartea* aff. *fascicularis* shrublands

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
*21c Low-lying *Banksia attenuata* woodlands or shrublands
*22 *Banksia ilicifolia* woodlands
*23a Central *Banksia attenuata* — *B. menziesii* woodlands

WETLANDS

Wetland Types: dampland

Natural Wetland Groups

Bassendean—Pinjarra transition OR Bassendean with fluvial features
Bennett Brook (B/P.4)

Bassendean Dunes
Jandakot (B.3)

Wetland Management Objectives: Conservation (124.3ha), Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (part Site — Trudgen 1990); detailed survey (part Site — Clarke *et al.* 2000, Goble-Garratt 1994)

Structural Units: mapping (part Site — Clarke *et al.* 2000, Goble-Garratt 1994); general mapping (Trudgen 1990)

Uplands: *Banksia attenuata*, *B. menziesii* and *B. ilicifolia* Low Woodland; *Banksia attenuata* and *B. menziesii* Low Woodland; *Eucalyptus marginata*, *Allocasuarina fraseriana*, *Banksia attenuata*, *B. menziesii* and *B. ilicifolia* Woodland, Low Open Forest dominated by combinations of *Eucalyptus marginata*, *Allocasuarina fraseriana*, *Banksia attenuata*, *B. menziesii* and *Eucalyptus todtiana*; *Acacia pulchella* and *Calytrix fraseri* Low Shrubland

Wetlands: *Eucalyptus rudis* Open Forest; *Eucalyptus rudis* and *Melaleuca preissiana* Woodland; *Melaleuca rhaphiophylla* and *Kunzea glabrescens* Tall Open Scrub; *Melaleuca teretifolia* Shrubland to Very Open Shrubland; *Pericalymma ellipticum* Open Heath; *Regelia ciliata* and *Melaleuca lateritia* Shrubland; *Pericalymma ellipticum*, *Regelia ciliata* and *Calothamnus lateralis* Closed Low Heath; *Hypocalymma angustifolium* Low Shrubland; mixed Open Low Heath and Open Shrubland; *Lyginia imberbis* Closed Sedgeland; *Lyginia imberbis* and *Hypolaena exsulca* Sedgeland

Vegetation Condition: >80% Excellent to Very Good, <20% Good to Completely Degraded (part Site — Clarke *et al.* 2000, Goble-Garratt 1994, Trudgen 1990)

Total Flora: 197 native taxa (part Site — Clarke *et al.* 2000, Goble-Garratt 1994) (estimated >75% expected flora)

Significant Flora: *Tripterococcus paniculatus* ms (1); Clarke *et al.* 2000 — *Byblis lindleyana* (2), *Anthotium junciforme* (4); *Astroloma xerophyllum, Hensmania turbinata, Stylidium utricularioides*; Keighery, GJ pers. comm. — *Aristida contorta, Dysphania glomulifera* subsp. *glomulifera, Gonocarpus paniculatus, Melaleuca teretifolia* x *M. lateritia*

Fauna: limited survey for native mammals (2 species) (Wood & Grieve 1994). Significant species: Quenda

Linkage: adjacent bushland to the north, south (Site 390), east (Site 472, across road) and west (Site 388); part of Greenway 92 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)

Other Special Attributes: majority included in Jandakot Botanic Park Proposal (MfP 1995)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation

Recommendation: Part A: Site with Some Existing Protection; the care, control and management of this Site for conservation purposes within Jandakot Regional Park is endorsed. Part B: Other Government Land Mechanism. Part C: Basic Raw Materials Negotiated Planning Solution (see Table 3, Volume 1).

ACOURT ROAD BUSHLAND, BANJUP

Boundary Definition: protected area/bushland 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. 389 **Map no.** 68

Map sheet series ref. no. 2033–I NE

Other Names
Part Submission Area 13

Area (ha): total 305.9; bushland 295.2

Local Authorities (Suburb)
City of Canning (Canning Vale), City of Cockburn (Banjup, Jandakot)

Zoning
MRS: Rural, Parks and Recreation
TPS: Local Road, R.O.W., P.A.W., Rural, Special Rural

Ownership Categories
Private (commercial organisation), State Government

Lot/Location/Reserve numbers (Purpose), Street name
125, 130, 437 Fraser Rd; 5 Acourt Rd; 600, 707 street not identified
Crown Reserve

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Bassendean Dunes
Bassendean Sands (Qpb: S8)

Bassendean Dunes/Pinjarra Plain Bassendean Sands over Guildford Formation (Qpb/Qpa:S10)

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Holocene Swamp Deposits (Qrw: Sp1, Sp2)

VEGETATION AND FLORA

Vegetation Complexes

Bassendean Dunes
Bassendean Complex — Central and South

Floristic Community Types: *not sampled, type inferred

Supergroup 2: Seasonal Wetlands
*5 Mixed shrub damplands

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
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WETLANDS

Wetland Types: dampland

Natural Wetland Groups

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Bennett Brook (B/P.4)

Bassendean Dunes
Jandakot (B.3)

Wetland Management Objectives: Conservation (124.3ha), Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, vegetated uplands

Vegetation and Flora: detailed survey (part Bushplan Site — Goble-Garratt 1993); limited survey (part Bushplan Site — Trudgen 1990)

Structural Units: mapping (part Bushplan Site — Goble-Garratt 1993, Trudgen 1990)
Uplands: *Banksia attenuata, B. menziesii* and *B. ilicifolia* Low Woodland; *Banksia attenuata* and *B. menziesii* Low Woodland; *Eucalyptus marginata, Allocasuarina fraseriana, Banksia attenuata, B. menziesii* and *B. ilicifolia* Woodland
Wetlands: *Eucalyptus rudis* and *Melaleuca preissiana* Woodland; mixed Open Low Heath; *Melaleuca teretifolia* Shrubland; *Pericalymma ellipticum* Open Heath; *Regelia ciliata* and *Melaleuca lateritia* Shrubland; *Melaleuca rhaphiophylla* and *Kunzea ericifolia* Tall Open Scrub

Vegetation Condition: >80% Excellent to Very Good, <20% Good to Completely Degraded (part Bushplan Site — Goble-Garratt 1993, Trudgen 1990)

Total Flora: 117 native taxa (part Bushplan Site — Goble-Garratt 1993) (estimated >50% expected flora)

Significant Flora: *Tripterococcus paniculatus* ms (1)

Fauna: limited survey by Wood and Grieve (1994) for native mammals (2). Significant species: Quenda
Linkage: adjacent bushland to the north, south (BS390), east (BS472, across road) and west (BS388); part of proposed Greenway 105 (Tingay, Alan & Associates 1997a); part of a regionally significant fragmented bushland/wetland linkage (Volume 2A, Map 8)
Other Special Attributes: majority included in Jandakot Botanic Park Proposal (MfP 1995)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

