

## HARRISDALE SWAMP AND ADJACENT BUSHLAND, FORRESTDAL

**Boundary Definition:** protected area/bushland (part taken to cadastre boundary)(Boundary adjusted after vegetation survey and negotiations with land owner(s) in response to a submission to draft *Perth's Bushplan*)

### SECTION 1: LOCATION INFORMATION

**Bush Forever Site no.** 253

**Area (ha):** bushland 98.4 (Site also includes open water.)

**Map no.** 60

**Map sheet series ref. no.** 2033-I NE

**Other Names:** Green's Swamp, Submission Area 252, Part Submission Area 13, part of Jandakot Regional Park

**Local Authorities (Suburb):** City of Armadale (Forrestdale)

### 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 (Bassendean Dunes)

Holocene Swamp Deposits (Qrw: Sp1, Sp2)

#### VEGETATION AND FLORA

##### Vegetation Complexes

Combinations of Bassendean Dunes/Pinjarra Plain/Spearwood Dunes

Southern River Complex

**Floristic Community Types:** \*not sampled, types inferred

##### Supergroup 2: Seasonal Wetlands

\*4 *Melaleuca preissiana* damplands

\*5 Mixed shrub damplands

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

\*23a Central *Banksia attenuata* — *B. menziesii* woodlands

#### WETLANDS

**Wetland Types:** sumpland, dampland, artificial channel

##### 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 (28.5ha), Resource Enhancement

Swan Coastal Plain Lakes EPP: 9.2ha

#### THREATENED ECOLOGICAL COMMUNITIES

Not assessed

### SECTION 3: SPECIFIC SITE DETAIL

**Landscape Features:** open water, vegetated wetland, vegetated uplands

**Vegetation and Flora:** limited survey (Trudgen 1990; part Site — DEP 1998, DEP 1999)

**Structural Units:** general mapping (Trudgen, 1990)

Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland to Low Open Forest with scattered *Allocasuarina fraseriana*, *Eucalyptus marginata* and *Nuytsia floribunda*; *Banksia menziesii*, *B. ilicifolia* and *Eucalyptus marginata* Low Open Forest; *Banksia ilicifolia*, *B. attenuata* and *Melaleuca preissiana* Low Open Forest

Wetlands: *Melaleuca preissiana* and *M. raphiophylla* Woodland with scattered *Banksia littoralis* and *Eucalyptus rudis*; *Eucalyptus rudis* and *M. raphiophylla* Woodland with scattered *M. preissiana* and *Banksia littoralis*;

*Melaleuca preissiana* and *Nuytsia floribunda* Woodland; *Melaleuca preissiana* Low Very Open Woodland; *Kunzea glabrescens* Closed Tall Scrub; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Hypocalymma angustifolium* and *Melaleuca seriata* Low Open Heath; *Baumea* and

*Leptocarpus* species Sedgeland

**Scattered Native Plants:** not assessed

**Vegetation Condition:** >60% Pristine to Very Good, <40% Good to Completely Degraded (Trudgen 1990)

**Total Flora:** not known

**Significant Flora:** *Caladenia huegelii* (R); *Astroloma xerophyllum*, *Blancoa canescens*, *Hensmania turbinata* (poorly conserved south of the river)

**Fauna:** Significant mammal species: Quenda (Friend 1996 D)

**Linkage:** adjacent bushland to the south, east and west (Site 472, across road); part of Greenway 91 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)

**Other Special Attributes:** majority Site included in Jandakot Botanic Park Proposal (MfP 1995); 'wetland of special note' (Payne 1993a), Green's Swamp potential breeding place for the Freckled Duck (Payne 1993a); part Site Category One Area, Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995)

#### ***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, Diversity, Rarity, 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: Urban Negotiated Planning Solution (see Table 3, Volume 1).

**HARRISDALE SWAMP AND ADJACENT BUSHLAND, FORRESTDALE**

**Boundary Definition:** protected area/bushland taken to boundary cadastre (currently subject to Environmental Impact Assessment)

**SECTION 1: CADASTRAL INFORMATION**

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

**Bushplan Site no.** 253      **Map no.** 68      **Map sheet series ref. no.** 2033-I NE

**Other Names**      **Area (ha):** total 114.7 (includes open water); bushland 102.4  
 Green's Swamp, Submission Area 252, Part Submission Area 13

**Local Authorities (Suburb)**  
 City of Armadale (Forrestdale)

**Zoning**  
**MRS:** Parks and Recreation, Urban, Important Regional Roads

**TPS:** Landscape, Rural

**Ownership Categories**

Private (including commercial organisation), State Government

**Lot/Location/Reserve numbers (Purpose), Street name**

4, 5, 6, 388 Wright Rd; 2, 7, 8, 9 Warton Rd; 3 Ranford Rd

**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 (Bassendean Dunes)**

Holocene Swamp Deposits (Qrw: Sp1, Sp2)

**VEGETATION AND FLORA**

**Vegetation Complexes**

**Combinations of Bassendean Dunes/Pinjarra Plain/Spearwood Dunes**  
 Southern River Complex

**Floristic Community Types:** \*not sampled, types inferred

**Supergroup 2: Seasonal Wetlands**

\*4 *Melaleuca preissiana* damplands

\*5 Mixed shrub damplands

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

\*23a Central *Banksia attenuata* — *B. menziesii* woodlands

**WETLANDS**

**Wetland Types:** sumpland, dampland, artificial channel

**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 (28.5ha), Resource Enhancement

**Swan Coastal Plain Lakes EPP:** 9.2ha

**THREATENED ECOLOGICAL COMMUNITIES**

Not assessed

**SECTION 3: SPECIFIC SITE DETAIL**

**Landscape Features:** open water, vegetated wetland, vegetated uplands

**Vegetation and Flora:** limited survey (Trudgen 1990; part Bushplan Site — DEP 1998)

**Structural Units:** general mapping (Trudgen 1990)

Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland to Low Open Forest with scattered *Allocasuarina fraseriana*, *Eucalyptus marginata* and *Nuytsia floribunda*; *Banksia menziesii*, *B. ilicifolia* and *Eucalyptus marginata* Low Open Forest; *Banksia ilicifolia*, *B. attenuata* and *Melaleuca preissiana* Low Open Forest

Wetlands: *Melaleuca preissiana* and *M. raphiophylla* Woodland with scattered *Banksia littoralis* and *Eucalyptus rudis*; *Eucalyptus rudis* and *M. raphiophylla* Woodland with scattered *M. preissiana* and *Banksia littoralis*; *Melaleuca preissiana* and *Nuytsia floribunda* Woodland; *Melaleuca preissiana* Low Very Open Woodland; *Kunzea ericifolia* Closed Tall Scrub; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Hypocalymma angustifolium* and *Melaleuca* sp. B; Low Open Heath; *Baumea* and *Leptocarpus* species Sedgeland

**Scattered Native Plants:** not assessed



**Vegetation Condition:** >60% Pristine to Very Good, <40% Good to Completely Degraded (Trudgen 1990)

**Total Flora:** not known

**Significant Flora:** *Caladenia huegelii* (R); *Astroloma xerophyllum*, *Blancoa canescens*, *Hensmania turbinata* (poorly conserved south of the river)

**Fauna:** no systematic survey. Significant mammal species: Quenda (Friend 1996 D)

**Linkage:** adjacent bushland to the south, east and west (BS472, across road); part of proposed Greenway 104 (Tingay, Alan & Associates 1997a); part of a regionally significant fragmented bushland/wetland linkage (Volume 2A, Map 8)

**Other Special Attributes:** majority Bushplan Site included in Jandakot Botanic Park Proposal (MfP 1995); 'wetland of special note' (Payne 1993a), Green's Swamp potential breeding place for the Freckled Duck (Payne 1993a); part Bushplan Site Category One Area Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995)

#### **SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE**

Not listed

#### **SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS**

**Criteria:** Representation of ecological communities, Diversity, Rarity, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation

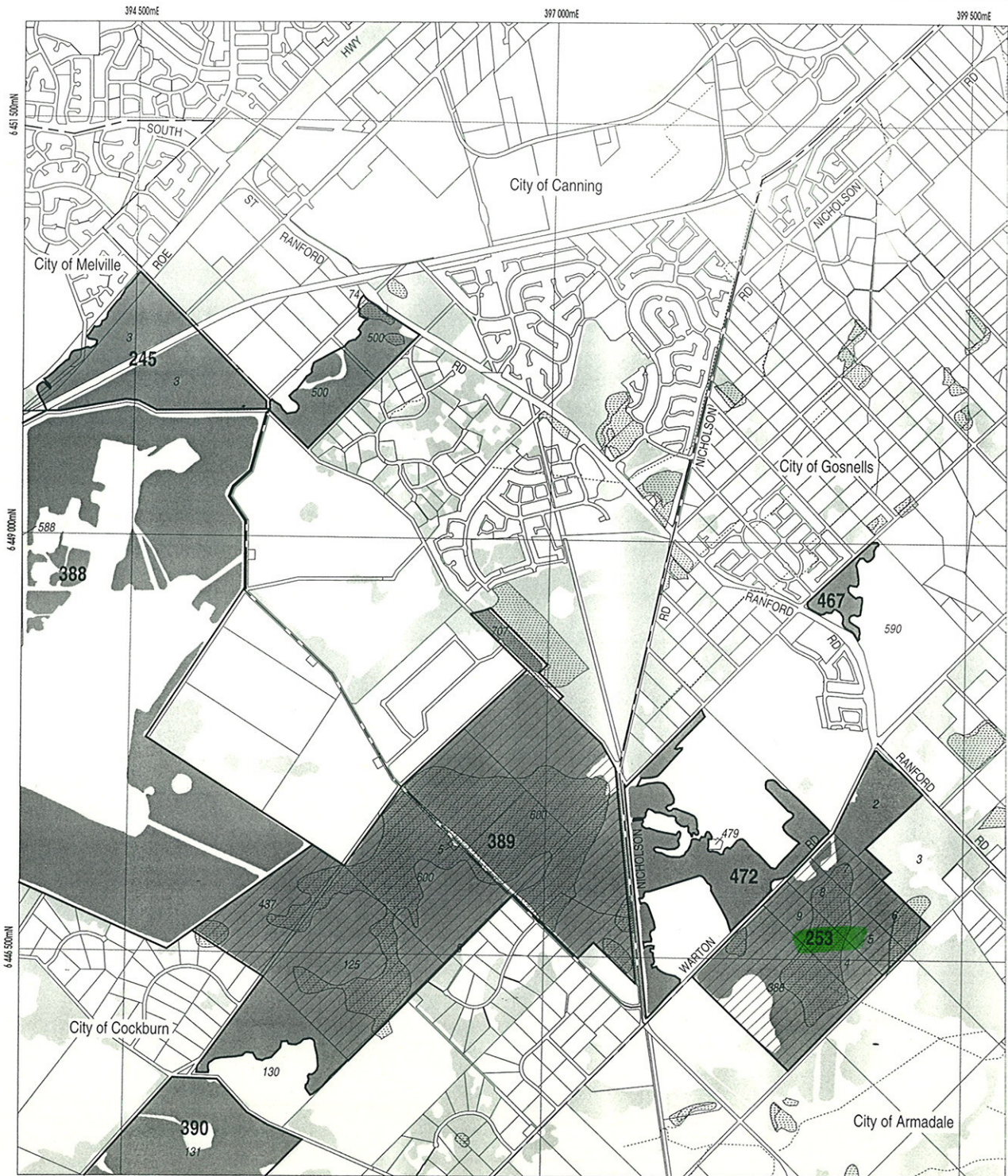
##### **Opportunities and/or Constraints**

**Opportunities:** Bushplan Site/part Bushplan Site subject to Swan Coastal Plain Lakes EPP, Swan and Canning Rivers EPP; location of Declared Rare Flora, conservation category wetlands; under MRS Parks and Recreation Reservation and TPS Landscape Zoning

**Constraints:** under MRS Urban Zoning, MRD regional road requirements, General Mineral Resource Area (sand)

**Recommendation:** The care, control and management of parts of this Bushplan Site for conservation purposes within Jandakot Regional Park is endorsed. The most appropriate mechanism for the protection of the remainder of this Bushplan Site be considered through the public comment period in consultation with the land owner(s).





**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**

NW	NE
IV	63
SW	SE

**2033**

III	II
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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							
60	61	62	63	64							
65	66	67	68	69	70						
71	72	73	74	75	76	77					
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								