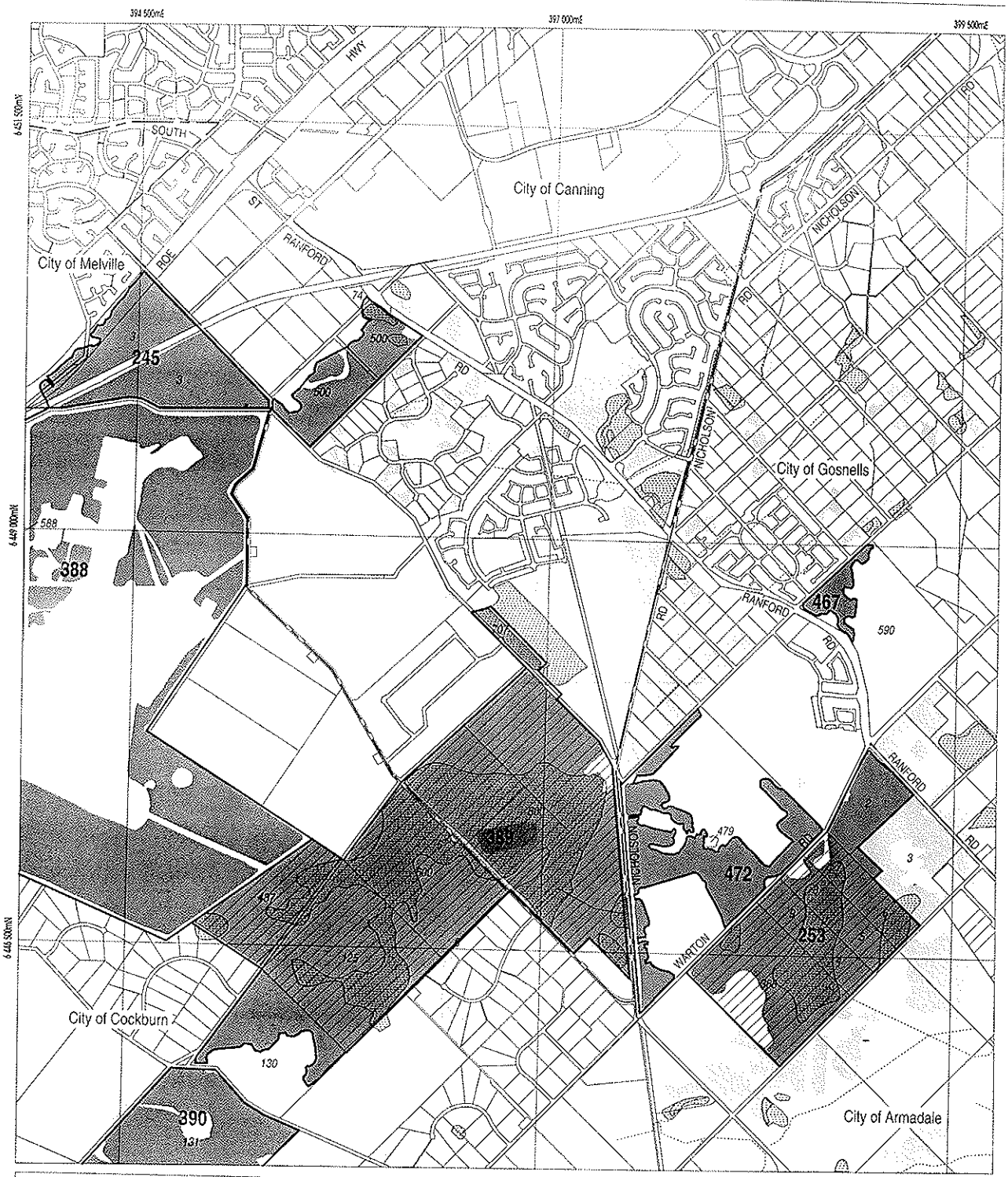
Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation

Opportunities and/or Constraints

Opportunities: Bushplan Site/part Bushplan Site subject to Swan and Canning Rivers EPP; location of conservation category wetland; under MRS Parks and Recreation Reservation, Crown Reserve

Constraints: private land; under General and Priority Mineral Resource Area (sand), mining tenement (NLG Sand Supplies) for sand

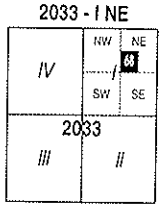
Recommendation: The care, control and management of this Bushplan Site for conservation purposes within Beeliar Regional Park is endorsed.



LEGEND

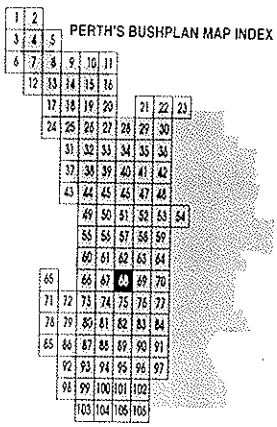
- 472 — Bushplan Sites With Regionally Significant Bushland
- Other Native Vegetation
- Conservation Category Wetlands
- Bushplan Sites With Some Existing Protection
- 696 — Lot Number, Location Number
- Channel Wetlands
- Local Government Boundary

2033 - I NE



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

PERTH'S BUSHPLAN MAP INDEX



N

SCALE

0 500 1000

Metres

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

ntw-map18//environ/bushplan//bushv2map2.dgn

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

Wetlands Data supplied by Water and Rivers Commission

Native Vegetation Extent for Study Area supplied by Agriculture Western Australia

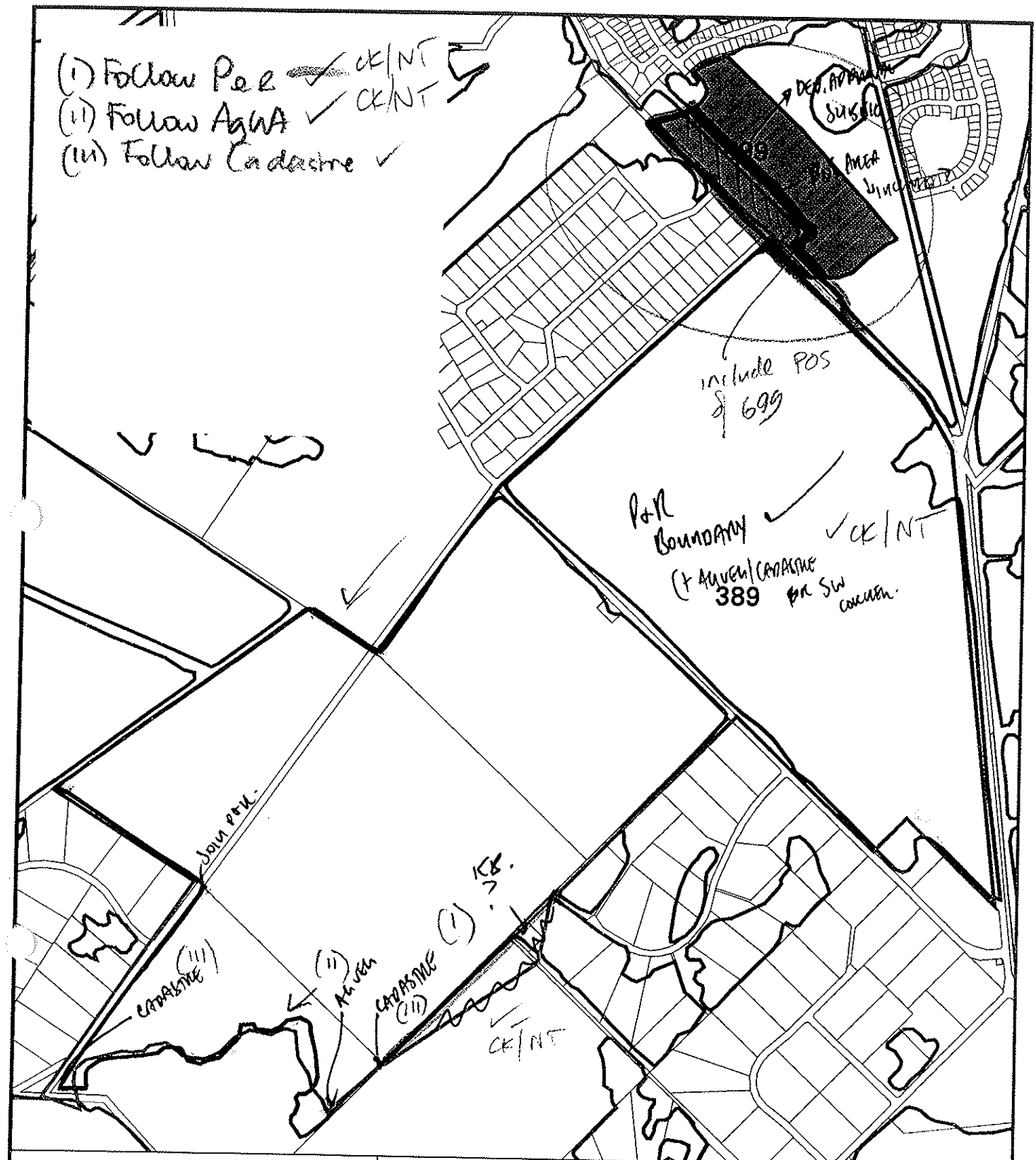
Bushplan Site Map

BUSHPLAN SITES CORRECTED

WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS WESTERN AUSTRALIA

N



bp site 389

MFP INTERNAL USE ONLY	
Prepared By: Andrea Zappacosta	
Prepared For:	
Map Ident: plot980604_1	
Date: 04 Jun 98	
Scale 1:15141	

- AG VEG 1998 BOUNDARY THEME
- Cadastre
- Bushplan sites refno 1-500 SCP BOUNDARY THEME
- cons category wetlands
- Verified CCWs

(1) POS of Kow 699 to be included
29/9/98

for Herrisdale Swamps to photo

K

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 ACOURT RD. BUSHLAND/WETLAND

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: Acourt/Fraser/Clifton/Nicholson Rds.

b) Nearest Corner: .....

c) Lot Number: 122/123 + 403 ACOURT RD. Street Number: .....

d) Town/Suburb/Location: Camming Vale

e) Local Council: City of Camming

f) Site Name (if any): Known as Acourt Rd. Bushland.

g) Approximate size of the area (ha): 92 ha.