**SCALE**

0 500 1000

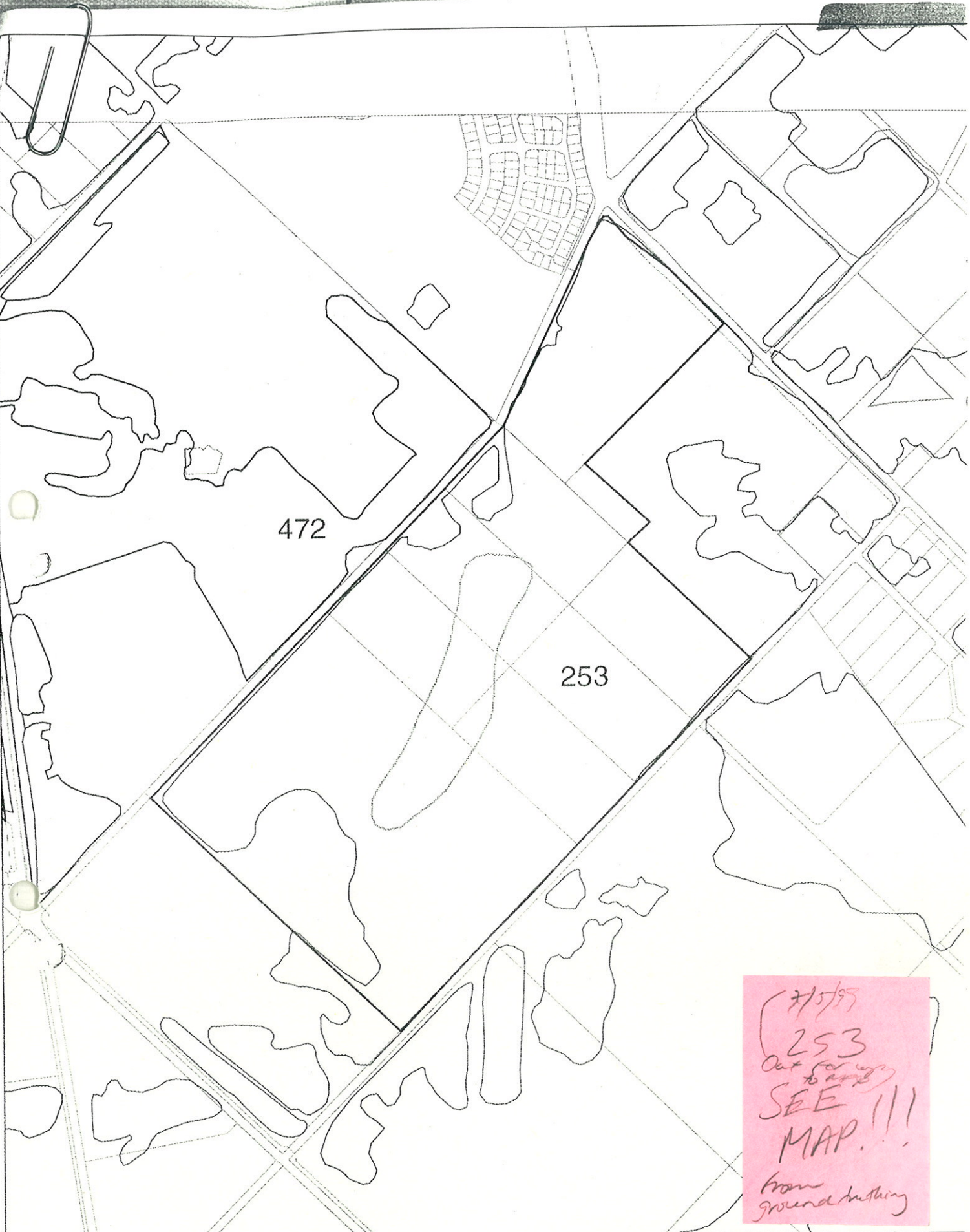
Metres

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



7/5/99  
253  
Out for map  
SEE  
MAP!!!  
from  
ground truthing

**BUSHPLAN SITES CORRECTED**



WESTERN  
AUSTRALIAN  
PLANNING  
COMMISSION



CUSTOMER  
FOCUS  
WESTERN AUSTRALIA



P BK 28/10/99

Queries

Bushplan  
Boundaries

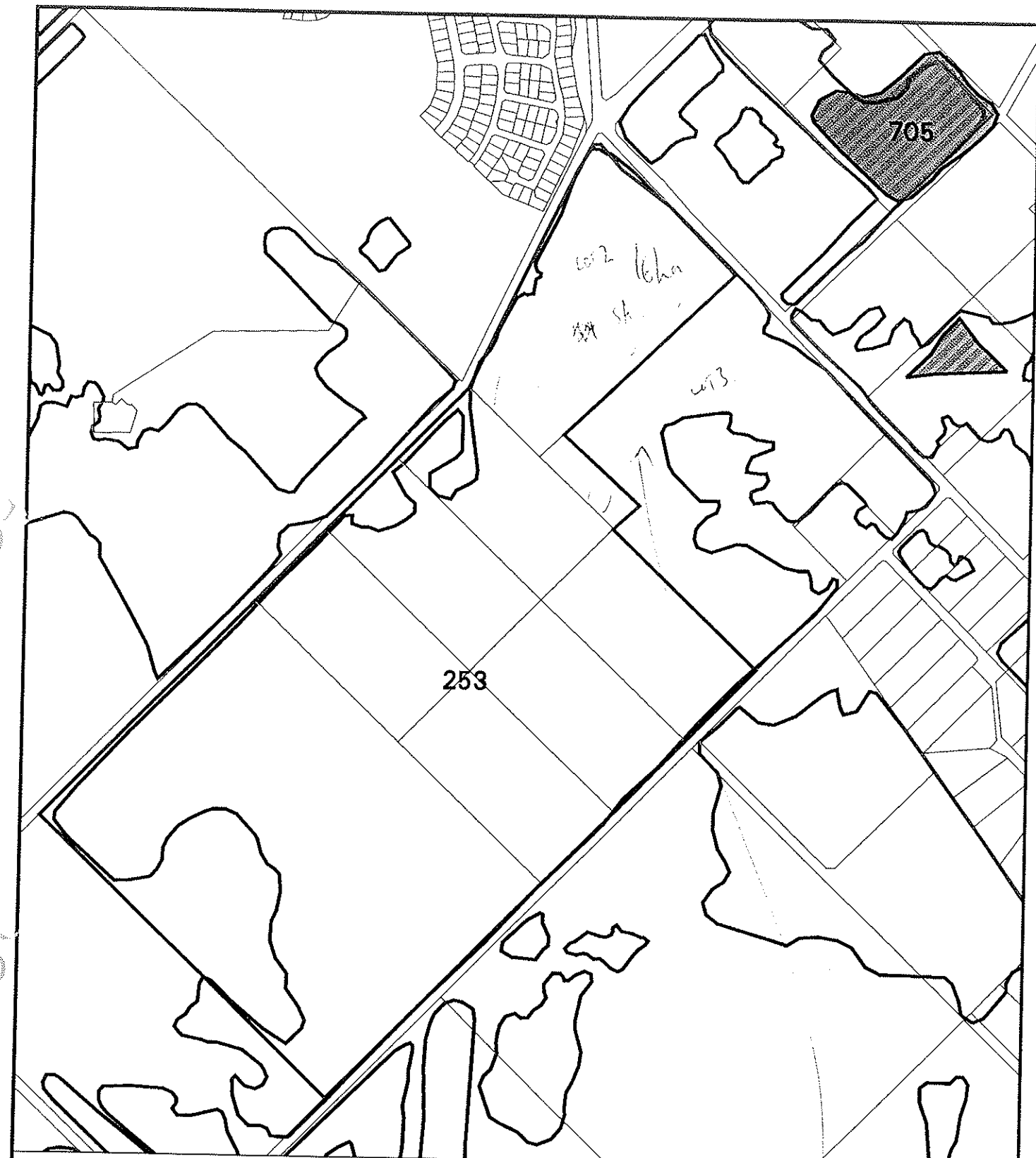
BS 253

20/8/98






D. Farrow

Homeswest waiting for  
outcome of Harpenden St  
(re Minister's decision)

before progressing.



**bp site 253**

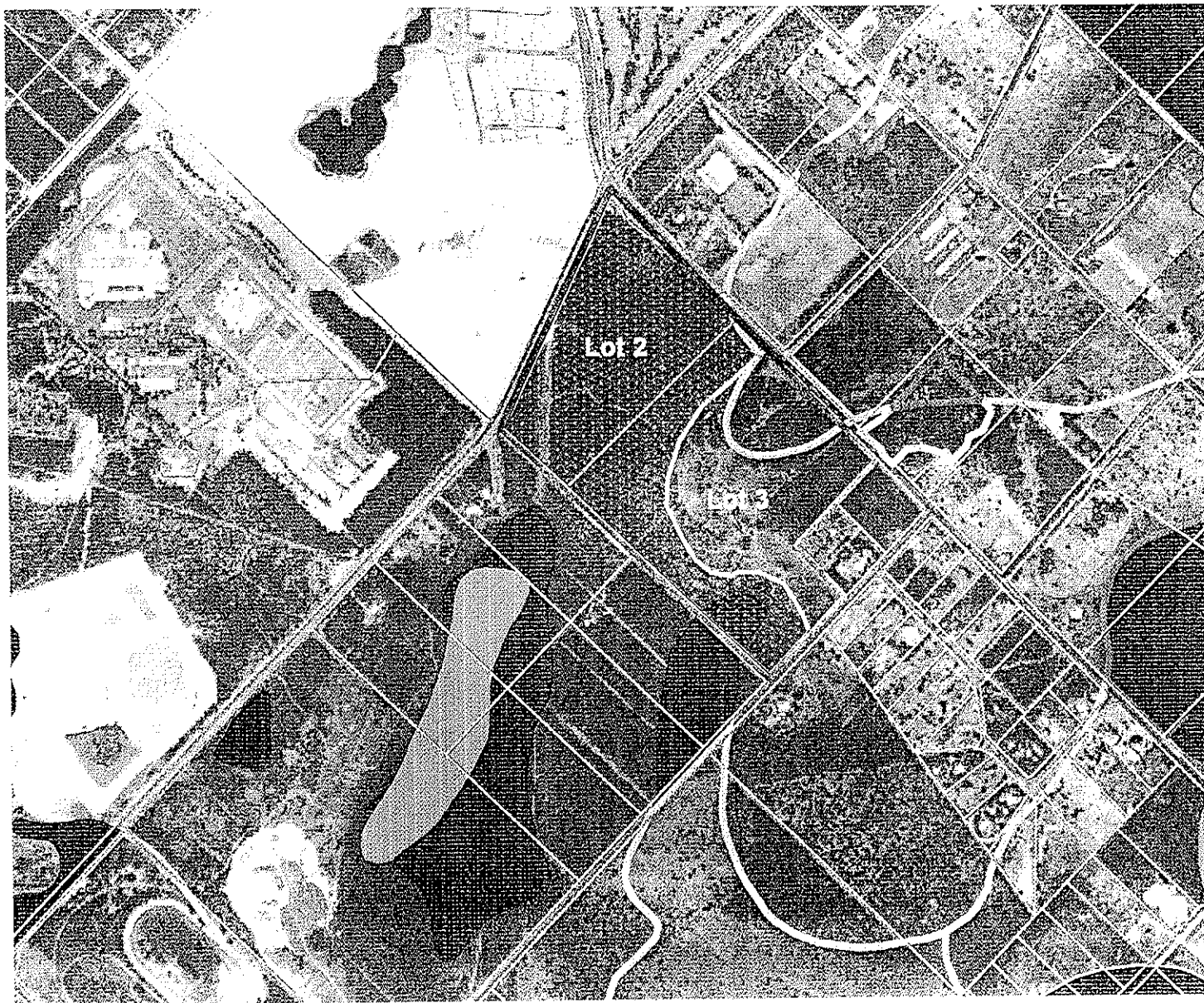
-  AG VEG 1998 BOUNDARY THEME
-  Cadastre
-  Bushplan sites refno 1-500 SCP BOUNDARY THEME
-  cons category wetlands
-  Verified CCWs

*OUTCOME OF EPA ASSESSMENT*

MFP INTERNAL USE ONLY  
 Prepared By: Andrea Zappacosta  
 Prepared For:  
 Map Ident: plot980527\_1  
 Date: 27 May 98  
 Scale 1:10709

*BJR 15/7*  
*- See attached map for boundary*

Residential Subdivision Lots 2 & Pt Lot 3 cnr Ranford and Warton Rds Forrestdale



Cadastral Boundaries

EPP Lakes

VERIFIED CONSERVATION WETLANDS 1997  
 Areas adjacent to wetlands  
 Conservation areas

WETLAND MANAGEMENT OBJECTIVES

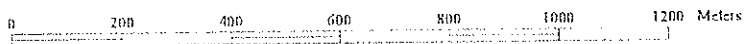
Conservation  
 Resource Enhancement

Area not to be developed

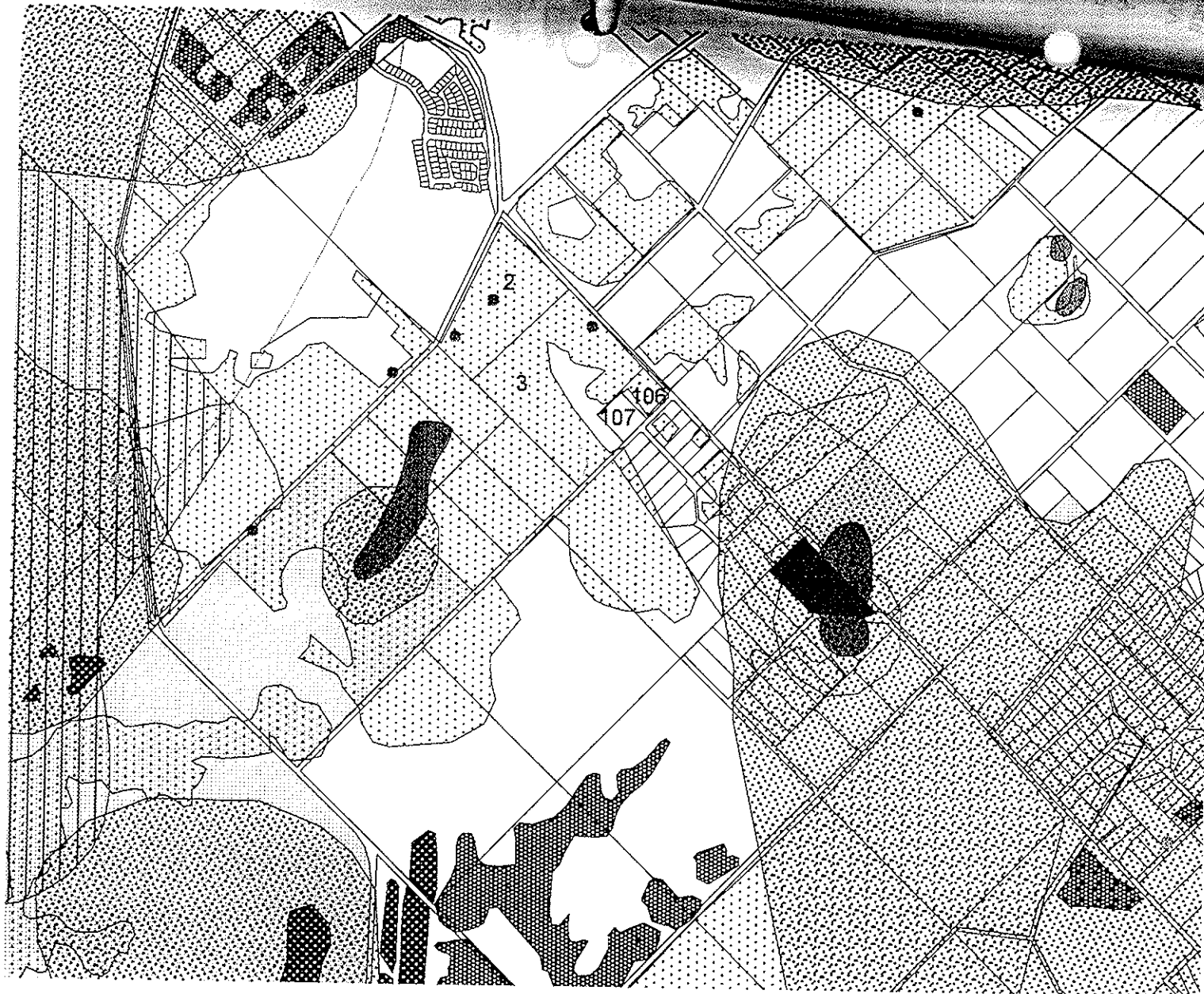
Subject Lots

not necessary  
 to use in  
 this context  
 use Cons/RH.

Need  
 • Jurisdiction between  
 PL boundaries.  
 • Year of  
 photography



CB/pj/6/1



- Remnant Vegetation, Perth, 1996
- ▨ Vegetation condition unknown
  - ▩ Vegetation in good condition
  - ▧ Vegetation in poor condition
  - ▦ Vegetation in very good condition
  - ▥ Vegetation in very poor condition
- Rare Flora
- Declared Rare Flora - Extra Tax
  - ⊙ Priority Four - Rare Taxa
  - ⊗ Priority One - Poorly Known Taxa
  - ⊘ Priority Three - Poorly Known Taxa
  - ⊙ Priority Two - Poorly Known Taxa
- ▭ Major Water Bodies
  - ▭ Airport Noise Zones
  - ▭ CALM Managed Land
  - ▭ Section 50 Reserve
  - ▭ Conservation Park
  - ▭ Leasehold
  - ▭ Marine Park
  - ▭ National Park
  - ▭ Nature Reserve
  - ▭ State Forest
  - ▭ Lakes EPP
  - ▭ Jandakot Groundwater Wellhead Protection Area Boundary
  - ▭ SPACB
  - ▭ Land Owner Type and Lot Numbers
  - ▭ Cadastral Boundaries
  - ▭ Local Government Authority Boundaries

0 100 200 300 400 500 600 700 800 900 1000 1100 1200 1300 1400 Meters

1:24090



Department of Environmental Protection, Western Australia

**Vegetation, flora and habitat values of Lot 2 and part Lot 3, Ranford  
Road Forrestdale, part Bushplan Site 253**

prepared by

**Bronwen Keighery  
Conservation Branch  
Department of Environmental Protection**

**November 1997**

The naturally vegetated areas (bushland) of Lot 2 and part Lot 3 as shown on the Map are of regional conservation value and represent plant communities and habitat that are poorly reserved. The clearing and destruction of habitat in this area is considered to have unacceptable environmental impacts.

Lot 2 and part Lot 3 are part of a larger area of bushland that encompasses an area of vegetated wetland and upland (Map). Containing both vegetated wetlands and uplands in excellent to good condition the bushland in the two lots is typical of the larger area and is important in consolidating the whole. The entire area is located on the interface of the Bassendean Dunes and the Pinjarra Plain within the area mapped as the Southern River Vegetation Complex (Heddle *et al.* 1980).

The Southern River Vegetation Complex has been heavily cleared and it is estimated that over the entire area of its range less than seven percent remains uncleared (Trudgen and Keighery 1995). Within the Perth Metropolitan Area 18% was considered to be uncleared in 1994 (Dixon *et al.* 1994). Lot 2 and part Lot 3, and the larger area of which they are part, are excellent examples, both structurally and floristically, of the Southern River Vegetation Complex. Together they are one of the largest remaining areas of this complex in the Perth Metropolitan Area. Therefore in the context of Government's policy, outlined in the Urban Bushland Strategy (Anon 1995), which aims protect to protect 10% of each vegetation complex, Lot 2 and part Lot 3 are considered to be regionally significance and poorly conserved.

The regional values of the larger area has also been identified by a recent study by Evangelisti & Associates *et al.* (1995). The study by Evangelisti & Associates *et al.* (1995) on the wetlands of the Middle Canning Catchment identified 'Category One Wetlands' in the Lot 2 and 3 and the larger area. Category One Wetlands were recommended to be "...considered for reservation at the regional level as they contain inherent values, functions, uses and attributes which should not be lost, such as short term and long term scientific, environmental, historic, educational or economic values." The Category One Wetlands in Lot 3 have been identified as 'Conservation Category' and 'Resource Enhancement' wetlands by Hill *et al.* (1996b and Map, Appendix 3). Recognition of the wetlands Lot 2 and part Lot 3 is also consistent with the Government's policy, outlined in the Wetland Conservation Policy for Western Australia (1997) which has the primary objective of preventing "...the further loss or degradation of valuable wetlands and wetland types..".

In addition Lot 2 and part Lot 3 contain parts of a low sand dune vegetated with *Banksia* Woodland and dampland that are contiguous with areas identified within the Jandakot Botanic Park Proposal (Ministry for Planning 1995, Map). That is the areas of these lots identified are an integral part of the area and should be included in the Park.