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

See EPA, Bulletin 745 for map + other details

i) Map: ..... Streetsmart /UBD/Other: .....

j) Map no.: .....

k) Grid Ref: .....

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

.....

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

.....

.....

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) ..... Private .....

.....

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)
Significant part of Jandakot Botanic Park
Identified by MPR/DEP SPC, Private consultants
as very important -

6. What is/are the soil type/s and colours ? .....

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? .....

.....

.....

8. Is the area a wetland or does it include a wetland? .....

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? .....

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

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

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. Bowman Bushaid Gordon unpublished Report (Trudgen), see MFP/PEP studies
If yes, please give details of the work .....

.....

.....

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) .....

Do you know what they are? .....

.....

16. Do you know of any native animals that use the area? .....

Can you list those you know of? (birds, mammals, reptiles, amphibians etc)

.....

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

If yes, please name them and indicate source of information

.....

.....

CAN YOU TELL US A LITTLE ABOUT THE SURROUNDING AREA

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

If yes, how close are they ? .....

.....

.....

Are they already conservation reserves? .....

What is their approximate size? .....

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

.....

.....

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

WETLANDS CONSERVATION SOCIETY (INC)

c/- 14 Stone Court, Kardinya, WA 6163

(6) a to t

35 389

16 July 1995

The System Six Study Team
Department of Environmental Protection
141 St George's Terrace
Perth WA 6000

Dear Sir,

System Six Review

The Wetlands Conservation Society wishes to make a submission to the System Six Review. This submission is in two parts. Firstly some comments on the general principles and secondly some specific nominations.

(1) General Principles

The original System Six Red Book, published in 1983, included 19 general recommendations. Many of these are now irrelevant or outdated. Recommendations 1 - 6 relate to the management of State Forests. These have been overtaken by events. It is now clear that the only effective way to conserve State Forest is to place it in national parks or nature reserves. There is an urgent need to set aside a comprehensive and representative system of forest reserves and this should be part of a new general recommendation.

Recommendations 7 - 12 have also been overtaken by events. Many of the areas recommended for protection as reserves have been destroyed (eg. Casuarina M98, Buckland Hill M55, Port Kennedy M106, etc.) Many others have not been established because of CALM's reluctance to take on new reserves without additional funding. Perhaps these reserves should be vested in other authorities (eg. local government, community groups, LCDCs, etc.) if CALM are unwilling to accept them. The Port Kennedy LCDC has done an outstanding job of managing that reserve, for example, at little cost to the WA Government.

Recommendations 13 and 14 are still relevant and they should be supplemented by a recommendation about how this process will be funded. A regional improvement fund like the MRIF should be established to facilitate the acquisition of land for parks and recreation in regional areas.

Recommendations 15 - 17 need very careful attention. Although the Ministry for Planning has done quite a good job of identifying and resuming land for Regional

Parks, CALM has failed to co-operate and so far we still do not have any legally established Regional Parks. The WCS believes that the Regional Park Concept is extremely important in the System Six Area because of the multiple uses of reserves. The concept of a regional park as an area for conservation, recreation and landscape protection is now well established. We have least confidence in CALM's willingness to manage these Parks and we have proposed that MFP should continue to manage them until all of the policy and management issues have been resolved. We believe that funding should come from local authority rates, land tax and development tax. Ultimately a Regional Parks Authority may be the best body to manage them. Because they are so different to national parks and nature reserves the RPA should be quite different from the NPNCA and have its own budget. It should work closely with CALM, MFP and the local authorities.

Recommendations 18 and 19 are still relevant and have been partially implemented. However recommendation 18 does not specify which agency should fund and coordinate this task. This should be addressed in the update.

The General Recommendations should include an additional set which relate to the funding and implementation of the specific recommendations. We believe that there is a need for an implementation committee which will set priorities and review progress. A major review or progress report should be required every three years. A funding mechanism for implementation and management of the System Six conservation estate should be clearly identified in the general recommendations. The failure to do this was one of the main reasons why the original System Six exercise was so unsuccessful.

(2) Specific Recommendations

I am aware that the DEP has provided a detailed nomination form. However, we wish to nominate so many areas that it is quite impracticable for us to fill in such detailed forms. Most of the areas we wish to nominate are already documented in official Government reports, so the degree of detail requested is unnecessary. However, I would be happy to supply any additional information you require for any of the nominations we have made. Please call me on 337 7113 (h) or 360 2274 (w) or 310 1711 (fax) if you need further information.

Our specific recommendations for new areas to be included in the System Six Report are :

(a) The Spectacles Swamps near Kwinana. These are part of the Beeliar Regional Park and are fully described in the Planning Report for that Park. They are also zoned P & R in the MRS.

(b) Long Swamp on Hope Valley Road, Kwinana. This is also included in the Beeliar Regional Park. It is the last of the wetlands in the western chain of the Cockburn Wetlands. It is privately owned.

(c) Bollard Bulrush Swamp in Wellard. This is also part of the Beeliar Regional Park

(d) Tamworth Hill Swamp in Baldivis. This is part of the proposed Rockingham Lakes Regional park. It is fully documented in the ecological study of the Rockingham lakes carried out by V and C Semeniuk for the Australian Heritage Commission. It is zoned for Parks and Recreation in the MRS and it is affected by a mining claim.

(e) Anstey Swamp, Baldivis. This is also a part of the proposed Rockingham Lakes Regional Park. It is owned by the MFP and is zoned for Parks and Recreation. It is fully documented in the Semeniuk study and by the EPA in its original report on the Secret Harbour project.

(f) Paganoni Swamp, Baldivis. This wetland is an outstanding conservation area. It is owned by the MFP and is zoned for Parks and Recreation. it is fully documented in the Semeniuk study and in the Wildflower Society's nomination of this reserve to the Register of the National Estate.

(g) Lark Hill wetlands. This area lies adjacent to Port Kennedy M106 and contains some important wetlands and parallel dune formations. It is fully described by the Australian Heritage Commission in its listing of the area. The land is owned by the MFP and is zoned for Parks and Recreation. It is intended for inclusion in the Port Kennedy Scientific Park.

(h) Jandakot Botanical Park. This area is fully documented by the MFP in its Planning study for the Jandakot Botanical Park. It includes some areas such as M97, M98, M99 and M100 which are already in the System Six Red Book. However, there are several other important reserves in this area which should be included in the System Six Report. All of this land is reserved for Parks and Recreation and most of it is owned by the State.

(i) Piney Lake, Winthrop. This wetland was not included in System Six. However, it is part of the Beeliar Regional park and supports a diverse range of waterfowl and has some remnant vegetation. The City of Melville recently completed a management plan for this reserve.

(j) Blue Gum Swamp, Mt Pleasant. This wetland is an important wildlife refuge. It is well managed by the City of Melville and is being rehabilitated by a local group. It has a management plan, prepared by the City of Melville. It could be incorporated into M73 as it is very close to Booragoon Lake.

(k) Brixton Street Wetlands, Gosnells. These important wetlands should be added to M69. Their importance is well documented in the EPA assessment of the housing proposals for this area.

(l) Ken Hurst Park. Leeming. This is an important area of wetland and banksia woodland adjacent to M94. It contains declared rare flora as indicated in the Floristic Study of the Swan Coastal Plain. The Murdoch Branch of the Wildflower Society has done a detailed flora survey of the site. Contact Diana Corbyn for details.

(m) Twin Bartram Swamp, Hird Road Swamp, Solomon Road Swamp and Gibbs / Russell Swamp in Jandakot. These small wetlands are the best remaining examples of the Jandakot suite of wetlands. They are reserved in the local open space system and are well documented by V. Semeniuk in the report to Gold Estates on Wetlands East of Thomsons Lake.

(n) Creery Wetlands. These important samphire marshes should be added to C50 (Peel Inlet). Their values are fully documented in the Bamford Report which was attached to the proposal for the Harbour City Canal Estate.