### **Description of Lot 2 and part Lot 3**

#### **REGIONAL INFORMATION**

#### **LANDFORM AND SOILS** (Jordan 1986)

##### **Bassendean Dunes**

Bassendean Sands (Qpb: S8)

##### **Bassendean Dunes/Pinjarra Plain**

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

#### **VEGETATION AND FLORA**

**Vegetation Complex** (Heddle *et al.* 1980)

##### **Combinations of Bassendean Dunes/Pinjarra Plain**

Southern River Complex

**Floristic Community Types** \* not sampled types inferred (after Gibson *et al.* 1994)

##### **Supergroup 2 - Seasonal Wetlands**

\*4 *Melaleuca preissiana* damplands

\*5 Mixed shrub damplands

##### **Supergroup 3 - Uplands, centred on Bassendean Dunes and the Dandaragan Plateau**

\*23a Central *Banksia attenuata* - *B. menziesii* woodlands

#### **WETLANDS** (Hill *et al.* 1996a & b)

**Wetland Types:** dampland

**Consanguineous suite**

**Bassendean - Pinjarra transition OR Bassendean with fluvial features**

Bennett Brook (B/P.4)

**Bassendean Dunes**

Jandakot (B.3)

**Wetland Management Objective:** Conservation Resource Enhancement

**Lake EPP:** none identified

**THREATENED ECOLOGICAL COMMUNITIES** (English and Blyth 1997)

Not assessed (none expected)

#### **AREA DETAIL**

**Landscape Features:** vegetated wetland, vegetated uplands

**Vegetation and Flora:** limited survey (Trudgen 1990, DEP 1997)

**Structural Units:** mapping (Trudgen 1990)

Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland to Low Open Forest with scattered *Allocasuarina fraseriana*, *B. ilicifolia*, *Eucalyptus tottiana* and *Nuytsia floribunda*; *Banksia ilicifolia*, *B. attenuata* and *Melaleuca preissiana* Low Open Forest

Wetlands: *Melaleuca preissiana* and *Nuytsia floribunda* Woodland; *Melaleuca preissiana* Low Very Open Woodlands; *Kunzea ericifolia* Closed Tall Scrub; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Hypocalymma angustifolium* and *Melaleuca* sp. B Low Open Heath

**Vegetation Condition:** >70% Pristine to Very Good with <30% Good to Degraded (associated with area that has been partially cleared but is regenerating and has the potential to regenerate further)

**Total Flora:** > 200 taxa (estimated, DEP 1997)

DRF/Priority and significant flora: Three species - *Hensmania turbinata*, *Astroloma xerophyllum* and *Blancoa canescens*, that are poorly conserved south of the river have been identified in significant populations (DEP 1997). In the larger area *Diuris purdiei* (R) and *Caladenia huegelii* (R) have been found and could occur in Lot 2 or 3 (Atkins 1996).

**Fauna:** no known information

**Linkage:** bushland linkage to south, east, west fragmented; with adjoining areas forms part of a regional corridor linking the Southern River with bushland on the Jandakot Mound, much of which is identified in the Jandakot Botanic Park.

#### **References**

Anon. 1995 Urban Bushland Strategy. Government of Western Australia

Anon. 1997 Wetlands Conservation Policy for western Australia. Government of Western Australia

Atkins, K. 1996 Declared Rare and Priority List for Western Australia. Department of Conservation and Land Management, WA.

Dixon, J., Connell, S., Bailey, J. and Keenan, C. 1994 The Perth Environment Project and an Inventory of Perth's Remnant Native Vegetation. In A Vision for a Greener City, 1994 National Greening Australia Conference Proceedings.

Department of Environmental Protection 1997 Survey records. Unpublished notes.

English, V. and Blyth, J. 1997 Identifying and Conserving Threatened Ecological Communities in the South West Botanical Province. An unpublished report for the Department of Conservation and Land Management to Environment Australia.

Evangelisti & Associates, Landvision and The V & C Semeniuk Research Group 1995 Water Resources Management Plan. Middle Canning Catchment Study. Stage 1 - Volume 1. A report for the Water Authority of WA.

Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H., and Lyons, M.N. 1994 A Floristic Survey of the southern Swan Coastal Plain. Unpublished report for the Australian Heritage Commission, prepared by the Department of Conservation and Land Management and the Conservation Council of WA (Inc.)

Hedde, E.M., Loneragan, O.W. and Havel, J.J. 1980 Vegetation of the Darling System' in Atlas of Natural Resources, Darling System, Western Australia. Department of Conservation and Environment, Western Australia.

Hill, A.L., Semeniuk, C.A., Semeniuk, V., and Del Marco, A. 1996a Wetlands of the Swan Coastal Plain Vol. 2A: Wetland Mapping, Classification and Evaluation. Water and Rivers Commission and Department of Environmental Protection.

Hill, A.L., Semeniuk, C.A., Semeniuk, V., and Del Marco, A. 1996b Wetlands of the Swan Coastal Plain Vol. 2B: Wetland Mapping, Classification and Evaluation Atlas. Water and Rivers Commission and Department of Environmental Protection

Jordan, J.E., 1986 Armadale Sheet part of Sheets 2033 I and 2133 IV. Environmental Geology Series. Geological Survey of Western Australia, Department of Minerals and Energy, Perth.

Ministry for Planning 1995 Proposals for the Jandakot Botanic Park Final. State of Western Australia 1995

Trudgen, M.E., 1990 An Assessment of the Vegetation and Flora Conservation Values in the area between Jandakot and Wellard. An unpublished report for Bowman Bishaw Gorham.

Trudgen, M.E., and Keighery, B.J., 1995 A Survey of the Remnant Vegetation of the City of Gosnells west of the Darling Scarp. Unpublished report prepared for City of Gosnells.

Corrected & Sent  
21/11/97

Appendix 4: Vegetation, flora and habitat values of Lot 2 and part Lot 3, Ranford Road Forrestdale

## **Vegetation, flora and habitat values of Lot 2 and part Lot 3, Ranford Road Forrestdale**

### **Summary**

The naturally vegetated areas (bushland) of Lot 2 and part Lot 3 as shown on the Map in Appendix 3 are of regional conservation value and represent plant communities and habitat that are poorly reserved. The clearing and destruction habitat in this area is considered to have unacceptable environmental impacts.

Lot 2 and part Lot 3 are part of a larger area of bushland that encompasses an area of vegetated wetland and upland (Map, Appendix 3). Containing both vegetated wetlands and uplands in excellent to good condition the bushland in the two lots is typical of the larger area and is important in consolidating the whole. The entire area is located on the interface of the Bassendean Dunes and the Pinjarra Plain within the area mapped as the Southern River Vegetation Complex (Heddle *et al* 1980).

The Southern River Vegetation Complex has been heavily cleared and it is estimated that over the entire area of its range less than seven percent remains uncleared (Trudgen and Keighery 1995). Within the Perth Metropolitan Area 18% was considered to be uncleared in 1994 (Dixon *et al* . 1994). Lot 2 and part Lot 3, and the larger area of which they are part, are excellent examples, both structurally and floristically, of the Southern River Vegetation Complex. Together they are one of the largest remaining areas of this complex in the Perth Metropolitan Area. Therefore in the context of Government's policy, outlined in the Urban Bushland Strategy (Anon 1995), which aims to protect 10% of each vegetation complex, Lot 2 and part Lot 3 are considered to be regionally significant and poorly conserved.

The regional values of the larger area has also been identified by a recent study by Evangelisti & Associates *et al.* (1995). The study by Evangelisti & Associates *et al.* (1995) on the wetlands of the Middle Canning Catchment identified 'Category One Wetlands' in the Lot 2 and 3 and the larger area. Category One Wetlands were recommended to be "...considered for reservation at the regional level as they contain inherent values, functions, uses and attributes which should not be lost, such as short term and long term scientific, environmental, historic, educational or economic values." The Category One Wetlands in Lot 3 have been identified as 'Conservation Category' and 'Resource Enhancement' wetlands by Hill *et al.* (1996b and Map, Appendix 3).

In addition Lot 2 and part Lot 3 contain parts of a low sand dune vegetated with *Banksia* Woodland and dampland that are contiguous with areas identified within the Jandakot Botanic Park Proposal (Ministry for Planning 1995, Map, Appendix 3). That is the areas of these lots identified are an integral part of the area and should be included in the Park.

### **Description of Lot 2 and part Lot 3**

#### **REGIONAL INFORMATION**

#### **LANDFORM AND SOILS** (Jordan 1986)

##### **Bassendean Dunes**

Bassendean Sands (Qpb: S8)

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

#### **VEGETATION AND FLORA**

##### **Vegetation Complex** (Heddle *et al.* 1980)

##### **Combinations of Bassendean Dunes/Pinjarra Plain**

Southern River Complex

**Floristic Community Types** \* not sampled types inferred (after Gibson *et al.* 1994)

##### **Supergroup 2 - Seasonal Wetlands**

\* 4 *Melaleuca preissiana* damplands

\* 5 Mixed shrub damplands

##### **Supergroup 3 - Uplands, centred on Bassendean Dunes and the Dandaragan Plateau**

\* 23a Central *Banksia attenuata* - *B. menziesii* woodlands

#### **WETLANDS** (Hill *et al.* 1996a & b)

**Wetland Types:** dampland

**Consanguineous suite**

**Bassendean - Pinjarra transition OR Bassendean with fluvial features**

Bennett Brook (B/P.4)

**Bassendean Dunes**

Jandakot (B.3)

**Wetland Management Objective:** Conservation Resource Enhancement

**Lake EPP:** none identified

**THREATENED ECOLOGICAL COMMUNITIES** (English and Blyth 1997)

Not assessed (none expected)

**AREA DETAIL**

**Landscape Features:** vegetated wetland, vegetated uplands

**Vegetation and Flora:** limited survey (Trudgen 1990, DEP 1997)

**Structural Units:** mapping (Trudgen 1990)

Uplands: *Banksia attenuata* and *B. menziesii* Low Woodland to Low Open Forest with scattered *Allocasuarina fraseriana*, *B. ilicifolia*, *Eucalyptus tottiana* and *Nuytsia floribunda*; *Banksia ilicifolia*, *B. attenuata* and *Melaleuca preissiana* Low Open Forest

Wetlands: *Melaleuca preissiana* and *Nuytsia floribunda* Woodland; *Melaleuca preissiana* Low Very Open Woodlands; *Kunzea ericifolia* Closed Tall Scrub; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Hypocalymma angustifolium* and *Melaleuca* sp. B Low Open Heath

**Vegetation Condition:** >70% Pristine to Very Good with <30% Good to Degraded (associated with area that has been partially cleared but is regenerating and has the potential to regenerate further)

**Total Flora:** > 200 taxa (estimated, DEP 1997)

DRF/Priority and significant flora: Three species - *Hensmania turbinata*, *Astroloma xerophyllum* and *Blancoa canescens*, that are poorly conserved south of the river have been identified in significant populations (DEP 1997). In the larger area *Diuris purdiei* (R) and *Caladenia huegelii* (R) have been found and could occur in Lot 2 or 3 (Atkins 1996).

**Fauna:** no known information

**Linkage:** bushland linkage to south, east, west fragmented; with adjoining areas forms part of a regional corridor linking the Southern River with bushland on the Jandakot Mound, much of which is identified in the Jandakot Botanic Park.

**References**

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Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H., and Lyons, M.N. 1994 A Floristic Survey of the southern Swan Coastal Plain. Unpublished report for the Australian Heritage Commission, prepared by the Department of Conservation and Land Management and the Conservation Council of WA (Inc.)

Appendix 4: Vegetation, flora and habitat values of Lot 2 and part Lot 3, Ranford Road Forrestdale

Hedde, E.M., Loneragan, O.W. and Havel, J.J. 1980 Vegetation of the Darling System' in Atlas of Natural Resources, Darling System, Western Australia. Department of Conservation and Environment, Western Australia.

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Hill, A.L., Semeniuk, C.A., Semeniuk, V., and Del Marco, A. 1996b Wetlands of the Swan Coastal Plain Vol. 2B: Wetland Mapping, Classification and Evaluation Atlas. Water and Rivers Commission and Department of Environmental Protection

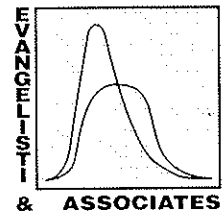
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Ministry for Planning 1995 Proposals for the Jandakot Botanic Park Final. State of Western Australia 1995

Trudgen, M.E., 1990 An Assessment of the Vegetation and Flora Conservation Values in the area between Jandakot and Wellard. An unpublished report for Bowman Bishaw Gorham.

Trudgen, M.E., and Keighery, B.J., 1995 A Survey of the Remnant Vegetation of the City of Gosnells west of the Darling Scarp. Unpublished report prepared for City of Gosnells.

BS 253



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# **WATER RESOURCES MANAGEMENT PLAN**

## **MIDDLE CANNING CATCHMENT**

(STAGE 1 - VOLUME 1)

Prepared for the

**Water Authority of Western Australia**

By

**Evangelisti & Associates**  
Consulting Engineers and Project Managers

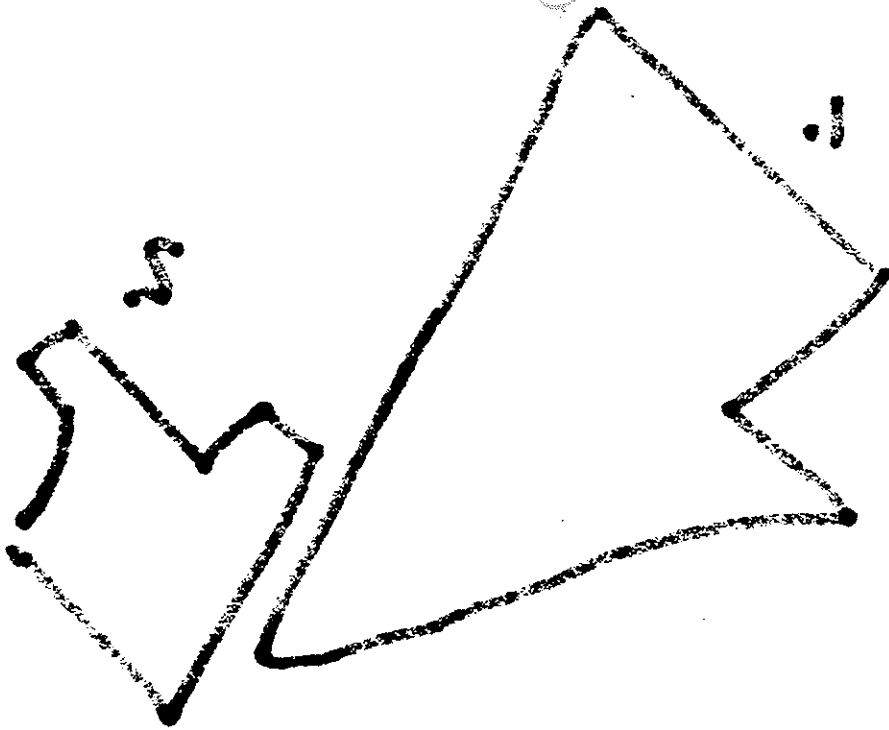
in association with

**Landvision**  
Consultants in Urban and Environmental Planning

and

**The V & C Semeniuk Research Group**  
Environmental Scientists

October 1995



- Additional to Jandakot  
Between PK block (swamp)
- Banksia woodland in both  
variable cond (both Mulliske &  
Tredgen JBP study)
- Not in Category 1 in  
Middle Country Patch BUT  
needs to be rigorously assessed

# 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 *HARRISDALE SWAMP.*

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: *WARTON RANFORD WRIGHT RDS.*

b) Nearest Corner: .....

c) Lot Number: *388 2,3,4,5,6,7,8,9.* Street Number: .....

d) Town/Suburb/Location: *Fonnestdale*

e) Local Council: *City of Armadale.*

f) Site Name (if any): *See above.*

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

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

.....

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:

*See Planning & Control Area Map 7.2704 Structure  
Plan 1 M&S Subject Corridor, Stage A Agent Jon Latot*

m) Are you aware of any development proposals that are likely to affect the area? *Botan*  
*P.R.*

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

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?

...Barbara Bishaw + Gordon (Toudgen)  
Several significant fauna populations (studies  
If yes, please give details of the work ... need to be done) +  
waterland usage

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
- It was pristine but 10% of the acres cleared (illegally) a lot of the woodland 2 years ago.*

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

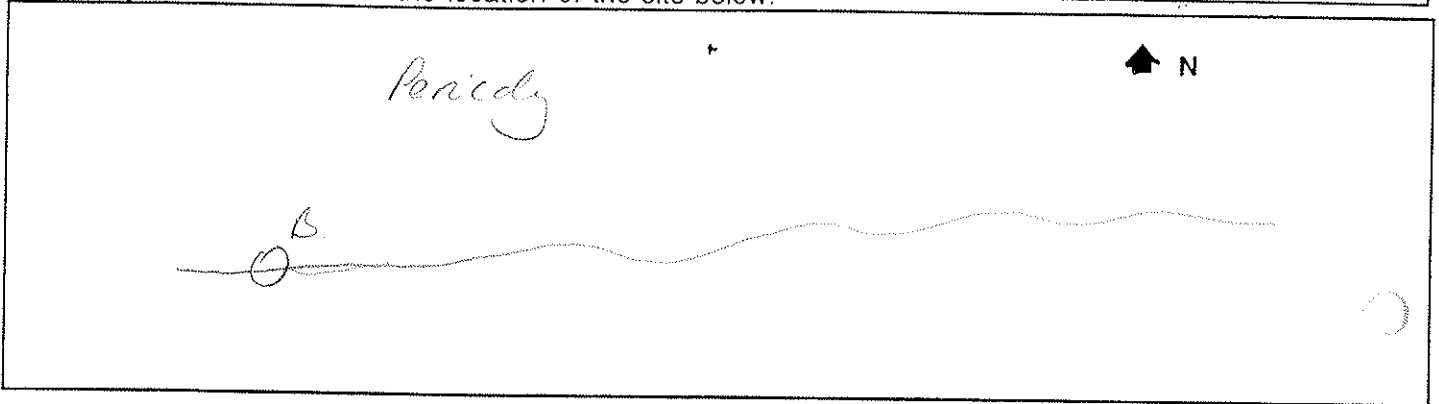
**BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only**

BUSHLAND AREA BS 252 SITE NUMBER S17EB  
 DATE TRIP \_\_\_\_\_ RECORDERS \_\_\_\_\_  
 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 64 Nedlands WA 6008.