(o) Vasse - Wonnerup Regional park. The whole area of the Broadwater, Deadwater and the Vasse Wonnerup estuaries should become a regional park. This concept should be proposed in the System Six update.

(p) Cockburn Wetlands - Eastern Chain M93. The boundaries of this area should be modified to coincide with the boundaries of the Beeliar Regional Park.

(q) Folly, Maramanup, Duck and Beenyup Pools, Baldivis. These small pools on the Folly Drain are important breeding and feeding areas for wildlife. The Folly Drain is an important wildlife corridor and its conservation value should be recognised in the System Six Report.

(r) West Corio Swamp, Karnup. This is an important breeding area for the straw-necked ibis. It should be protected. The EPA did an assessment of it several years ago when sand mining was proposed.

(s) Serpentine River Valley. The entire length of the Serpentine River and its flood plain should be listed in the System Six Report. It is a major wildlife corridor and a habitat for many species. It should be recommended as a regional park.

(t) Wilbinga and Guilderton. Two large blocks of coastal heathland south of the mouth of the Moore River. The Wilbinga block was proposed as a land swap for M1 which has been approved for subdivision. These blocks are adjacent to C12 and together provide an outstanding opportunity to conserve the best remaining transect of coastal vegetation in the northern part of System Six.

If you require further information about any aspect of this submission, please contact me. I would like some feedback on your decision about these areas.

Yours faithfully,

Philip Jennings
President

PROPOSED JANDAKOT BOTANICAL PARK

AN ASSESSMENT OF THE CONSERVATION VALUES OF VEGETATION FLORA AND WETLANDS BETWEEN JANDAKOT AND WELLARD

February 1990

BOWMAN BISHAW GORHAM
ENVIRONMENTAL MANAGEMENT CONSULTANTS

TABLE OF CONTENTS

smaller more colourful flowers. Grows in winter wet depressions.

Diuris purdei. Found in densely vegetated winter wet depressions on the Coastal Plain. Flowers from September to October after fires.

Drakea elastica (syn. Drakea jeanensis). Found in sandy soils near swamps, often in Banksia woodland on the Coastal Plain from Perth south to Capel but also recorded from the Murchison River. Flowers from September to October.

Drakea micrantha (M.S.). An undescribed species. Grows in open sandy patches on the sandy rises near swamps in Allocasuarina woodland. In the study area it is at the northern limit of its range. Flowers from September to October.

Drosera occidentalis. Found in damp soils on the margins of swamps and in winter wet depressions (in peaty sand). Flowering occurs from November to December. Lowrie (1989) considers it to be "rather common and easy to locate, given knowledge of it's growth cycle and habitat."

3.4.2 Priority Three Species Currently Known for the Study Area

Restio stenostachyus. Found in winter wet depressions and along watercourses. Although Marchant et al (1987) suggest this species could be endemic to the Perth region it is also known from the northern forest region.

Cartonema philydroides. A poorly known and poorly collected species occurring on the Coastal Plain from Guildford south to Capel with an occurrence at Kalbari (probably a separate species). This species may more common than was previously thought (G. J. Kieghery pers. comm.).

Thysanotus arbuscula. One of the fringe lilies, found in Banksia low forest, Jarrah-Marri forest and sandplain low scrub. Grows from 160 km north of Perth to c. 260 km south-east of Perth. Flowers from September to January.

Phlebocarya filifolia. Found in Banksia woodland on sandy soils from south Eneabba to south of Busselton (G. J. Kieghry pers. comm.). A poorly collected speci now recognised to be more common than previously thought (Jandakot w previously thought to be the most southerly location for this species).

Jacksonia sericea. Apparently endemic to the Perth Region, found on calcareous ar sandy soils of the Coastal Plain from Perth to Pinjarra. Flowers from December February.

Gonocarpos pithyoides. Found in sandy soils on the Coastal Plain, extendir nor to Gingin in Banksia woodland. It appears to be poorly collected rather tha uncommon.

3.4.3 Priority Two Species Currently Known for the Study Area

Lysinema elegans. This species has been collected from the Jandakot area in the pa but has not been recollected there despite some searches. A population was recent found in the Moore River National Park (Griffin and B. Kieghery 1989) and may the only extant population.

3.4.4 Priority Five Species Currently Known for the Study Area

Dodonaea hacketiana. This taxon is endemic to the Perth region (Marchant et 1987), growing from Perth to south of Jandakot.

3.4.5 Other Significant Flora

Evandra pauciflora. This species occurs sporadically (in suitable wetland habit from the Perth area south to Albany. Probably should be on the reserve li uncommon but probably not rare.

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TABLE OF C. .TS

EPORT ON A SURVEY OF THE FLORA AND VEGETATION OF LOTS 122, 123 & 403 ACOURT ROAD, CANNING VALE.

PREPARED FOR WOOD AND GRIEVE ENGINEERS

BY E. M. GOBLE-GARRATT

November 1993.

TABLE OF CONTENTS

1. GENERAL INTRODUCTION

The following pages provide a report on a flora and vegetation survey commissioned by Wood and Grieve Engineers. The survey is required for inclusion in a Consultative Environmental Review (CER) of a proposal to develop Lots 122, 123 and 403 Acourt Road, Canning Vale for residential purposes.

The survey area is situated on the eastern side of the Swan Coastal Plain on the Geomorphic Unit known as the Bassendean Dunes (McArthur and Bettenay, 1960). The soils are classified as belonging to the Southern River Association which forms the easternmost fringe of the Bassendean Dune system (Bettenay et al, 1960). The Southern River Association consists of leached siliceous sandy dunes and numerous sandy and clayey swamp flats. Many of the dunes have a clay basement, the result of the dunes having been formed by wind-blown sand movement over the clayey swamps. The Armadale map sheet of the Perth Metropolitan Region 1:50 000 Environmental Geology Series (Jordan, 1986) shows that the greater portion of the site has Bassendean sand at the surface. The south-eastern portion of the area where the seasonal open water occurs, is covered by fine to medium-grained sand rich in brown to black peaty material. This is surrounded by a band of less peaty, but still fine grained sand, which also extends in a tongue along a weakly defined drainage line in a south-westerly direction towards Acourt Road.

A large dune crosses the northern portion of the site running roughly in an east-west direction. The northern corner is low-lying and seasonally waterloggged with water at the surface for short periods following rainfall events. A similar situation is found over most of the southern half of the site with the exception of the peaty area along the south western border which is inundated in winter and where there is water at the surface till well into November, and possibly later.

Tracks/firebreaks surround and cross the site, and are especially noticeable around the peaty, seasonally indated area. The tracks appear to be used by horse riders, and there is a small cleared exercise ring close to Fraser Road. The tracks on the flat areas are used extensively by trailbike riders.

The eastern part of the site closest to Nicholson Road is fairly heavily invaded by weedy grass species, and may have been grazed at some time in the past. The western corner (Acourt/Fraser Rds) is also very weedy, as are some parts of the flats. A large area at the south of the site was burnt in the Summer of 92/93.

Surrounding landuse includes the special residential (Canning Vale Kennel Area) across Fraser Road, a new residential subdivision to the north and north-east across Clifton Road, the Canning Vale Prison Complex and large areas of uncleared bush to the east, and uncleared bush to the south-east and across Acourt Road on the south-west.

The line of an existing Water Authority of Western Australia wellfield runs along the south-western border of the site.

This site, along with the uncleared bush areas to the south-west and south-east have been suggested for inclusion in the Jandakot Botanic Park (Department of Planning and Urban Development, 1992).

2. FLORA AND VEGETATION

2.1 Introduction and Objectives

The general characteristics of the vegetation in the region have become fairly well known over the past few years as a result of specific areas being surveyed for rare flora, from wider ranging planning related surveys, and through the Water Authority of Western Australia's monitoring of wetland vegetation. The Banksia Woodlands at Jandakot Airport have long history of scientific study (Milewski and Davidge, 1981).

Beard (1979) mapped the area as supporting Sheoak-Banksia Low Woodland with scattered Jarrah, and classified the vegetation as belonging to the Bassendean Vegetation System. He noted that freshwater swamps between the dunes comprise a large proportion of this System.

Eleven species currently on the Schedule of Declared Rare Flora occur in the Metropolitan area. Of these, the following five occur in the general southern Metropolitan area and could possibly be expected on the site; *Diuris purdiei, Aponogeton hexatepalus, Hydrocotyle lemnoides, Drakea elastica,* and *Caladenia huegelii.*

The objectives of the current survey were:

- to provide a checklist of the vascular flora of the site,
- to describe the vegetation communities present in broad terms, and
- to comment on the importance of the site with respect to the flora and vegetation in a local and regional context.

2.2 Methods and Limitations

The site was surveyed opportunistically over several days in late September and early October, and was visited again in late October. The survey included walking many of the tracks/firebreaks, and also several traverses through the Banksia Woodland area and across the burnt southern portion. A checklist was compiled of the species encountered. Where field identification was not possible a voucher specimen was pressed for later identification or verification at the Western Australian Herbarium. As the survey took place over a limited period it was of necessity not systematic, the species list cannot be considered complete. The very young post fire nature of the vegetation along the south-western boundary also made identification of some of the plants present difficult. Notes were taken of the vegetation changes, and these were used in conjunction

with aerial photography to map the community types in broad terms. No attempt has been made to relate the vegetation types recognised for the mapping to any other published descriptions. They were chosen to give a practical description of the vegetation present on the site. In some cases the mapped vegetation boundaries must be considered approximate as boundaries between the recognised units were not distinct.

2.3 Results

2.3.1 Flora

A total of 148 taxa of vascular plants were identified during the survey. Of these 117 were native taxa, and 31 were naturalised exotics (See Appendix 2). This compares with some 180 native species and 33 exotics encountered in the Water Authority of Western Australia's vegetation monitoring in the region (E. M. Mattiske, pers comm.). The suite of species found during this survey is generally similar to that recorded in the WAWA study with most of the genera common to both.

There are 85 genera from 35 families of native vascular plants represented in the checklist. The families best represented are the Myrtaceae (18 taxa), the Papilionaceae (9 taxa), the Asteraceae and Proteaceae (8 taxa), and the Stylidaceae with 7 taxa. Systematic surveying would undoubtedly add to the checklist, especially in the case of less conspicuous herbaceous species.

None of the species of Declared Rare Flora mentioned in the introduction were found on the site. The *Pericalymma elipticum* dominated, wet heath appears to be suitable habitat for *Diuris purdiei*, and a special search was made of this vegetation type. The first Spring following a Summer burn is when this orchid flowers and is visible, and it would have been recorded if present.

The Department of Conservation and Land Management maintains a Priority flora list which provides priorities for the survey of species of uncertain conservation status. Priority 1 to 3 taxa are under consideration for gazettal. One Priority 3 species *Gonocarpus pithyoides* was identified during this survey. The Priority 3 taxa are defined as follows:

> *Taxa which are known from several populations, at least some of which are not believed to be under immediate threat. these taxa are under consideration for declaration as "rare flora" but are in need of further survey.*

Gonocarpus pithyoides has recently been recorded from numerous sites in the Metropolitan area and has been recommended for deletion from the priority list (Kelly et al, 1993).

2.3.2 Vegetation

Because of the topographic variation contributed by the east-west trending

dune, the vegetation on the site is fairly diverse. Three variants of Banksia Woodland were recognised in the mapping. The differences between them are in both species composition and stature. These differences result mainly from differences in water availability, and are due to textural differences in the sandy substrate, and varying depths to the watertable. The Mixed Heath and Flooded Gum-Moonah Fringing Woodland types occupy intermediate positions in the topographic continuum between the dune and the flats. The flats are occupied by a mosaic of mostly low shrub communities of varying densities. The open peaty flats where the water remains longest into the Summer is considered to be a sub-type of one of these because of shared species, but is in habitat terms very different to the rest of the flats.

The following vegetation/community types were used as mapping units. The letters which identify them correspond to the letters appearing on the map (Figure 1).

A **Mixed Low Heath.** Mixed Low Heath occurs as a small confined area at the northernmost point of the site, and over a larger area at the foot of the dune near the western end. These areas are topographically intermediate between the dunes and the flats, and the vegetation present contains elements of Banksia Woodland flora and species more common on the wetter flats. Soils tend to be slightly peaty. Common shrubs include *Hypocalymma elipticum, Eriostemon spicatus, Astartea fascicularis, Dasypogon bromeliifolius, Platytheca galioides* and *Latrobea tenella*. Small *Melaleuca preissiana* and *Xanthorrhoea preissii* occur as emergents.

B. **Banksia Low Woodland of the Crests.** This occurs across the central-northern part of the site (the highest lying area), and also in elongated and interconnected patches towards the north. Soils are coarse, free-draining, and deep. All three of the Banksia Woodland variants recognised for the mapping share the presence of the canopy dominants *Banksia attenuata* and *Banksia menziesii*. The woodland on the crests tends to be more open, and the trees of a lower stature. Many understorey species such as *Dampiera linearis, Hemiandra pungens, Petrophile linearis, Dasypogon bromeliifolius,* and *Macrozamia riedlei* are also common to all three types. However, the open canopy encourages an abundance of some understorey species on the crests such as the ephemeral daisies (*Brachycome iberidifolia* and *Asteridea pulverulenta*) and the grass species *Amphipogon turbinatus* and *Neurachne alupecuroides*. The shrubs *Scholtzia involucrata* and to some extent *Adenanthos cygnorum* were restricted to this Woodland type.

C. **Banksia Low Woodland of the Slopes and Swales.** This form of the Banksia Woodland occurs slightly lower in the landscape than type B as described above. On the northern portion of the site it merges into the Mixed Heath and the Flooded Gum-Moonah Fringing Woodland downslope, and grades into the Banksia Woodland of the crests. It also occurs on the small dune at the southern end of the site. The two common Banksias are joined in the canopy by *Banksia ilicifolia* and an occasional

Nuytsia floribunda and *Eucalyptus todtiana*. The trees tend to be denser and taller than on the crests. The shrubs *Regelia inops*, *Melaleuca thymoides* and *Leucopogon sprengeloides* appear restricted to this woodland type. The first two are abundant and provide a magnificent show of flowers in Spring.

D. **Banksia-Sheoak-Jarrah Woodland** This woodland type occurs on the gentle slope down to the open flat area at the western end of the site. The soils here are possibly finer textured, leading to better soil-plant water relations, and may also be more fertile than the dunes proper. This vegetation type merges downslope with the Flooded Gum-Moonah Fringing Woodland. It is a woodland in which the three Banksia species still dominate. The other canopy species previously mentioned (*Banksia ilicifolia*, *Nuytsia floribunda* and *Eucalyptus todtiana*) also occur. However two additional species are also important components. These *Eucalyptus marginata* and *Allocasuarina fraseriana*, both of which tend to be taller than the other canopy species. Species common in the understorey which were not noted elsewhere are *Hibbertia hypericoides*, *Conostylis aculeata*, *Bossiaea eriocarpa* and *Calytrix fraseri*.

E. **Flooded Gum-Moonah Fringing Woodland.** This community type occurs in a band along the edge of the dune area, and broadens out around northern end of the open peaty flat along Nicholson Road. This is probably the most disturbed community on the site. The tracks which skirt the open flat are situated on the boundary of this community. The area may also have been grazed in the past, and the understorey is very weedy. The canopy is formed by a broken band of large *Eucalyptus rudis* with an accompanying band of *Melaleuca preissiana* present on the upslope side in some areas. *Banksia littoralis* occurs sporadically. The native understorey is in the form of dense beds of the sedge *Schoenus globifer*. Other sedge-like plants which are common are *Lepidosperma longitudinale* and *Lyginia barbata*. *Hypocalymma angustifolium*, *Jacksonia furcellata* and *Astartea fascicularis* which are shrubs typical of the wet heaths also occur as an understorey to the Paperbarks.

F. **Melaleuca teretifolia Shrubland.** This community type occurs in a dense band on the periphery of the open peaty flat. The canopy is completely closed, about two to three metres high and almost monospecific. An occasional clump of *Melaleuca lateritia* is also present. As with the previous community the understorey, where it occurs on the edges and in openings, is very weedy with the grass *Sporobolus indicus* prominent. Native species include *Drosera ?menziesii* and *Baumea juncea*.

F. **Open Peaty Areas with scattered *Melaleuca teretifolia*.** The vegetation on the open peaty flats consists of scattered dense clumps of *Melaleuca teretifolia* and beds of *Typha orientalis* and some *Villarsia albiflora* in the areas of deepest (and longest) inundation.