**1. LOCATION of the QUADRAT**

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



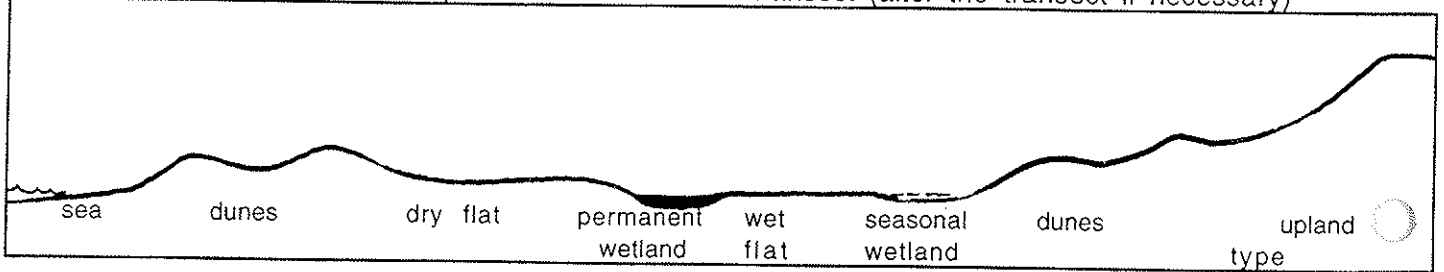
**Road Location** \_\_\_\_\_

**Geographic Location** Latitude \_\_\_\_\_ S Longitude \_\_\_\_\_ E Altitude \_\_\_\_\_

Reference Map \_\_\_\_\_

**Photograph** Photographer's Name \_\_\_\_\_ Photo No \_\_\_\_\_

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



**2. SITE DATA** Circle the correct response.

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

**Surface Soil** type Sandy (humic) **Colour** gray (dark)  
**Exposed rock** type \_\_\_\_\_ % surface \_\_\_\_\_

**Sub-surface Soil** **Colour** \_\_\_\_\_  
**Rock** type \_\_\_\_\_ depth to rock \_\_\_\_\_

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

<b>Litter</b>	Depth	% cover	<b>Bare Ground</b>	% cover
	cm			












**BUSHLAND PLANT SURVEY RECORDING SHEET 2 - 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 6008.

**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	10 - 30m	under 10m	over 8m	under 8m
LIFE FORM	30m					
	10m					
COVER CLASS (%)				2-10%		
DOMINANT SPECIES				Mel. pae Nand. ebr		
		SHRUBS		SHRUBS		
		over 2m	2m - 1m	under 1m		
LIFE FORM	2m					
	1m					
COVER CLASS (%)			2-10%	77%		
DOMINANT SPECIES			Yort pae	Peri elip + numerous Millea		
		GRASSES	HERBS	SEDGES	OTHER	
LIFE FORM	1m					
COVER CLASS (%)			2-10%	30-70%		
DOMINANT SPECIES			Phleb cil Pant oc Dasy brom	CyM. Patenaeum Schoen sp		

**4. VEGETATION CONDITION**

1	'PRISTINE'		COMMENTS Roadside (across fence in spot area)
2	EXCELLENT	✓	
3	VERY GOOD		
4	GOOD		
5	DEGRADED		

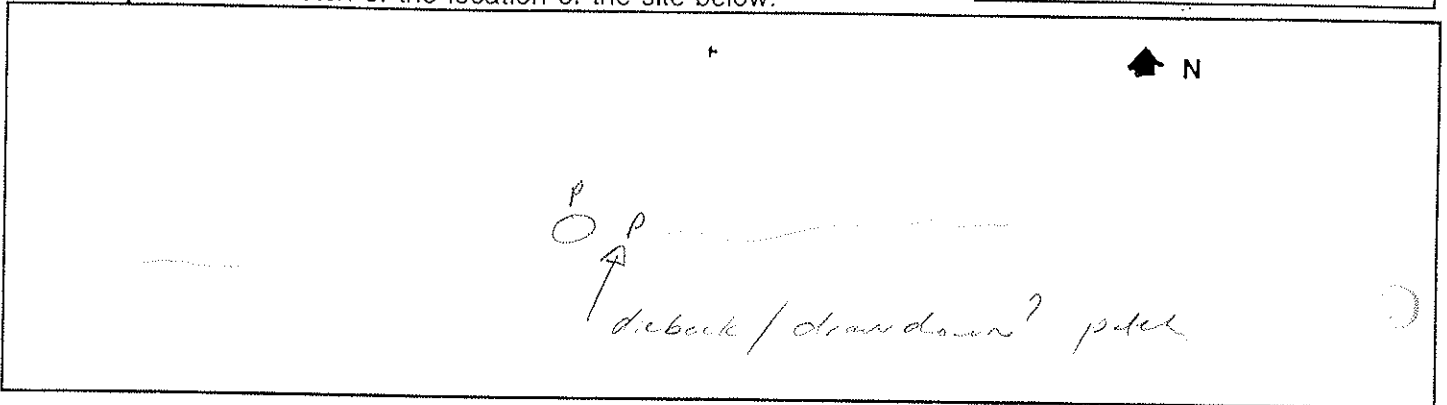
**BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only**

BUSHLAND AREA BS 252 SITE NUMBER SRA  
 DATE TRIP 5/11/97 RECORDERS BJK  
 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 64 Nedlands WA 6008.

**1. LOCATION of the QUADRAT**

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

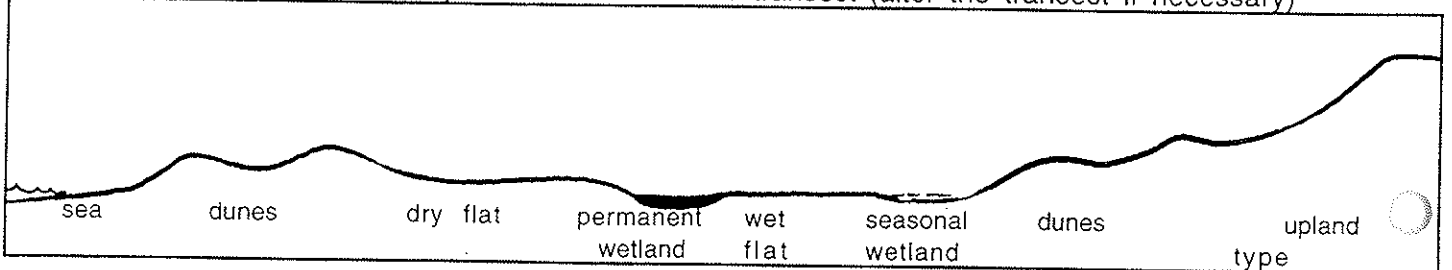


Road Location WARFON RO.

Geographic Location Latitude \_\_\_\_\_ S Longitude \_\_\_\_\_ E Altitude \_\_\_\_\_  
 Reference Map \_\_\_\_\_

Photograph Photographer's Name BJK Photo No (2)

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  SW W NW

Surface Soil sand Colour grey  
 Exposed rock type NA % surface \_\_\_\_\_

Sub-surface Soil as above Colour \_\_\_\_\_  
 Rock type \_\_\_\_\_ depth to rock \_\_\_\_\_

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

Litter	Depth	<u>80</u> % cover	Bare Ground	<u>0</u> % cover
		cm		











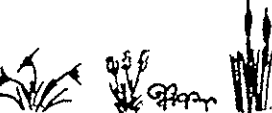
BUSHLAND PLANT SURVEY RECORDING SHEET 2 - use pencil only

3. VEGETATION STRUCTURE AND COVER

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

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%

LIFE FORM	TREES			MALLEES	
	over 30m	10-30m	under 10m	over 8m	under 8m
					
COVER CLASS (%)			30-70%		
DOMINANT SPECIES			Bank euc Bank merr occ Bank illie		
LIFE FORM	SHRUBS		SHRUBS		
	over 2m	2m-1m	under 1m		
					
COVER CLASS (%)		10-30%	30-70%		
DOMINANT SPECIES		Mel. myrsoides Kan. oriz Tuck. fusc.	Loac con, leuc Sp, Schol. invol. (pros), bos eno Erem. pauc.		
LIFE FORM	GRASSES	HERBS	SEDGES	OTHER	
					
COVER CLASS (%)		10-30			
DOMINANT SPECIES		Phleb cil	Luz. barb		

4. VEGETATION CONDITION

1	'PRISTINE'	<input type="checkbox"/>	COMMENTS Very few weeds, occ gladi, Ehr. cely Vrs earth Adj wetter patches Ehr cely to 2-10%
2	EXCELLENT	<input checked="" type="checkbox"/>	
3	VERY GOOD	<input type="checkbox"/>	
4	GOOD	<input type="checkbox"/>	
5	DEGRADED	<input type="checkbox"/>	

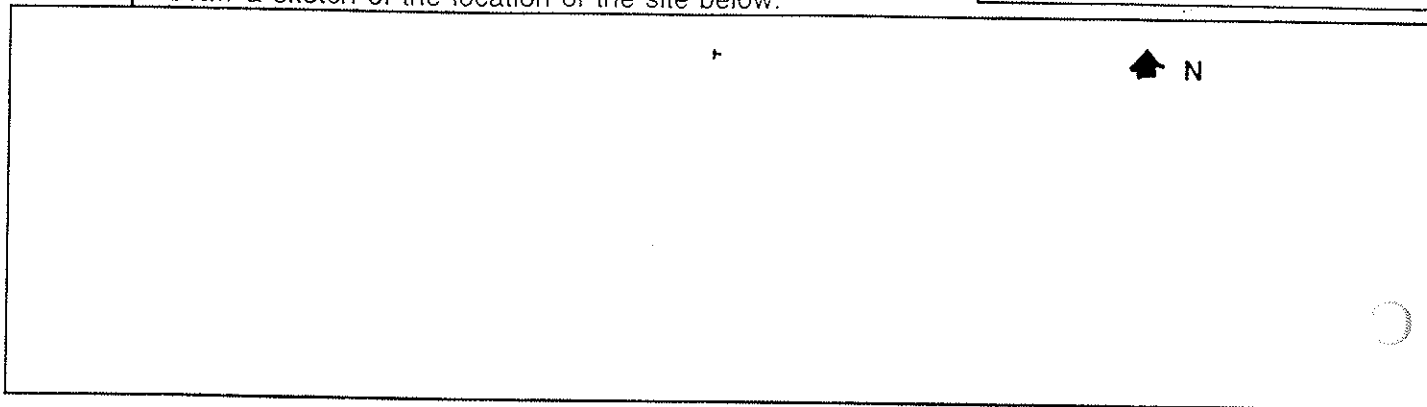
**BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only**

BUSHLAND AREA BS 252 SITE NUMBER Site 9  
 DATE TRIP \_\_\_\_\_ RECORDERS \_\_\_\_\_  
 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 64 Nedlands WA 6008.

**1. LOCATION of the QUADRAT**

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



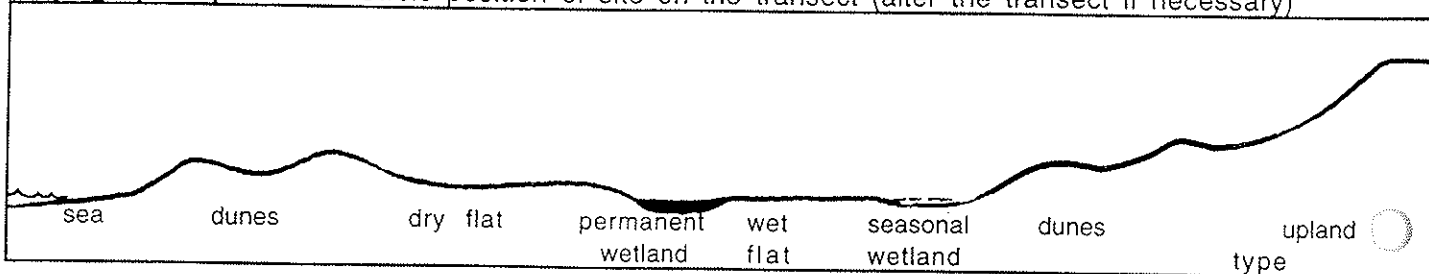
**Road Location** \_\_\_\_\_

**Geographic Location** Latitude \_\_\_\_\_ S Longitude \_\_\_\_\_ E Altitude \_\_\_\_\_

Reference Map \_\_\_\_\_

**Photograph** Photographer's Name \_\_\_\_\_ Photo No \_\_\_\_\_

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



**2. SITE DATA** Circle the correct response.

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

**Surface Soil** \_\_\_\_\_ **Colour** \_\_\_\_\_  
**Exposed rock** type \_\_\_\_\_ % surface \_\_\_\_\_

**Sub-surface Soil** \_\_\_\_\_ **Colour** \_\_\_\_\_  
**Rock** type \_\_\_\_\_ depth to rock \_\_\_\_\_

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

<b>Litter</b>	Depth	% cover	<b>Bare Ground</b>	% cover
	cm			






**BUSHLAND PLANT SURVEY RECORDING SHEET 2 - use pencil only**




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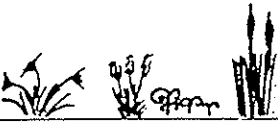
**3. VEGETATION STRUCTURE AND COVER**

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%

LIFE FORM	TREES			MALLEES	
	over 30m	10-30m	under 10m	over 8m	under 8m
			Transition site E to site F 		
COVER CLASS (%)			Scattered		
DOMINANT SPECIES			Met. pili Bank illu		

LIFE FORM	SHRUBS		SHRUBS
	over 2m	2m-1m	under 1m
			
COVER CLASS (%)	adj 770% Koz in daps	2-10% (clumped)	10-30%
DOMINANT SPECIES	Kun enc	Peni ellip	Hyp ang

LIFE FORM	GRASSES	HERBS	SEDGES	OTHER
				
COVER CLASS (%)		30-70%	2-10%	
DOMINANT SPECIES		Phleb cil Dasy brow	Schoenus sp. Lyy. barb	

**4. VEGETATION CONDITION**

1	'PRISTINE'	COMMENTS  Occ Eha only present.
2	EXCELLENT	
3	VERY GOOD	
4	GOOD	
5	DEGRADED	

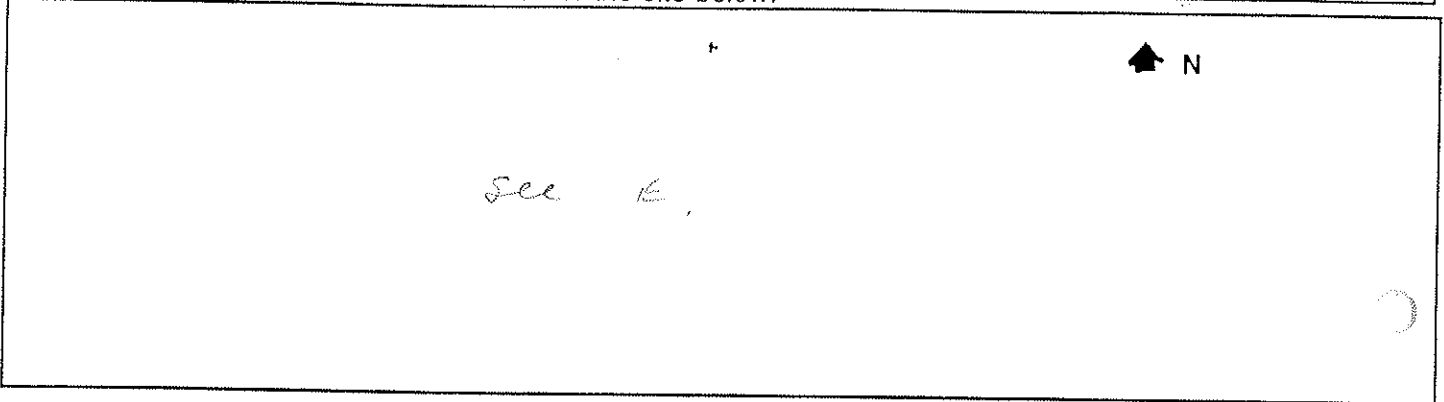
**BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only**

BUSHLAND AREA B5 252 SITE NUMBER 517E F  
 DATE TRIP \_\_\_\_\_ RECORDERS \_\_\_\_\_  
 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 64 Nedlands WA 6008.