G. ***Pericalymma elipticum* Dense Low Shrubland.** This community type and the following one (H) form a mosaic on the flats of the southern half of the site. The distribution of the two communities is determined by small differences in topography, with *Pericalymma elipticum* dominant on slightly higher ground. Much of this community type was burnt in a fire during the summer of 1992/93. When mature, this community is composed of a dense canopy of shrubs to approximately 1.5 metres high. *Pericalymma elipticum* is the main species present with other shrubs such as *Adenanthos obovatus, Hypocalymma angustifolium, Pimelea imbricata* and *Hibbertia stellaris* important components. In the first few seasons after fire numerous sedges, rushes and small herbaceous species, (*Stipa ?compressa, Schoenus curvifolius, Lobelia tenuior, Gnaphalium sphericum, Stackhousia monogyna* and *Anigozanthos humilis*) are prominent. Occasional trees such as *Banksia littoralis* and *Melaleuca priessiana* occur as emergents.

H. ***Regelia ciliata-Melaleuca lateritia* Shrubland.** When mature, this community type is similar in structure to the previous one, but is often taller. The shrubland may appear monospecific over large areas, but in the wettest sites *Melaleuca lateritia* also occurs. Herbs and sedges are also prominent in the post fire succession in this community, and many of the shrubs and herbaceous species mentioned above (G), are common to both.

I. **Melaleuca-Spearwood Thickets.** This type occurred at the western corner of the site, and as small pockets along Acourt Road and in the centre of the site (not mapped). *Melaleuca raphiophylla* grows at the centre of the thicket with *Kunzea ericifolia* on the edges. Kangaroo Paws and other smaller species may be present. This community type has been affected by fires - neither of the dominant species is fire resistant. The area at the western corner of the site is severely weed infested, with no native understorey species visible.

2.3.3 Vegetation Condition

The vegetation condition varies widely in different parts of the survey area. An indication of this variation is given on the vegetation map by the use of indices of condition. Allocation of these indices was subjective, and they are to some extent relative to other areas of remnant vegetation in the surrounding area. They are a measure of the degree of disturbance and invasion by weedy species, and are not indicators of significance.

The Banksia Woodland on the main dune at the north of the site and the Mixed Heath are in surprisingly good condition. Weed invasion is limited to a few metres along the roads, and to a limited extent along the tracks on the site. Away from the roads and tracks there are occasional occurrence of *Gladiolus caryophyllaceus* and *Briza maxima*. There does not appear to be any sign of infection by dieback (*Phytophthora cinnamomi*) - many of the understorey plants which are sensitive to the pathogen (Family Epacridaceae, *Macrozamia riedlei* and

Xanthorrhoea preissii) are common and in good health.

The Banksia-Sheoak-Jarrah area is far more disturbed, with the understorey very weedy, and numerous loads of rubbish and old car bodies dumped near the main track. The Jarrah has been cut over in the past, and some standing dead (and very large) trees have been harvested recently.

The periphery of the open peaty flat, including the fringing woodland areas is similarly disturbed and weedy. Some of the *Melaleuca teretifolia* down the western side of the open flat are dead. This is possibly due to a previous fire.

The southwestern portion of the site appears to have a greater diversity, if not density of weedy species, and rabbit activity is also very evident in this burnt area. These may be a short-term, post-fire phenomena. However, as mentioned above, the western corner of the site is heavily weed infested. None of the bulbous garden escapes commonly found in remnant bush areas appear to be a problem on this site.

3. WETLAND CLASSIFICATION

Over the years the Environmental Protection Authority has produced a number of publications which provide broad management outlines for wetlands on the Swan Coastal Plain, and also a method by which individual wetlands can be allocated to a specific management category. Wetlands are defined as areas of permanent, seasonal or intermittent inundation. The definition covers natural and modified or artificial wetlands, and fresh, brackish or saline water. It also includes areas of land which are intermittently waterlogged, where surface water may or may not be present, known as damplands, such as the wet heath areas found on the survey site.

The wetland evaluation method as set out in the most recent publication, Bulletin 886 (Environmental Protection Authority, 1993), uses natural and human use attributes to assign each wetland to one of five management categories.

The three categories relevant to the survey area are:

- High Conservation. The management objectives for these wetland areas are given as follows. Active management to maintain and enhance the wetland attributes, particularly natural attributes. Where there is no active management at present it should be put in place as a matter of priority. Active management requires that a detailed management plan is prepared and implemented, with sufficient resources to maintain or improve the wetland's current condition.

- Conservation. Management objectives for these wetlands are given as the maintenance and enhancement of natural attributes and functions.

R - Resource Enhancement. Management objectives for these wetlands are given as the maintenance and enhancement of existing ecological functions.

The questionnaire in Bulletin 686 was applied to the wetlands on the survey site in two ways. The flat peaty area at the western end of the site was taken as an entity in it's own right, and the survey was also applied to the rest of the seasonally waterlogged heathy areas. The field record sheets for these evaluations are in Appendix 1.

The presence of Declared Rare Flora or Fauna in the assessment area automatically allocates that area to the Management Category H (High Conservation). This would apply to the wet heath areas on the southern portion of the site. The scores of other attributes for this area are; natural attributes - 17½, human use attributes - 10. These categorise the area as being transitional between Category C (Conservation) and Category R (Resource Enhancement). If these wet heath areas are considered to be of limited distribution this shifts the area in the Conservation category.

The open peaty area at the western end of the survey site which is seasonally inundated is considered to be a Category C wetland (Natural Attribute Score - 46, Human Use Score - 9). Should the presence of the Southern Brown Bandicoot be confirmed in this area it would also be considered a High Conservation wetland (See comment on the field record sheet at E).

GENERAL DISCUSSION AND RECOMMENDATIONS

All areas of remnant native vegetation in the Metropolitan Area should be considered as having conservation significance. This is especially so for large, relatively intact, and diverse areas such as the project site.

Wetland areas have received prominence in the last few years due to their rapid disappearance, and to the fact that they often fulfil a multiplicity of ecological functions, as well as having aesthetic and human use attributes.

The conservation of Banksia Woodlands, especially on the southern Swan Coastal Plain has also been seen as a priority. Hopper (1989), for the Bassendean Central and South Complex, gave a figure of 14.5% of the original area of woodland still extant in 1986. More recently, Trudgeon estimated that 95% of the Banksia Woodland and associated wetland vegetation on the coastal plain south of Perth has been cleared (Department of Planning and Urban Development, 1992). These facts, in part, resulted in the provisional identification of areas for inclusion in the Jandakot Botanic Park. The project site, as well as the adjacent uncleared areas to the south-east and south-west are included in these provisional areas.

Given this background, and that the project area supports good quality Banksia Woodland as well as two distinct types of wetland and associated vegetation, the Conservation/Development question should only be resolved after consideration of the planning proposals for other areas of remnant native vegetation in the

surrounding area which may be considered to have similar or higher conservation priorities. This can only be done by the Planning Authorities.

Consideration must be given to the following factors:

- The site supports a large stand of good quality Banksia Woodland;
- The Banksia-Sheoak-Jarrah community type is probably the least common of the Banksia Woodland types. Although this community on the project area is disturbed, it does still have native understorey elements present. It also has passive recreational potential because the larger timber present and the open woodland aspect are aesthetically pleasing. The area could be cleared of rubbish and rehabilitated to some extent;
- The fringing woodland community, though degraded in the understorey is possibly less so than some similar areas further south and is possibly habitat for the Gazetted Rare Fauna species *Isoodon obesulus* (the Southern Brown Bandicoot);
- The open peaty area which retains water well into Summer, though somewhat weedy is still categorised as a C Class Wetland using the Environmental Protection Authority's Bulletin 686. This area, along with the fringing woodland may have importance as habitat for birds;
- Due to the presence of the Southern Brown Bandicoot, the wet heath areas at the south of the site are classified as High Conservation Wetlands using the Environmental Protection Authority's Bulletin 686;
- The entire site has value from a vegetation diversity point of view, but must also be considered with respect to the fauna habitat it provides. Aside from the Bandicoot, Kangaroos are also present, and there may be other native mammals resident. The area is undoubtedly home to many reptile species, and because of the larger trees and dense shrubs in some areas may be of residential significance to birds;

Should the decision be to develop the site, it is recommended that a substantial portion be retained for conservation and passive recreation purposes. Two options could be considered.

- The open peaty wetland area and associated *Melaleuca teretifolia* shrubland along with a contiguous corridor **at least** 200 metres wide along Clifton Road be retained.

  This option has the following good and bad points:

  i. The wetland area identified as a C category wetland along with some of the peripheral vegetation is conserved;
  ii. A substantial portion (some 16ha.) of good quality Banksia Woodland, including most of the Banksia-Sheoak-Jarrah type is retained;

iii. Topographic and landscape diversity of the reserved area is maximised;
iv. The greatest diversity of habitat types, including areas which suppport the Southern Brown Bandicoot (Mixed Heath, Fringing Woodland) are retained;
v. The wet heath areas (H category wetlands) at the southern end of the site are lost;
vi. Future development scenarios for adjacent land may leave the conserved area isolated from other remnants of native vegetation.

2. The open peaty wetland area and associated *Melaleuca teretifolia* shrubland, and a contiguous area of the wet heath vegetation at the southern end of the site be retained.

This option has the following characteristics:

i. The wetland area identified as a C category wetland is conserved;
ii. A portion of the wet heath vegetation (Category H Wetland and Southern Brown Bandicoot habitat) is retained;
iii. All the remnant Banksia Woodland on the site is lost;
iv. Future develepment scenarios for adjacent land may leave the conserved area isolated from other remnants of native vegetation.

A management plan for the reserved areas will need to be prepared in consultation with the Environmental Protection Authority and the Department of Conservation and Land Management. This management plan must include the prohibition of horses and trailbikes from the reserved areas.

Whichever portion of the site is retained for conservation if the development proposal proceeds, the reserved area must not be included in the entry statement or other urban landscaping plans prepared for the subdivision.

CALM must also be consulted regarding the resident population of the Southern Brown Bandicoot.

5. ACKNOWLEDGEMENTS

Ms B Koch provided assistance with the identification of voucher material.

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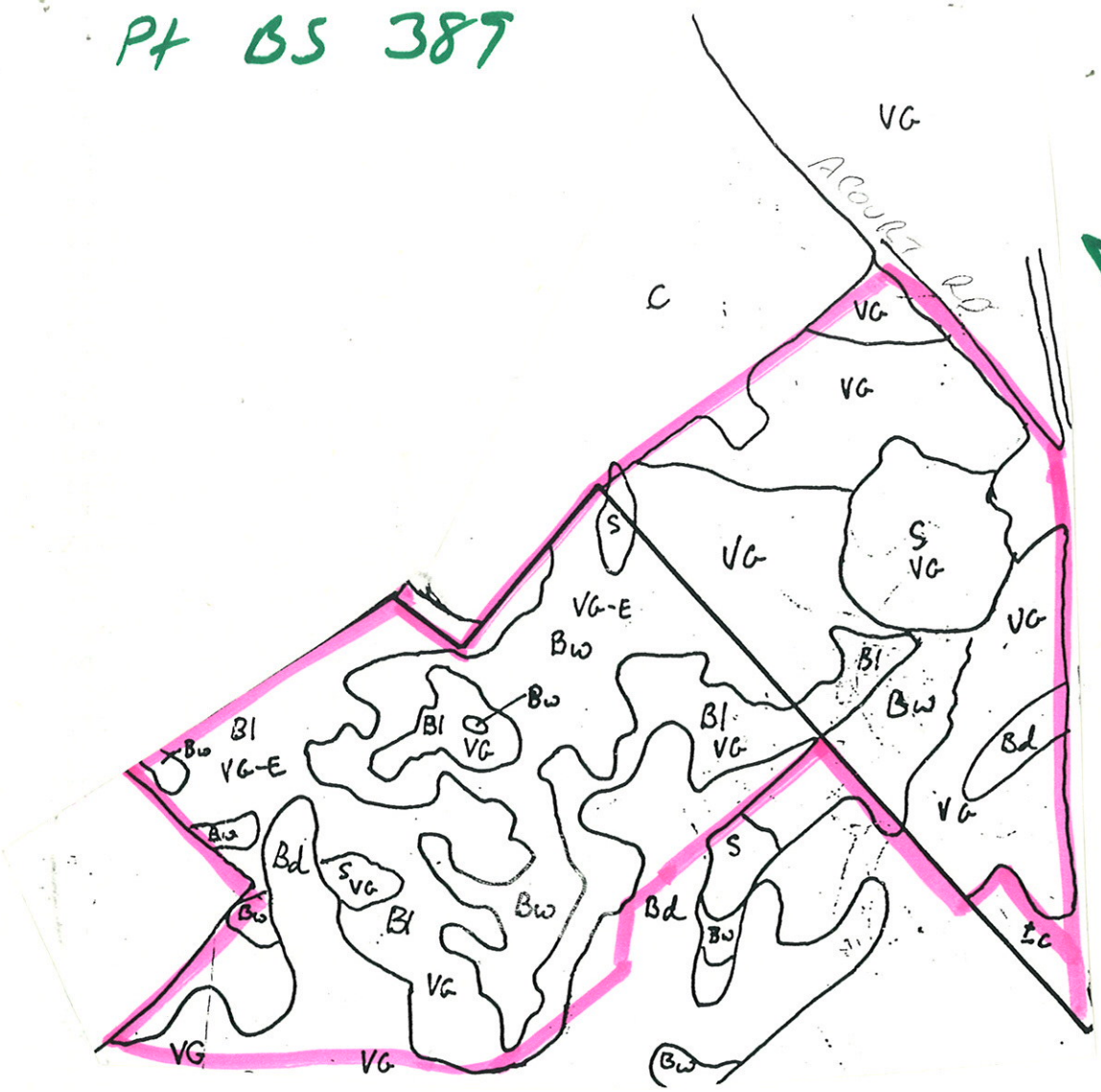

AN

Part Subm 13, E of Jandakot Airport

MAP ONE: Significant Remnants of Native Vegetation

Sheet one : Northern Section of Study Area

KEY TO VEGETATION UNITS

Bassendean Complex-Central and Southern

Bd: Low woodland to low open forest of Banksia attenuata-Banksia menziesii with occassional Banksia ilicifolia, Allocasuarina fraseriana, Eucalyptus marginata and Nuytsia floribunda.

Bl: Low open forest of Banksia menziesii-Banksia ilicifolia-Eucalyptus marginata with occassional Banksia attenuata.

Bw: Low open woodland to closed heath dominated by species of Myrtaceae. The tree species are predominantly Melaleuca preissiana or Banksia ilicifolia. The understorey include Hypocalymma angustifolium, Pericalymma ellipticum and Astartea fascicularis.

Sw: Woodland of Melaleuca preissiana-Melaleuca rhaphiophylla with occassional Eucalyptus rudis and Banksia ilicifolia. With sedgelands of Baumea and Leptocarpus species and closed heaths dominated by Myrtaceae species.

L: Woodlands of Melaleuca rhaphiophylla-Eucalyptus rudis with the occassional Melaleuca preissiana and Banksia littoralis. The woodlands are interspersed with sedgelands of Baumea, Leptocarpus and Typha and areas of open water.

Karrakatta Complex-Central and South

K: Woodlands of Eucalyptus gomphocephala-Eucalyptus calophylla-Eucalyptus marginata with admixtures of Banksia attenuata-Banksia menziesii and Allocasuarina fraseriana.