**1. LOCATION of the QUADRAT**

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

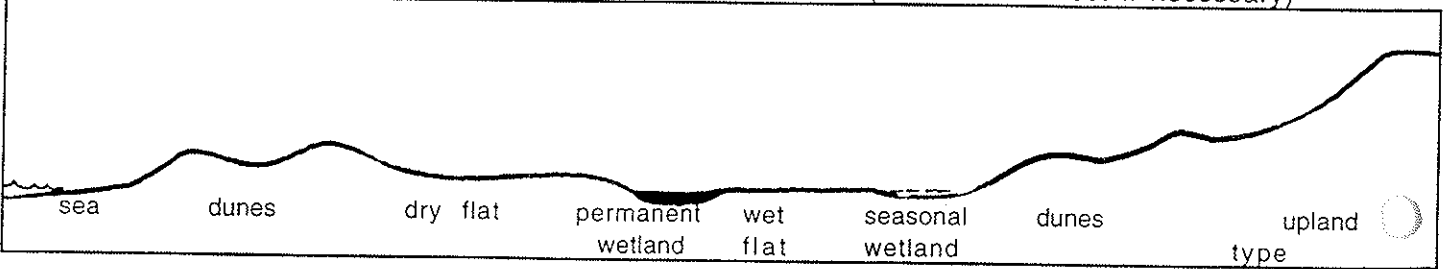


**Road Location**

**Geographic Location** Latitude \_\_\_\_\_ S Longitude \_\_\_\_\_ E Altitude \_\_\_\_\_  
 Reference Map \_\_\_\_\_

**Photograph** Photographer's Name BJK Photo No 3

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



**2. SITE DATA** Circle the correct response.

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

**Surface Soil** sand (humic) **Colour** lt grey  
**Exposed rock** type \_\_\_\_\_ % surface \_\_\_\_\_

**Sub-surface Soil** **Colour** \_\_\_\_\_  
**Rock** type \_\_\_\_\_ depth to rock \_\_\_\_\_

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

**Litter** \_\_\_\_\_ **Bare Ground** \_\_\_\_\_  
 Depth 95 % cover cm %cover 0












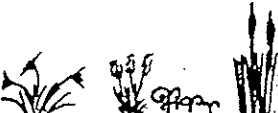
BUSHLAND PLANT SURVEY RECORDING SHEET 2 - use pencil only

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

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%

LIFE FORM	TREES			MALLEES	
	over 30m	10-30m	under 10m	over 8m	under 8m
		<i>clumped</i> 	 		
		30-70%			
COVER CLASS (%)					
DOMINANT SPECIES		<i>Bank illc</i> <i>Bank att</i> <i>Mel paei</i>			
	SHRUBS (occ) over 2m		2m-1m	SHRUBS under 1m	
LIFE FORM	<i>clumped</i> 				
COVER CLASS (%)	30-70%		30-70%	2-10%	
DOMINANT SPECIES	<i>Kunz eric</i> (some lower)		<i>Xanth paei</i> <i>Ac. pul.</i>	<i>Dar. ptyg.</i> <i>Cor. slab.</i>	
	GRASSES	HERBS	SEDGES	OTHER	
LIFE FORM					
COVER CLASS (%)		30-70%			
DOMINANT SPECIES		<i>Phleb Gil</i> <i>Dasy brow</i>			

4. VEGETATION CONDITION

1	'PRISTINE'		COMMENTS <i>Note photos taken into area site and another int adj of site C/E.</i>
2	EXCELLENT	✓	
3	VERY GOOD		
4	GOOD		
5	DEGRADED		

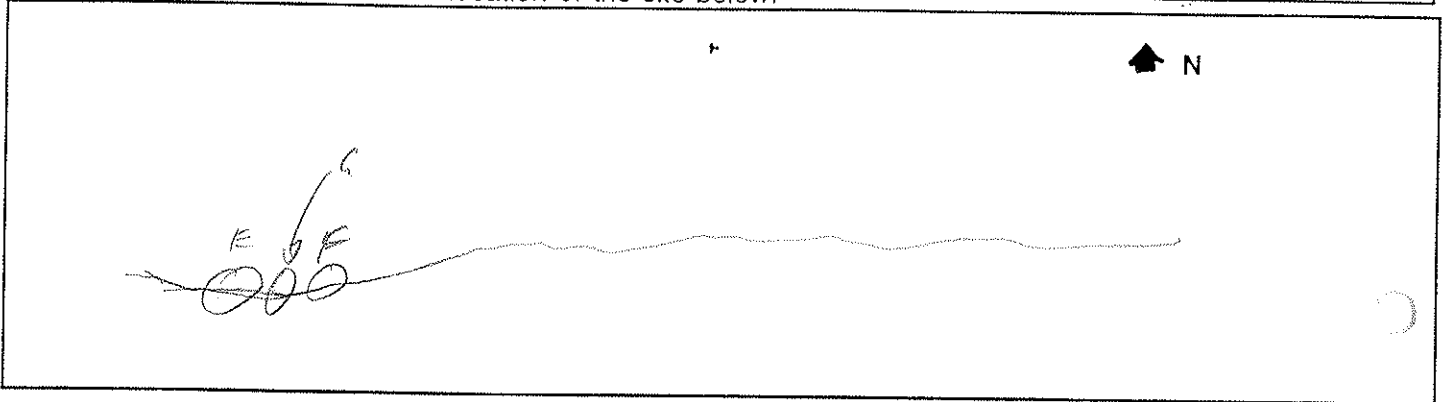
**BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only**

BUSHLAND AREA BS 252 SITE NUMBER SITE F  
 DATE TRIP \_\_\_\_\_ RECORDERS \_\_\_\_\_  
 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 64 Nedlands WA 6008.

**1. LOCATION of the QUADRAT**

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

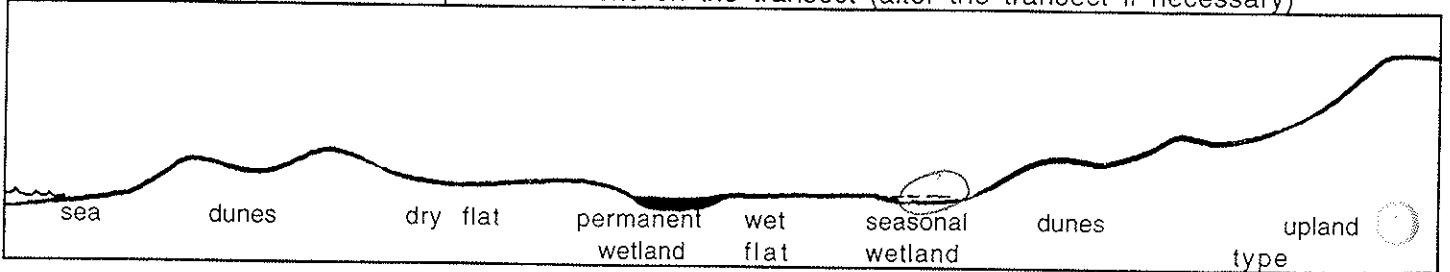


**Road Location** \_\_\_\_\_

**Geographic Location** Latitude \_\_\_\_\_ S Longitude \_\_\_\_\_ E Altitude \_\_\_\_\_  
 Reference Map \_\_\_\_\_

**Photograph** Photographer's Name \_\_\_\_\_ Photo No \_\_\_\_\_

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



**2. SITE DATA** Circle the correct response.

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

**Surface Soil** type sand      **Colour** dark grey  
**Exposed rock** type NA % surface \_\_\_\_\_

**Sub-surface Soil** Colour \_\_\_\_\_  
**Rock** type \_\_\_\_\_ depth to rock \_\_\_\_\_

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

**Litter** litter % cover \_\_\_\_\_  
 Depth \_\_\_\_\_ cm      **Bare Ground** pebbles to 100% %cover \_\_\_\_\_






BUSHLAND PLANT SURVEY RECORDING SHEET 2 - use pencil only




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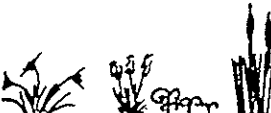
3. VEGETATION STRUCTURE AND COVER

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%

LIFE FORM	TREES			MALLEES	
	over 30m	10 - 30m	under 10m	over 8m	under 8m
			<p>patches to &gt; 70% but often only kun ere or bark</p> 		
COVER CLASS (%)			> 70%		
DOMINANT SPECIES			Mel. prec.		

LIFE FORM	SHRUBS		SHRUBS
	over 2m	2m - 1m	under 1m
	<p>See trees</p> 		
COVER CLASS (%)	> 70%		
DOMINANT SPECIES	Kun ere		

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

4. VEGETATION CONDITION

1	'PRISTINE'	<p>COMMENTS</p> <p>Numerous degraded activities</p>
2	EXCELLENT	
3	VERY GOOD	
4	GOOD	
5	DEGRADED	

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

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## TABLE OF CONTENTS

	Page No.
<b>EXECUTIVE SUMMARY</b>	
1.0 INTRODUCTION	1
2.0 RESULTS OF VEGETATION AND FLORA ASSESSMENT	2
3.0 RESULTS OF WETLAND ASSESSMENT	4
4.0 IMPLICATIONS FOR CONSERVATION PLANNING	6
4.1 Vegetation and Flora	6
4.2 Wetlands	6
4.3 Combined Vegetation Flora and Wetlands	6
5.0 CONCLUSIONS & RECOMMENDATIONS	7
6.0 REFERENCES	9
<b>APPENDICES</b>	
APPENDIX 1 Assessment of the Vegetation and Flora	
APPENDIX 2 Assessment of the Wetlands	
APPENDIX 3 Summary of Consultations, and Acknowledgements	
APPENDIX 4 Study Team	

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 species now recognised to be more common than previously thought (Jandakot was previously thought to be the most southerly location for this species).

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

Gonocarpus pithyoides. Found in sandy soils on the Coastal Plain, extending north to Gingin in Banksia woodland. It appears to be poorly collected rather than 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 past but has not been recollected there despite some searches. A population was recently found in the Moore River National Park (Griffin and B. Kieghery 1989) and may be 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 al. 1987), growing from Perth to south of Jandakot.

#### 3.4.5 Other Significant Flora

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

Department of Agriculture, Western Australia.

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- Trudgen, M.E. and Kieghery, B. (1990a). A report on the flora and vegetation of the Alkimos area and conservation issues affecting it. Unpublished report prepared for Landcorp.
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## TABLE OF CONTENTS

	Page No.
1.0 INTRODUCTION	1
2.0 DESCRIPTION OF THE STUDY AREA	2
3.0 METHODS OF INVESTIGATION	
3.1 Methods for Wetland Classification	5
3.2 Wetland Assessment and Classification	
Method Employed for the Present Study	5
(i) Surrounding Land Use	
(ii) Water Permanance	
(iii) Size	
(iv) Shape	
(v) Soil Type	
(vi) Vegetation Cover and Density	
(vii) Waterfowl Utilization	
(viii) Presence of Rare Fauna Species	
(ix) Landscape Value	
(x) Access	
(xi) Recreation Potential	
(xii) Degree of Disturbance	
(xiii) Biological Condition	
(xiv) Apparent Conservation Value	
4.0 RESULTS OF ASSESSMENT	16
4.1 Location, Assessment and Classification Results	16
4.2 Review of Apparent Conservation Value Assessment Results	16
4.3 Planning Options for the Jandakot Botanical Park	21
5.0 CONCLUSIONS AND RECOMMENDATIONS	23
6.0 BIBLIOGRAPHY	24

**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 occasional Banksia ilicifolia, Allocasuarina fraseriana, Eucalyptus marginata and Nuytsia floribunda.

**Bl:** Low open forest of Banksia menziesii-Banksia ilicifolia-Eucalyptus marginata with occasional 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 rhapsiophylla with occasional Eucalyptus rudis and Banksia ilicifolia. With sedgelands of Baumea and Leptocarpus species and closed heaths dominated by Myrtaceae species.

**L:** Woodlands of Melaleuca rhapsiophylla-Eucalyptus rudis with the occasional 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)



P 8080

Site 253 Map 76

The Ministry is advised that a portion of Reserve 27165, which is vested in the City, is currently leased to the Australasian Golf Masters for the Armadale Golf Course.

Site 253 Map 68 – Lots 2 and 3 Ranford Road Forrestdale

The Ministry is advised that by virtue of the regional environmental significance of these lots, Council has previously requested the WA Planning Commission to initiate a Scheme Amendment to the MRS to include the whole of lots 2 and 3 within the Reserve for Parks and Recreation and incorporation into the Jandakot Botanical Park, which immediately abuts the lots. (Minutes of D69/97 of 17<sup>th</sup> February 1997 and D91/97 of 17<sup>th</sup> March 1997 are attached).

Council's resolutions requesting the MRS amendment followed from Council's decision to recommend that Amendments No 126 and 130 not proceed to final gazettal following the overwhelming opposition expressed in public submissions and the lack of adequate justification or treatment of the environmental constraints of the site, as detailed in the attached Council Minutes.

Accordingly it is recommended that the boundaries of Bushplan Site No 253 on Map 68 be modified to include the whole of Lots 2 and 3 Ranford Road Forrestdale.

A general comment in relation to Bushplan Sites in Armadale, relates to the extent of urbanisation that is being proposed or considered in Armadale eg the Urban Deferred Zone and draft Southern River/Forrestdale District Structure Plan (in progress). In these scenarios there will be direct interfaces between Bushplan Sites and residential development. It is therefore imperative that guidelines be developed through Bushplan that will allow appropriate design solutions to be incorporated into local structure and subdivision plans. It should also be noted that the structure and nature of vegetation in the Forrestdale area often does not lend itself to an appreciation of its value by the lay public. Rather there will often be a perception that bushland adjacent to residential areas is in some sense "wasteland". Hence, without best practice design solutions, there will inevitably be a chronic attrition of the integrity and value of the Bushplan Sites.

**Matters to be considered under General recommendations**

Bushplan has adopted a sound scientific basis to identify areas that should be protected, and this approach and its findings are supported. However, in adopting this approach insufficient emphasis has been given to the identification and protection of locally significant bushland. In the case of locally significant bushland it is often the community's desire for the protection of bushland and fauna that is overriding (i.e. it is socially, rather than scientifically driven). In this context, Recommendation 5.11 that a support program be established to assist in the identification, assessment, and protection of local bushland is particularly important.

Recommendation 5.11 of Perth's Bushplan should be implemented and funded by the State government as a matter of urgency. It is suggested that a Working Group be established in the first instance to progress Recommendation 5.11, and that information compiled for sites that are not published in Bushplan be provided to local governments.

Recommendation 4 suggests the development of a Memorandum of Understanding between relevant agencies to provide a coordinated approach to the protection of bushland identified in Perth's Bushplan. The Western Australian Municipal Association's proposition that local government be included as a signatory to the Memorandum of Understanding is supported.

SCHEME AMENDMENT

COUNCIL MEETING 17 MAR 1997

Given the proximity of the Kennel Zone which immediately abuts the site as well as including the properties south of Wright Road, a reservation of the site for Parks and Recreation with retention of remnant vegetation would be advantageous as a buffer to the Kennel Zone to the south of the site.

Council's recommendation that the residential rezoning of land to the north (A126) should not be proceeded with also adds weight to a similar recommendation for A130 as the rationale for an educational establishment on the site was closely associated with the adjacent residential estate and the inherent need to provide a non residential buffer between housing and the dog kennels to the south. The local shops in particular have no longer have any justification given the lack of support for the residential subdivision to the north.

Given the rationale for Amendment No.130 was so closely associated with Amendment No.126 and the site constraints are comparable, there is no longer sufficient justification for the current rezoning process to proceed.

D91/97

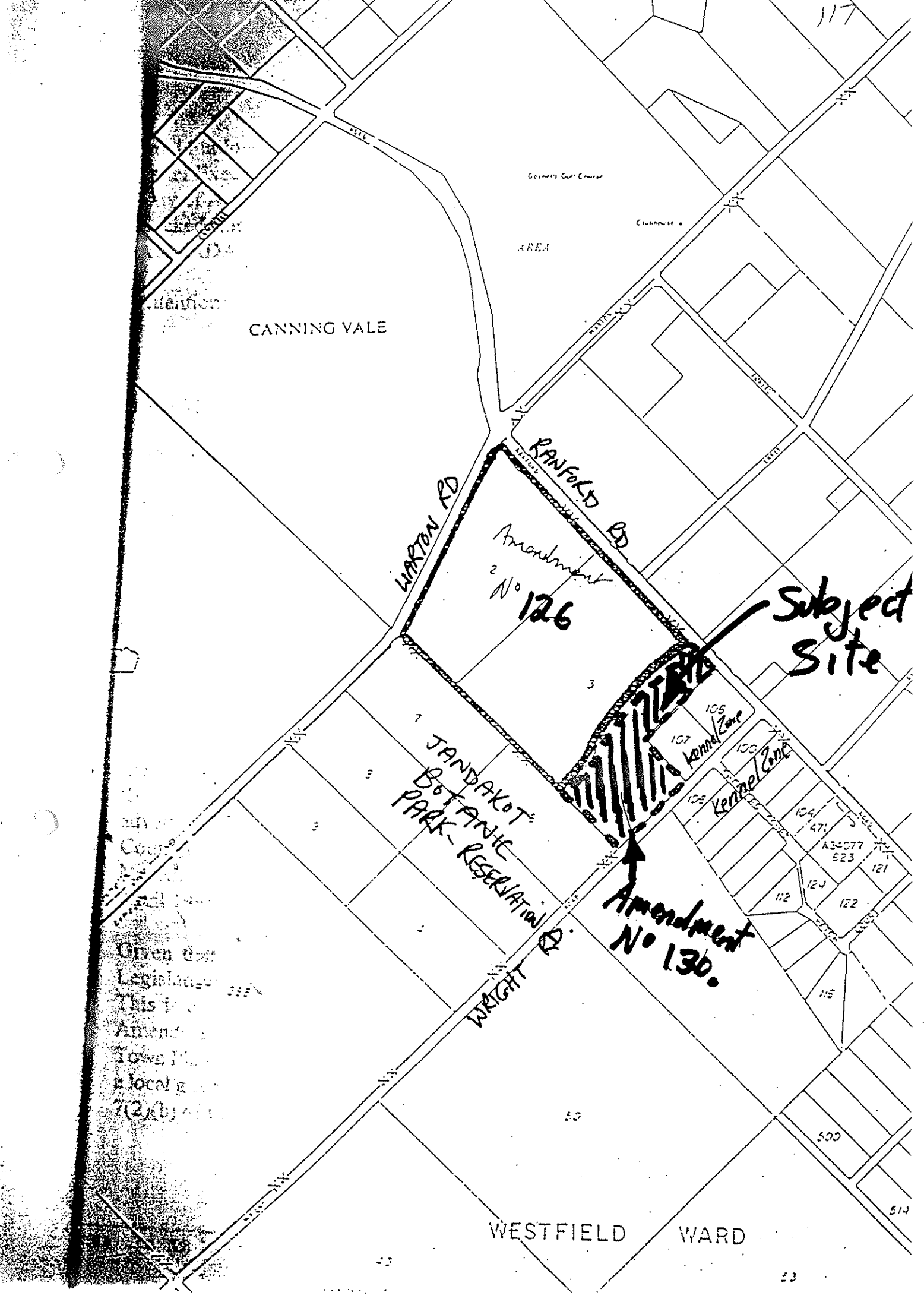
## RECOMMEND

- A) Council determine the submissions to Amendment No.130 in accordance with the recommendations recorded in the Attachments of the Agenda.
- B) Council recommend to the WA Planning Commission not to proceed with Amendment No 130 to Town Planning Scheme No.2 as:
  1. advice received from the Water & Rivers Commission, Department of Environmental Protection and Department of Conservation and Land Management indicates that the land is unsuitable for the proposed development and should be conserved in its present state given the following:-
    - the amendment is inconsistent with and contrary to the recommendations contained in the Middle Canning Catchment Stage 2 - Water Resources Management Study (Water & Rivers Commission 1996) which suggests that if development is permitted it would cause serious environmental damage to the site and surrounds;

SCHEME AMENDMENT

COUNCIL MEETING 1, 7 MAR 1997

- the site is proposed to be included in the System 6 Red Book Update (Department of Environmental Protection 1996) as supporting regionally significant bushland which should be retained for the purpose of conservation;
  - the Urban Bushland Advisory Group which was formed recently to assist in implementing the Urban Bushland Strategy (Ministry for Planning 1995) have assessed the site and supports its retention as bushland and wetland; and accordingly the site is proposed for inclusion within Perth's Bushplan (Department of Environmental Protection 1996) as regionally significant bushland earmarked for conservation.
3. The majority of community submissions (70%) objected to the proposal with the major concern being that the land should be reserved for Parks and Recreation and incorporated into the Jandakot Botanical Park to reflect its regional conservation significance.
  4. The proposal no longer receives support from the adjoining residential proposal under Amendment No.126, which was not supported for finalisation by Council.
  5. The value of the Remnant Vegetation as a bushland reserve on Lots 2 and 3 Ranford Road is enhanced by maintaining the maximum site area by inclusion of the subject site within a single reservation.
- C) In respect to the above, Council request the WA Planning Commission to initiate a scheme amendment to the Metropolitan Region Scheme to reserve the site for Parks and Recreation and incorporate it into the Jandakot Botanical Park which immediately abuts the site to the south west.



117

Geometry Club Course

Clearance

AREA

CANNING VALE

WAGON RD

RANFORD RD

Amendment  
No 126

Subject Site

JANDAKOT  
BOTANIC  
PARK-RESERVATIONAL RD

Amendment  
No 130

Kenral Zone

Kenral Zone

AS-077  
523

Given that  
Legislation  
This  
Amendment  
Towns  
a local  
72(a)

WESTFIELD WARD

500

514

53

SCHEME AMENDMENT

However, if Council still has reservations regarding the 'Urban' zoning under the Metropolitan Region Scheme and the objections to the amendment received from the relevant State Government Departments but seeks to have the environmental attributes of the land taken into account, Option 2 whilst not adopting the Amendment in its current form, indicates to the WA Planning Commission that it is prepared to re-initiated it so that it is subject to formal environmental assessment by the Department of Environmental Protection under the new requirements prescribed in the Planning Legislation Amendment act 1996. The intention of taking this action is to identify and if possible resolve the environmental issues of the site prior to determining what the most appropriate zoning is for the site.

D69/97

**RECOMMEND**

A) Council determine the submissions to Amendment No. 126 in accordance with the recommendations recorded in the Attachments of the Agenda.

B) Council recommend to the WA Planning Commission not to proceed with Amendment No 126 to Town Planning Scheme No. 2 as:

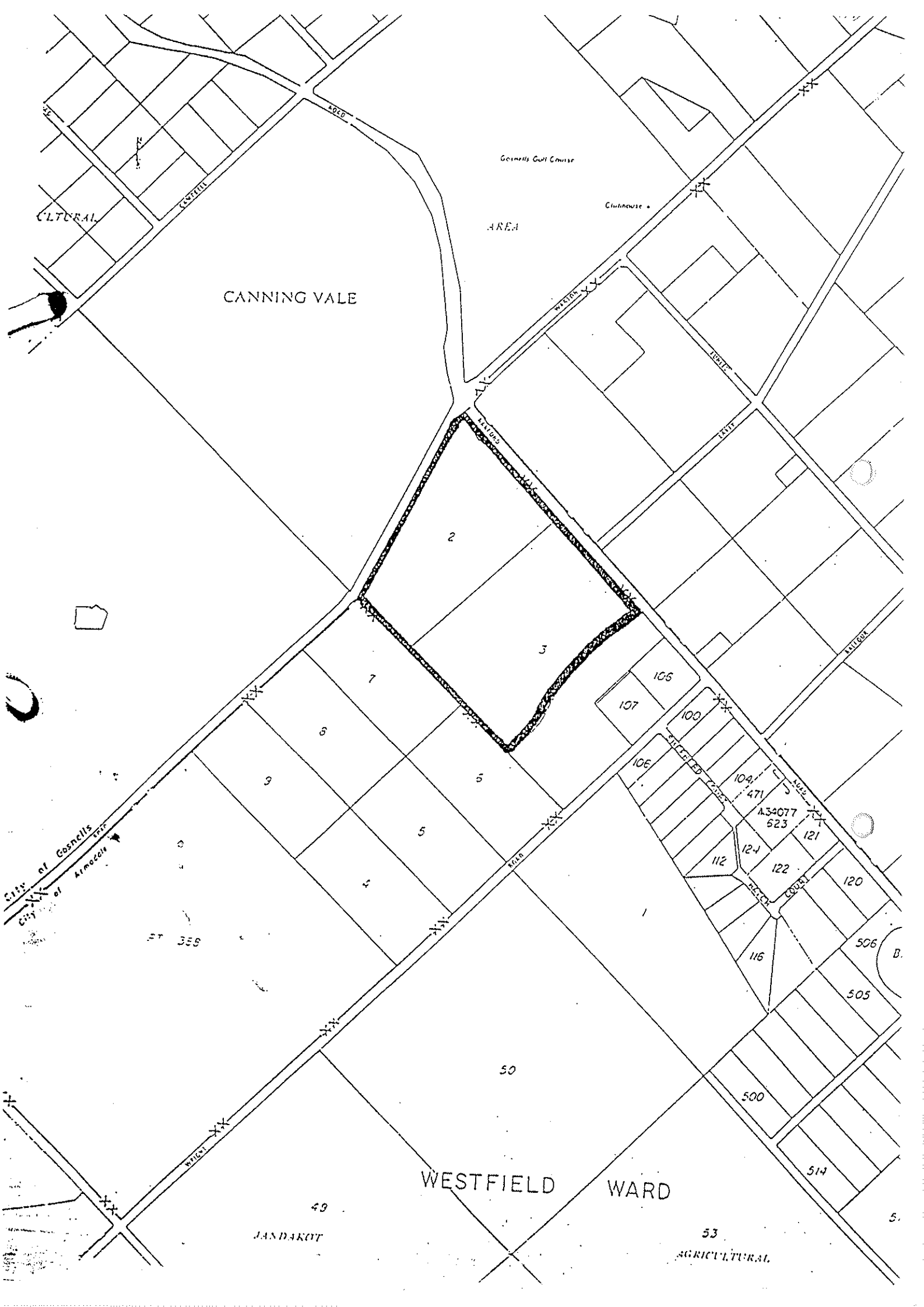
1. advice received from the Water and Rivers Commission, Department of Environmental Protection and Department of Conservation and Land Management indicates that the land is unsuitable for residential development and should be conserved in its present state given the following:-

- the amendment is inconsistent with and contrary to the recommendations contained in the Middle Canning Catchment Stage 2 - Water Resources Management Study (Water and Rivers Commission 1996) which designates most of the land as unsuitable for residential development with the remainder classified as remnant vegetation. It suggests that if development is permitted it would cause serious environmental damage to the site and surrounds;
- the site is included in the System 6 Red Book Update (Department of Environmental Protection 1996) as supporting regionally significant bushland which should be retained for the purpose of conservation;

SCHEME AMENDMENT

COUNCIL MEETING 17 FEB 1997

- the Perth Environmental Project (Ministry for Planning 1996) has identified the remnant vegetation on site as in good condition and is classified as Southern River complex where only 18% is left in the Metropolitan Region and only 2.5% reserved;
  - the Urban Bushland Advisory Group which was formed recently to assist in implementing the Urban Bushland Strategy (Ministry for Planning 1995) have assessed the site and supports its retention as bushland and wetland; and
  - the site is proposed for inclusion within Perth's Bushplan (Department of Environmental Protection 1996) as regionally significant bushland earmarked for conservation.
2. Council's following requirements for finalisation of the amendment have not been satisfactorily addressed and it is of the opinion that these cannot be successfully accommodated due to the regional environmental significance of the site, the close proximity of Rural (Kennel) zones and the Canine Association and uncertainty over the future alignment of Ranford Road:-
- 1) Completion of a Flora Survey conducted over a full spring flowering period and assessing:-
    - a) the number of species of Declared Rare Flora found on the site with particular attention to the known population of *Caladenia huegelii* (King Spider Orchid) and the species *Diuris Purdeii* known to exist in the general locality and potentially on the subject site;
    - b) the extent or area of the vegetation community on the site in which Declared Rare Flora have been identified; and
    - c) The value of remnant vegetation in terms of District Water Balance and Biodiversity Management.



CANNING VALE

Gosnell's Gut Cruise

Clubhouse

AREA

2

3

7

8

9

6

5

4

106

107

100

106

109

471

A34077

623

121

124

122

120

116

506

505

50

500

514

WESTFIELD WARD

49

JANDAKOT

53

AGRICULTURAL

54

190

HOMESWEST

PB080

~~25/55~~

LOT 2, 3 RANFORD ROAD, FORRESTDAL  
ENVIRONMENTAL ASSESSMENT

ALAN TINGAY & ASSOCIATES

AUGUST 1993

REPORT NO:93/54

15 . . . . 1993  
805-2-1-32pt12  
FILE

TABLE OF CONTENTS

INTRODUCTION ..... 1

Study Area ..... 1

    1.1.1 Location ..... 1

    1.1.2 Land Uses ..... 1

    1.1.3 Surrounding Land Uses ..... 1

PHYSICAL ENVIRONMENT ..... 2

    Topography ..... 2

    Geomorphology and Soils ..... 2

    Groundwater ..... 2

    Climate ..... 3

BIOLOGICAL ENVIRONMENT ..... 4

    Vegetation ..... 4

    Flora ..... 4

    Conservation Value ..... 5

    Fauna ..... 6

RECOMMENDATIONS FOR URBAN DEVELOPMENT ..... 7

    Land Use Capability ..... 7

    Groundwater ..... 7

    Vegetation ..... 8

    Flora ..... 8

    Poultry Farm ..... 9

CONCLUSIONS ..... 10

REFERENCES ..... 11

APPENDIX 1 NATIVE FLORA LIST

APPENDIX 2 WATER SENSITIVE URBAN DESIGN EXAMPLES

## INTRODUCTION

Lots 2 and 3 Ranford Road, Forrestdale are currently zoned Rural under the Metropolitan Region Scheme (MRS) and the City of Gosnells District Planning Scheme but are being considered for rezoning to urban through amendments to these schemes.

The owner of Lots 2 and 3, has commissioned this report to provide an assessment of the potential environmental impacts of urban development. The report provides a description of the current environment and identifies environmental issues which need to be addressed to minimise the environmental impact of urbanisation.

### Study Area

#### 1.1 Location

The study area is located approximately 20km SSE of Perth in the suburb of Forrestdale in the City of Gosnells (Figure 1). It comprises about 43ha and is bounded by Ranford Road, Warton Road, Wright Road and native vegetation.

#### 1.2 Land Uses

The site has been semi-cleared in the past but is not presently used by the owner. It is, however, easily accessible and appears to be frequently used for illegal dumping of vehicles.

#### 1.3 Surrounding Land Uses

Land uses surrounding the study site include an old sand quarry to the north-west, Gosnells Golf Course to the north, and a variety of rural activities to the east, south and west (Figure 2).

The old quarry site to the north-west is currently used as a site for soil blending including the use of sewage sludge. Odours from these operations are evident, on nearby areas of the study site especially with north-west winds.

Rural activities to the east include a poultry farm, dog kennels and the Thornlie Christian College. A small number of beehives are kept on adjoining Lot 107 near the corner of Ranford and Wright Roads.

## PHYSICAL ENVIRONMENT

### Topography

The site ranges in elevation from just below 26m AHD up to 30m AHD in the northern corner (Figure 3). The most low lying areas of the property are in the northern corner along Warton Road and Ranford Road, as well as along the western section and in the southern corner along Wright Road.

### Geomorphology and Soils

The property is situated on the eastern part of the Swan Coastal Plain within the Bassendean Dune System. The Bassendean Dunes are the oldest of the three dune systems on the Swan Coastal Plain and consist of low hills of leached siliceous sand interspersed with sand flats and seasonal swamps.

The soils on the site consist of Bassendean Sands on the high areas. These sands are pale to pale grey at the surface and yellow at depth. The lower areas of the site contain a thin veneer of peaty sands over the Guildford Formation which is a clayey sand with silt in places. These low lying soils are prone to waterlogging in winter.

### Groundwater

The site lies on the north-eastern side of the Jandakot Groundwater Mound and is about 1.5 km east of the Jandakot Public Water Supply Area. The direction of the groundwater flow is to the east with the shallow groundwater eventually discharging into the Southern Ocean (Figure 4).

Groundwater levels beneath the property range from a winter maximum of nearly 26m AHD in the western corner to about 24.5m AHD along the eastern boundary. As a result the depth to groundwater over the property in winter ranges from 5m under the higher sandy ground to 0m in the low lying swampy ground.

The seasonal fluctuation of groundwater levels is approximately 0.7m.

There are no Environmental Protection (Swan Coastal Wetlands) Policy wetlands at the study site (EPA, 1992). However, there is an EPP wetland on the lot immediately to the south-west. The Environmental Protection Policy (EPP) states that wetlands covered under this policy should not be polluted, or have water drained into or out of them without consultation with the EPA.

There are several non-EPP wetlands in the area which are outlined in the Western Australian Water Authority (WAWA) 'Wetland Management and Conservation Estate' Map Series (1993). Parts of two wetlands extend onto the study site.