KEY TO CONDITION RATING

E = Excellent
VG = Very Good
G = Good
P = Poor.
VP = Very Poor
C = Cleared
(See text for definitions)

SCALE: Approx. 1: 20,000

SOIL: Sp = Spearwood Sand; Gu = Guildford Formation
(All other areas Bassendean Sands)

CANNING PROPERTY GROUP

RESIDENTIAL SUBDIVISION

ACOURT ROAD, CANNING VALE

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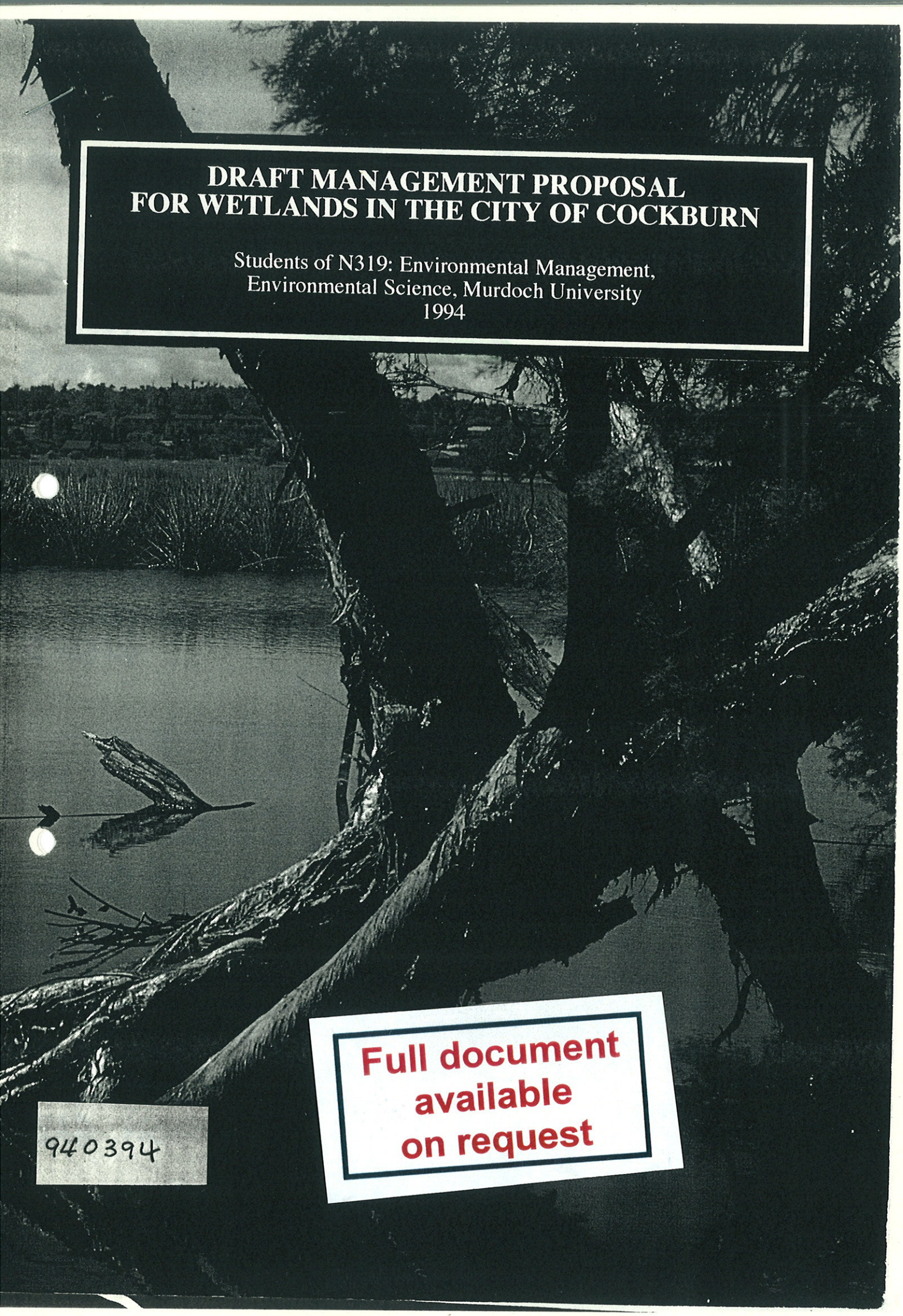

DRAFT MANAGEMENT PROPOSAL FOR WETLANDS IN THE CITY OF COCKBURN

Students of N319: Environmental Management,
Environmental Science, Murdoch University
1994

Proposal to subdivide Jandakot AA lots 122, 123 and 403 Acourt Rd, Canning Vale

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Canning Property Group

Report and recommendation of the Environmental Protection Authority

Environmental Protection Authority
Perth, Western Australia
Bulletin 745
July 1994

BS 244
BASS. STH
NTH LAKE

BS 247
SPEAR. S.
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BS 347
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Proposals for the

Jandakot Botanic Park

Final

BS 392
SPEAR. S
HARRY WAF

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BS 429
SPEAR S
MARKE

BS 342
BASSEND S.
ANST. KEAN

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BASS S
BANKSIA

Prepared for the Western Australian Planning Commission
by the Ministry for Planning
Albert Facey House
469 Wellington Street
Perth 6000 Western Australia

BS 388
BASS. S.
JANDAKOT

Ministry for Planning

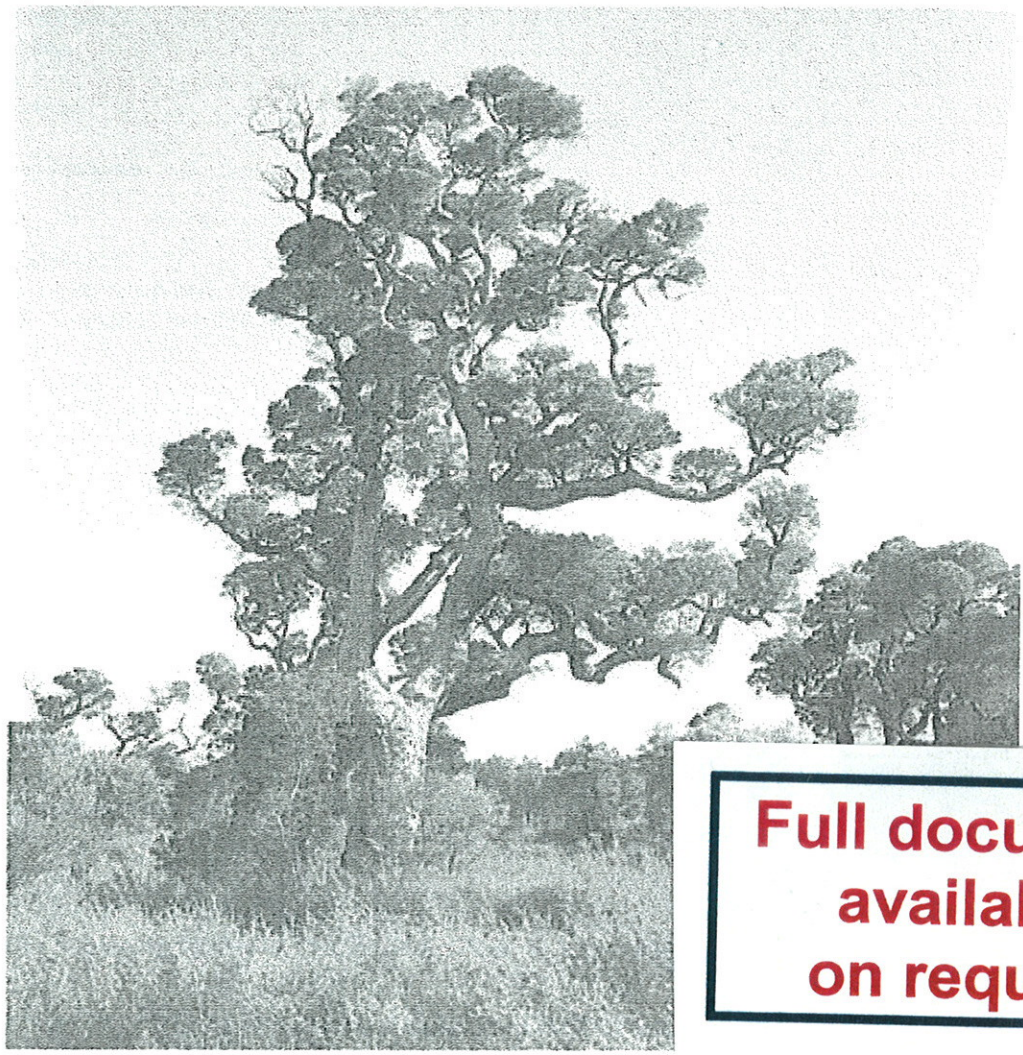
March 1995

BS 344
BASS. S
DE YOUNG

BS 389
BASS. STH
EAST of JAND

THE VEGETATION AND FLORA OF THE ACOURT ROAD BUSHLAND NORTH

BANJUP, CITY OF CANNING
JANDAKOT REGIONAL BOTANIC PARK



FOR THE BANNISTER CREEK CATCHMENT GROUP (INC.)

by
Karen Clarke, Margaret Langley and
Volunteers from the Bushland Plant Survey Project. December, 2000.
Wildflower Society of Western Australia (Inc.)
PO Box 64 NEDLANDS WA 6909

Bushcare
Bushcare: The National Vegetation Initiative

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