The northern wetland is part of a large system which extends to the north. It is classified as a seasonally waterlogged dampland (WAWA, 1992) but has not yet been assessed or assigned a management category (EPA, 1990; WAWA, 1993). It is likely that a large

Wetland area would be classified in the 'Resource Enhancement' category as degraded. The management objectives for this classification include enhancing the existing ecological functions of the wetland. However, this wetland area in good condition which might be classified in a higher category.

Wetland area in the southern section of the study area is classified as a logged basin (WAWA, 1992) with a management category of 'High'. The objectives for this category are to actively manage the wetland to enhance the natural attributes.

Approximately 4km at its nearest point from Jandakot Airport. The EPA have given that serious consideration be given to not allowing residential use within the human Noise Exposure Forecast (ANEF) contours (EPA, 1993) resulting from this airport. Lot 119 lies below the 20 ANEF contour level according to Airports Corporation predictions for 500,000 movements per year at Jandakot

sources of external noise which may affect residents on Lot 119 include the dog barking and kennels on the eastern corner of Warton and Ranford roads.

## BIOLOGICAL ENVIRONMENT

### Vegetation

... vegetation remains over about 90% of the lots, albeit in a range of conditions from severely disturbed to only slightly disturbed. The native vegetation belongs to the ... River Vegetation Complex which occurs on the Swan Coastal Plain from near ... Swan southwards to beyond Capel (Hedde *et al.*, 1981).

... vegetation on the sandy soils which is not subject to high watertables consists of ... *attenuata* Low Woodland mixed with *Allocasuarina fraseriana* Low Woodland ...). Other tree species which are co-dominant in places include *Banksia menziesii*, ... *angustifolium* and very occasionally Jarrah (*Eucalyptus marginata*). The understorey of ... *Banksia* Woodlands contains a dense layer of shrubs up to 2m and low shrubs less ... 1m with common species being *Regelia inops*, *Acacia pulchella* and *Scholtzia ...*

... areas which have a watertable close to the surface in winter contain two different ... types. The wettest areas with peaty sand soils contain Paperbark (*Melaleuca ...*), Low Woodlands and Low Open Woodlands with trees up to 6m high over a ... low shrub understorey dominated by *Hypocalymma angustifolium* and ... *ellipticum*. Other damp areas with slightly deeper watertables contain a ... *ericifolia* (Spearwood) Open Scrub with shrubs up to 4 to 5m tall over a very ... understorey.

... condition of the vegetation in the north-western half of the site is generally good with ... slight disturbance from non-invasive weeds and partial clearing or thinning of trees ...). The south-eastern half has some vegetation with low disturbance but mostly ... vegetation is more disturbed with large totally cleared areas and semi-cleared areas. ... regeneration of some of these areas is occurring naturally the past disturbance has ... allowed the introduction of invasive weeds. The ease of access for people and vehicles ... also contributed to the disturbance of the vegetation, particularly around the ... Paperbark and Spearwood areas along Ranford Road.

... 30m wide corridor of severely disturbed vegetation also is present as the result of a ... 2kV transmission line which cuts across the western corner of the property.

### 2 Flora

... botanical survey of the site commenced in July 1993 with the aim of compiling a ... count of native flora on the site with particular emphasis on rare and unusual species. In ... addition, the Department of Conservation and Land Management (CALM) advised on the ... possibility of known populations of Declared Rare Flora on the site or in the vicinity.

... total of 100 species has so far been recorded from the property. This includes 1 non- ... flowering plant (*Macrozamia riedlei*), 38 Monocotyledons and 61 Dicotyledons. The ... families containing the most number of species were the Myrtaceae (15 species) and ... Papilionaceae (11 species).

183

... the timing of the initial survey, the species list does not contain a complete list of ... species such as orchids and annuals which are identifiable mainly in Spring.

Declared Rare Flora species has been found on the property. *Caladenia huegelii* is a ... orchid which normally occurs on sand soils in well vegetated *Banksia*, *Allocasuarina* ... Woodlands from Gosnells to Yarloop. In the study area it has been found in ... north-western section of good quality *Banksia attenuata* Low Woodland.

Other Declared Rare Flora orchid species are likely to occur on the site. They are:

*Drakaea elastica* - This species occurs on the coastal plain from Perth south to ... Capel and is usually found under thickets of *Kunzea ericifolia* in sandy soils near ... swamps. It flowers from September to October.

*Diuris purdiei* - This species is found in winter wet Bassendean Sand swamps ... particularly after fire. The flowering time is September to October. Populations ... have been found in burnt Paperbark Swamps on neighbouring land across Ranford ... Road and the other side of Wright Road. There are no recently burnt Paperbark ... Swamps on the Homeswest properties and therefore it will be difficult to establish ... the presence of this species until such areas are burnt.

The preferred habitats and vegetation types of both of the above species occur on the ... properties and therefore a thorough search for both will be made during the respective ... flowering times.

Native Winter Bells, *Conostylis canescens*, occurs abundantly under *Allocasuarina* ... *casuarina* and *Banksia* Woodland in the eastern corner of the site adjacent to Lots 106 ... 107. This population is at the southern limit of the range for this species which ... extends northwards to Eneabba. Although not rare or threatened, populations of species ... at the extremes of the range may be important from a scientific viewpoint in understanding ... the evolution of species.

### 3 Conservation Value

The conservation value of areas of native vegetation is determined by the types of ... vegetation present, their rarity, distribution and protection within conservation reserves, ... and the value of that vegetation for wildlife habitats at a local and regional level.

In 1983, the EPA published the System 6 Study which aimed to identify areas that should ... be maintained in their natural state. A total of 108 areas were identified in the Perth ... Metropolitan region which were considered to be of regional conservation significance ... and/or were considered to have regional representation of biological and physical values. ... The study site is not included in any of the System 6 areas. The EPA admit, however, that ... some areas that are not included in the System 6 recommendations may have very high ... conservation values and may therefore be considered for protection.

A review of remnant vegetation in areas overlying the Jandakot Groundwater Mound was ... undertaken as part of the Jandakot Land Use and Water Management Strategy ... (DPUD, 1992). Selected areas of high quality vegetation were included in the strategy for ...

182

tion in the Jandakot Botanical Park. An area of nearly 2000ha was set aside for  
tion and passive recreation. Of this 2000ha approximately 460ha (23%) contains  
tion from the Southern River Complex while the remainder contains vegetation  
Bassendean Complex (Central and South). Areas containing vegetation of the  
River Complex were assessed as having extremely high conservation value for  
collection of vegetation types. This is mainly due to the fact that, while the complex  
has extended from north-east of Perth to Capel, it has been greatly reduced in  
due to clearing and is not well represented in conservation reserves. System 6  
which contain Southern River Vegetation Complex include Whiteman Park,  
Airport and Perth Airport.

study site lies just outside the Jandakot study boundary. However, the native  
tion in the lots adjacent to the south-west corner of the property were included in  
Jandakot Botanical Park.

On the basis of the Jandakot study it can be concluded that the areas of good quality  
vegetation on the study site could also be assigned a high conservation value. However,  
vegetation exists on the adjoining property and will be protected within the  
Jandakot Botanical Park if the current boundaries of the Park are formally adopted.

### Fauna

A comprehensive survey of the native fauna on the site has been carried out. Due to the  
area of good quality vegetation in the north-western half it is likely that these  
woodlands support populations of a range of native mammals, birds, reptiles and  
amphibians. However, the range of species is likely to be equivalent to that which occurs  
on the adjacent lots which have been recommended for inclusion in the Jandakot Botanical  
Park.

It is possible that the species present may include the Southern Brown Bandicoot (*Isodon  
sp. fulvus*). This species is classified as rare and in need of protection under the provisions  
of the Wildlife Conservation Act, 1950-1979.

*typical comment BUT  
this area could be  
the JLP area which  
was proposed for  
make area more  
viable.*

## IMPLICATIONS FOR URBAN DEVELOPMENT

Future land use planning for Lots 2 and 3 Ranford Road should address the environmental issues raised in this report. In particular, when considering the potential for urban development, important consideration should be given to the land use capability of the site and the environmental impact of urbanisation on groundwater protection, remnant vegetation and rare flora. These matters are discussed below.

### Land Use Capability

In terms of land use capability, the Bassendean sands are generally suitable for residential development provided that lots are sewered and stormwater disposal is planned using water sensitive urban design guidelines.

However, the low-lying swampy ground in the northern corner, along the north-eastern boundary and in the south-western corner of these particular lots have a low capability for urban development due to the high water tables.

### 2 Groundwater

Urban development can have a significant effect on the groundwater in the Perth Metropolitan Region. The impact of urbanisation is a general increase in recharge of the shallow groundwater as a result of increased run-off from hard surfaces and a reduction in water use due to the loss of native vegetation as a result of clearing. Urban development also has the potential to cause incidental pollution of groundwater from nutrients, pesticides, heavy metals, and petroleum compounds.

Due to the low nutrient retention capacity of Bassendean sands, pollutant sources are readily leached into the groundwater.

Any pollution of the groundwater under the study site has the potential to affect points of discharge further downstream, in this case Southern River, Canning River and eventually the Swan River.

The protection of groundwater has been addressed recently in the Water Sensitive Urban (Residential) Design Guidelines for the Perth Metropolitan Region (Whelans and Halpern & Glick Maunsell, April 1993). These guidelines present a range of best planning and management practices which developers can use to achieve a water sensitive subdivision design that meets the objectives of water conservation and groundwater protection.

The objectives of a water sensitive design are:

- To manage water balance.
- To maintain and where possible enhance water quality.
- To encourage water conservation.
- To maintain water related environmental values, and
- To maintain water related recreational and cultural values.

Water sensitive urban design is best achieved in new developments such as proposed for Lots 2 and 3 Ranford Road by the adoption of a stormwater management system in the early stages of design. The principles of a water sensitive stormwater management system which are particularly relevant to Lots 2 and 3 include:

The stormwater management system should emphasise the use of native vegetation to promote filtering, and slowing the run-off to pre-development conditions.

Local on-site storage and utilisation of run-off should be maximised.

Wherever possible, storage areas should be an integral component of the urban landscape.

The components of stormwater management should follow natural contours with the management system incorporating as many features and functions of the natural stormwater system as possible.

The practical application of these principles is set out in the water sensitive urban design guidelines. Examples of Best Planning Practices which could be incorporated in an urban design of Lots 2 and 3 are shown in Appendix 2.

### 4.3 Vegetation

Just over half of the property contains native vegetation which remains in good condition. Areas of remnant vegetation belonging to the Southern River Complex have been assessed recently as having extremely high value for conservation. As a result, neighbouring areas of native vegetation have been included in the proposed Jandakot Botanical Park.

It may be argued the 460ha of Southern River Complex vegetation set aside for the Botanical Park is sufficient to conserve a representative amount of this type of vegetation. However, the suggested high conservation value of this vegetation also indicates that every attempt should be made in land development proposals to protect as much of the remaining areas as possible. Therefore, it is recommended that as much *good quality* native vegetation as possible on Lots 2 and 3 should be retained in planning for urban development.

### 4.4 Flora

The site contains at least one Declared Rare Flora species, *Caladenia huegelii*, and possibly more pending further site investigations. Under the Wildlife Conservation Act, 1950 Ministerial permission is required to damage or destroy Declared Rare Flora.

It is recommended that the population of *Caladenia huegelii* be protected within native vegetation with a buffer zone of at least 20m of undisturbed vegetation around the population. The area should be maintained to prevent weed invasion and should be protected from frequent fires and random human access.

The low-lying swampy areas possibly contain populations of the rare orchid *Diuris cordiei*. These areas should be protected until such time that an adequate survey has been carried out on recently burnt ground.

### 5 Poultry Farm

A poultry farm is located on Furley Road to the north east of the property. The EPA Environmental Code of Practice on development around poultry farms published in 1991 provides advice regarding the general principles of separation between residential land and poultry farms. It recommends minimum separation distances from intensive poultry enterprises as follows:

- ) 500m from an urban residential zone,
- ) 300m from a rural residential zone with lots of 4ha or less,
- ) 100m from any single dwelling outside the poultry farm boundaries,
- ) 50m from any road frontage, and
- ) 30m from any side or rear boundary.

At its closest point, the poultry sheds on Furley Road are 400m from the boundary of the study site. Therefore a section of the property along Ranford Road is within the 500m urban residential buffer recommended by the EPA (Figure 7).

The EPA Code advises that the separation distances should be maintained unless it can be demonstrated that the poultry sheds will have no adverse impact on the amenity or enjoyment of residents in the nearby development as a result of odour emissions.

## CONCLUSIONS

Environmental assessment of Lots 2 and 3 Ranford Road, Forrestdale has identified several issues which will need to be considered in the future land use proposals for the site. With particular reference to future urban development these important environmental issues are:

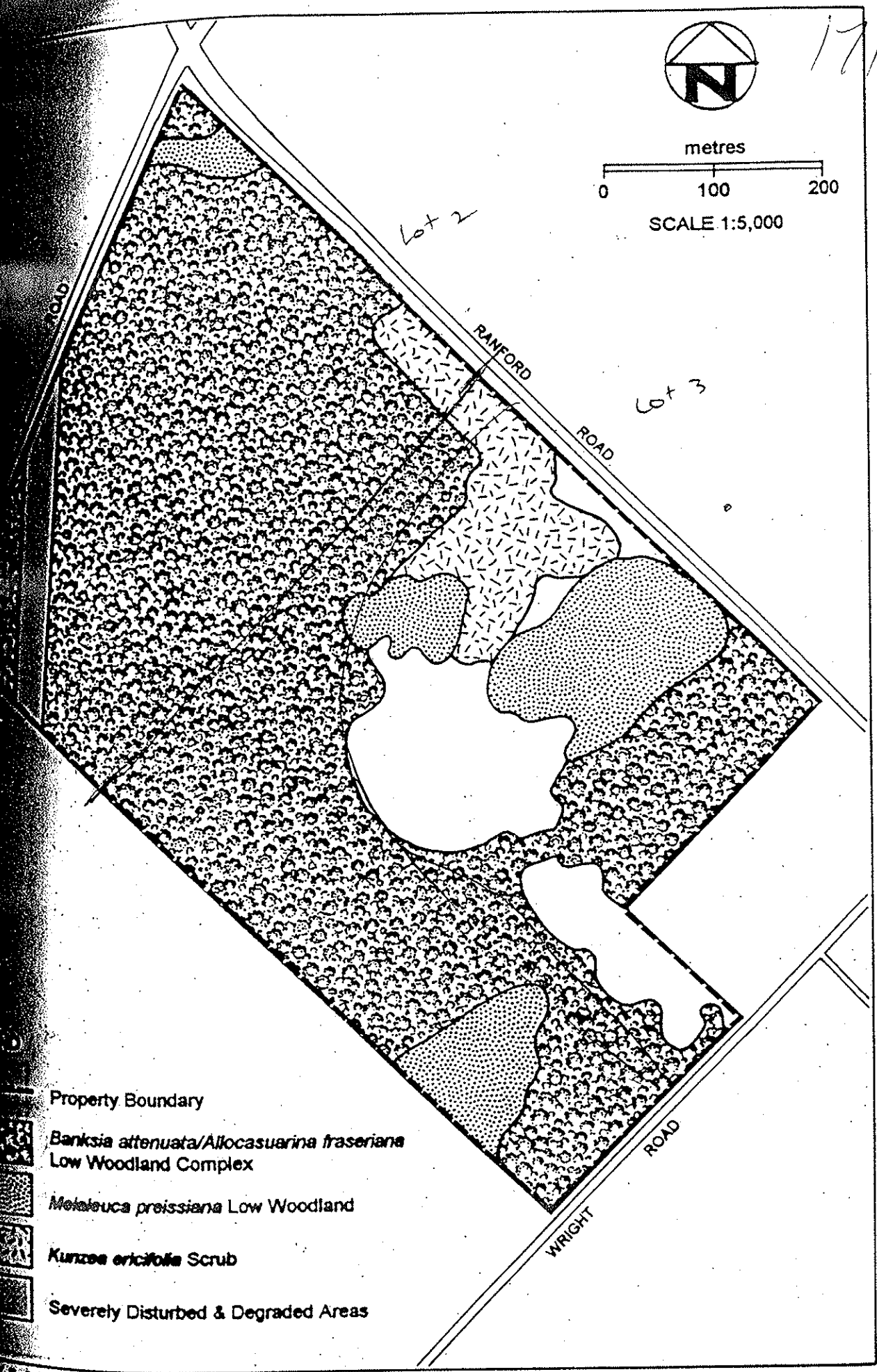
Areas of good quality native vegetation should be retained as much as possible.






Low-lying Paperbark Swamps which are in good condition should be protected until such time as a thorough survey for the Declared Rare Flora species *Diuris purdiei* is undertaken.

The population of the Declared Rare Flora orchid *Caladenia huegelii* should be protected within an adequate buffer of native vegetation which is maintained in a good condition.

Urban subdivision planning should incorporate water sensitive urban design guidelines to protect the groundwater from pollution.

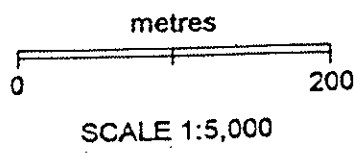
The area along Ranford Road which is within the 500m buffer zone for the poultry sheds on Furley Road should not be developed for residential housing unless the poultry operations cease or the buffer requirements are reduced due to changes in the EPA Environmental Code of Practice.



-  Property Boundary
-  *Banksia attenuata/Allocasuarina fraseriana* Low Woodland Complex
-  *Melaleuca preissiana* Low Woodland
-  *Kunzea ericifolia* Scrub
-  Severely Disturbed & Degraded Areas

Y & ASSOCIATES

LOTS 2 & 3 RANFORD ROAD FORRESTDAL  
 VEGETATION TYPES  
 FIGURE 5



Property Boundary

Slightly Disturbed

Disturbed

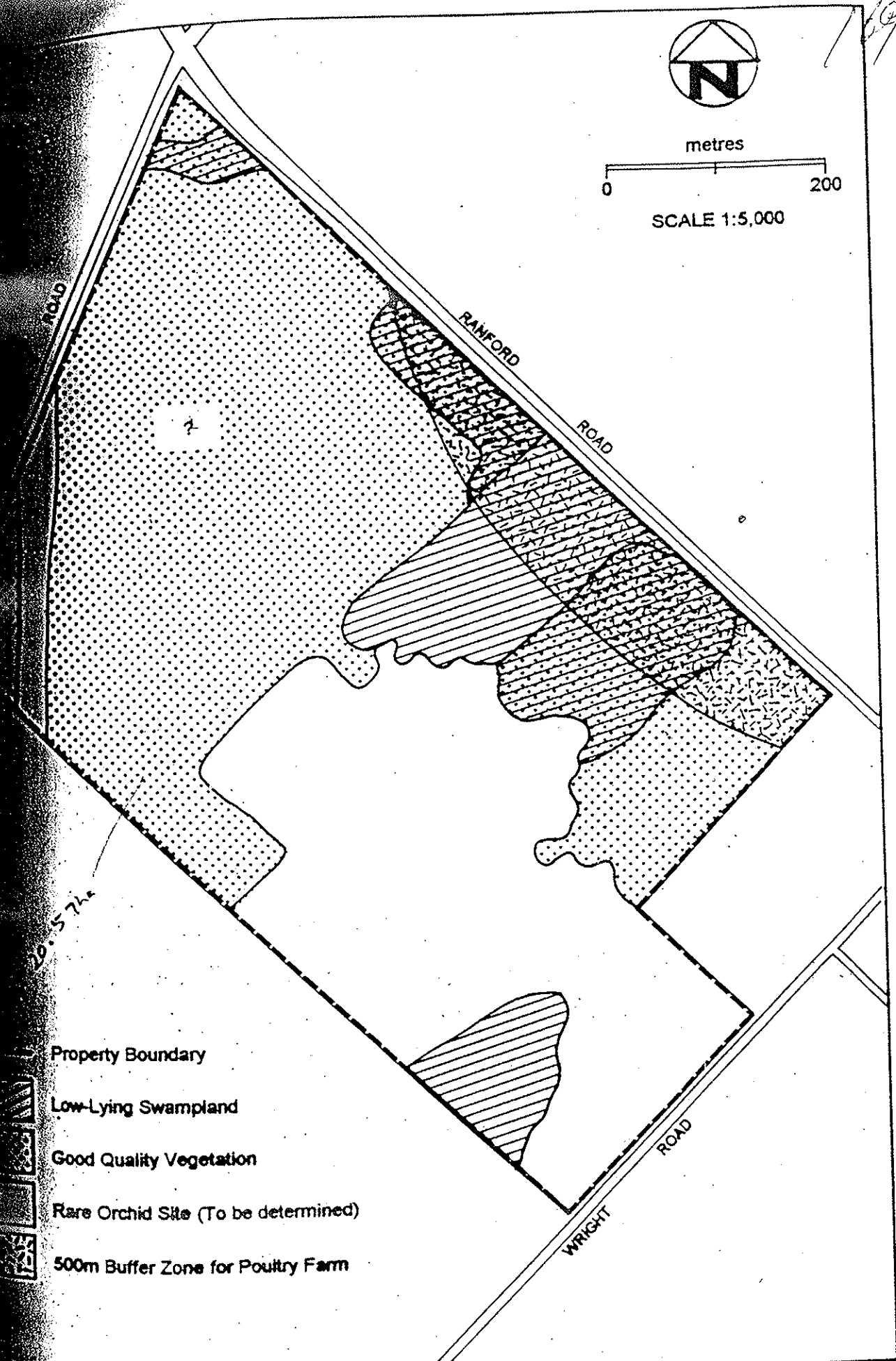
Obviously Disturbed

Severely Disturbed

Degraded

ASSOCIATES

LOTS 2 & 3 RANFORD ROAD FORRESTDALE  
VEGETATION QUALITY  
FIGURE 6



- Property Boundary
- Low-Lying Swampland
- Good Quality Vegetation
- Rare Orchid Site (To be determined)
- 500m Buffer Zone for Poultry Farm

ASSOCIATES

**LOTS 2 & 3 RANFORD ROAD FORRESTDAL  
 ENVIRONMENTAL CONSTRAINTS  
 FIGURE 7**



9 March 1999

Mr Kieran Beardmore  
Ministry for Planning  
Albert Facey House  
469 Wellington Street  
PERTH WA 6000

PB080

10 MAR 1999  
805 2-1-32 pt 12

Dear Kieran

**RE: LOT 2 & 3 RANFORD ROAD, FORRESTDALE**

On behalf of Homeswest, Alan Tingay and Associates has prepared this submission to the Ministry for Planning (MFP) to achieve a Negotiated Planning Solution (NPS) in regard to the proposed Bushplan site number [REDACTED].

The land comprises approximately 43ha and is approximately 19km south-south-east from Perth. The lots are bounded by Ranford Road to the northeast, Warton Road to the north-west, Wright Road to the south-east and native vegetation to the southwest. The land is zoned Urban in the Metropolitan Region Scheme (MRS). Consequently, Homeswest is keen to progress with subdivision of the land. The proposed Bushplan site affects a large proportion of the site and significantly affects the viability of developing the property.

### *Site Description*

An environmental assessment of the property was prepared by Alan Tingay and Associates in 1993 and is appended for your reference. Detailed descriptions of the site are contained in this report. In summary, the site contains native vegetation belonging to the Southern River Vegetation Complex ranging in condition from very good condition to severely disturbed. The condition of the vegetation in the north-western half (Lot 2) of the site is generally good with only slight disturbance from non-invasive weeds and partial clearing or thinning of trees. The south-eastern portion of the site (Lot 3) has some vegetation with low disturbance but mostly the vegetation to the east is more disturbed with large totally cleared areas and semi-cleared areas. A Conservation Category dampland is located in the southern corner of the property.

A botanical survey of the land in July 1993 identified that one Declared Rare Flora (DRF) orchid species (*Caladenia huegelii*) was recorded on the CALM database as occurring on Lot 2. Following discussions with CALM and extensive surveys of both Lots in subsequent years during the optimum flowering period (late September/October) no further specimens of *C.huegelii* were located. A closely related species to *Caladenia huegelii* (*C.paludosa*) was found in close proximity to the locations supplied by CALM. CALM has since advised that they cannot confirm the existence of DRF on Lots 2 and 3 and therefore do not object to development of the site. A copy of their correspondence is attached for your information.

21 Howard Street, Perth 6000 Western Australia  
Tel: (08) 9481 3434 Fax: (08) 9481 3435  
E-mail: tingay@wantree.com.au

*Bushplan Site No.253*

Approximately 16ha of the site is included in Bushplan site No.253. The Bushplan site extends into native bush south-west of the site and covers a total area of 114.7ha. The vegetation within the 16ha comprises mainly *Banksia attenuata/Allocasuarina fraseriana* Low Woodland with a small area of *Melaleuca preissiana* Low Woodland in the north-western corner and *Kunzea ericifolia* Scrub in the northeastern corner. The floristic community types associated with the wetland areas include "Type 4 *Melaleuca preissiana* damplands" and "Type 5 mixed shrub damplands". Uplands centered on Bassendean Dunes include "Type 23a *Banksia attenuata* – *B.menziesii* woodlands". None of these types is a Threatened Ecological Community. The vegetation is represented elsewhere in the remainder of Bushplan site No.253 southwest of the subject land and in the Jandakot Botanical Park.

According to Perth's Bushplan, site No.253 was selected based on environmental attributes, including representation of ecological communities, diversity, rarity, EPP and conservation category wetlands. Most of these attributes are associated with the vegetation southwest of the subject land. The conservation category dampland which encroaches into the southern corner of Lot 3 has not been included in the Bushplan site.

*Negotiated Planning Solution*

The Bushplan site has been identified by the MFP as a Negotiated Planning Solution (NPS) which provides the opportunity to discuss alternatives to the proposed Bushplan boundaries.

To achieve an NPS Homeswest proposes that the boundary of vegetation to be retained on site be altered as depicted in the attached Outline Development Plan. The NPS includes retention of 7.9ha of bushland, including an area of 6.6ha along the southwestern boundary of the land, ranging in width from 75m to 150m, and an additional 1.3ha Special Residential area. The vegetation types within the corridor include *Banksia attenuata/Allocasuarina fraseriana* Low Woodland mostly in good condition, and *Melaleuca preissiana* Low Woodland in fair condition. The Conservation Category dampland previously excluded from Bushplan site 253 is included. The Special Residential zoning within the Bushplan site in the southern corner of the land will have building envelopes and clearing covenants defined to allow for bushland sensitive development and the retention of additional *Banksia attenuata/Allocasuarina fraseriana* Low Woodland.

The proposed NPS is shown as POS in the Outline Development Plan and should be supported for the following reasons:

- Provides additional wildlife habitat and buffer to the EPP wetland situated immediately southwest of the land
- Retains a conservation category wetland (dampland) within the southern corner of the land which is currently not included in Bushplan site 253;
- Retains an area of good quality vegetation on the site of the Southern River Complex;

193

- Provides the opportunity to manage the entire Bushplan site No.253 as one large area of native vegetation;
- Allows for the development of high standard residential living without compromising conservation values; and
- The land is zoned urban in the MRS.

On behalf of Homeswest, Alan Tingay and Associates request the Negotiated Planning Solution for Bushplan site No.253 be adopted to reflect the Plan attached.

Yours sincerely



**PAUL VAN DER MOEZEL**  
Director

N:\DRAWINGS\1858\1858029901 Thu Mar 04 13:42:07 1999 Greg Rowe and Associates  
 HP DesignJet 650C dj0220c.hpc Hewlett-Packard HP-GL/2 devices v4.0, ADI 4.2 - by HP






# PROPOSED OUTLINE DEVELOPMENT PLAN LOT 2 AND 3 RANFORD ROAD, FORRESTDAL

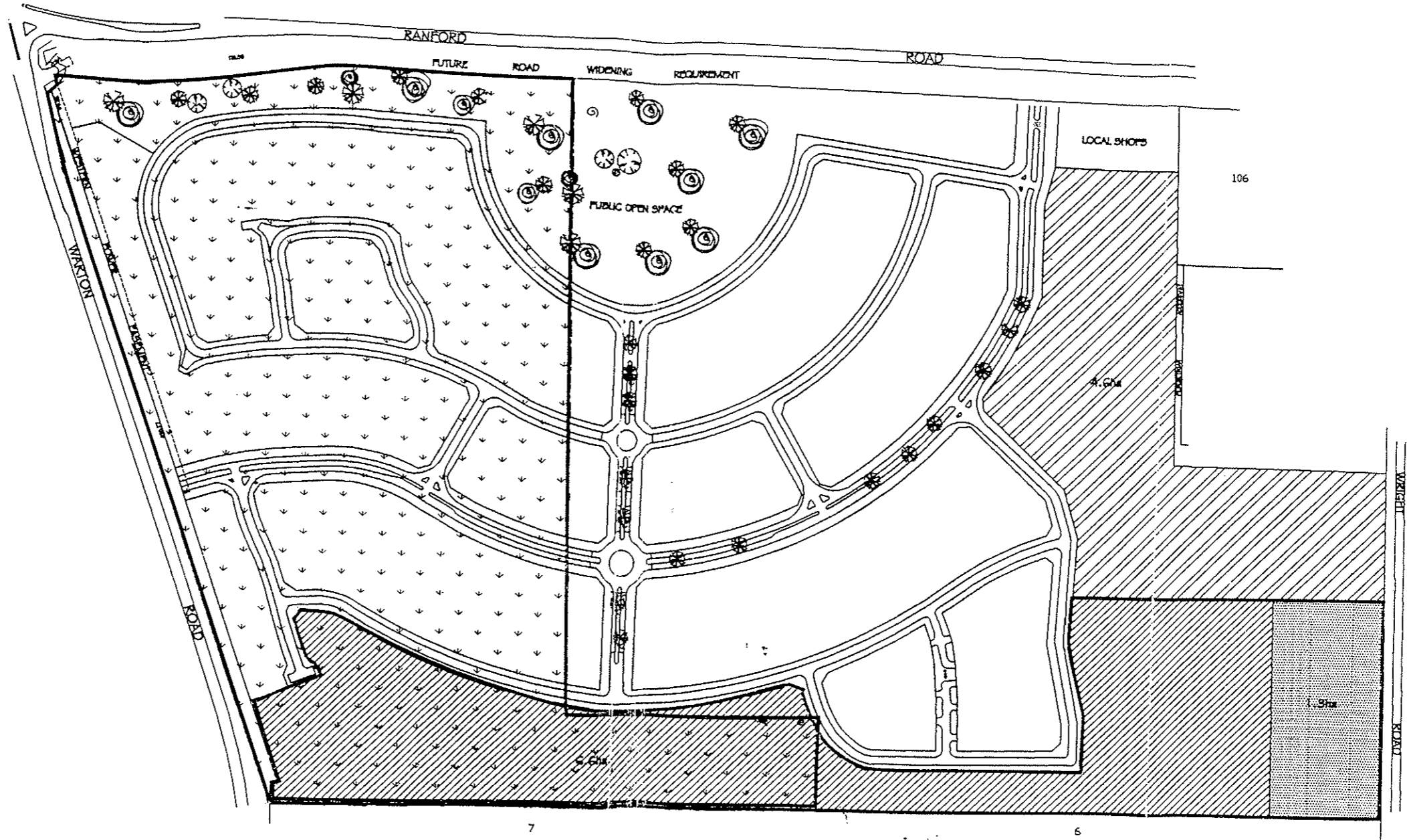


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 NOT TO SCALE  
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**GREG ROWE**  
 ARCHITECTS  
 24 - 26 Wattleback Street  
 Perth WA 6004  
 Tel: 9221 1961  
 Fax: 9221 1919

**LEGEND**

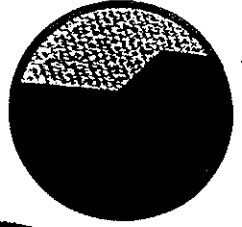
-  RESIDENTIAL
-  SPECIAL RESIDENTIAL
-  NEGOTIATED PLANNING SOLUTION / SPECIAL RESIDENTIAL
-  NEGOTIATED PLANNING SOLUTION
-  AREA INCLUDED WITHIN DRAFT BUSHPLAN



DEPARTMENT OF CONSERVATION AND LAND MANAGEMENT

HEAD OFFICE  
HACKETT DRIVE CRAWLEY  
WESTERN AUSTRALIA  
Phone (09) 442 0300  
Facsimile (09) 386 1578

STATE OPERATIONS HEADQUARTERS  
50 HAYMAN ROAD COMO  
WESTERN AUSTRALIA  
Phone (09) 334 0333  
Facsimile (09) 334 0466  
Teletype (09) 334 0546



Please address all correspondence to Executive Director, Locked Bag 104, Bentley Delivery Centre W.A. 6983

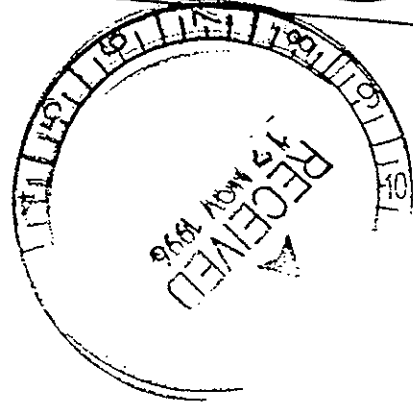
Your Ref: 036555F3702

Our Ref: Mr M O'Donoghue

Enquiries: 334 0422

Alan Tingay & Associates  
21 Howard Street  
PERTH WA 6000

Attention: Martine Scheltema



Dear Ms Scheltema.

**CALADENIA HUEGELII ON LOTS 2 AND 3 RANFORD ROAD FORRESTDALE**

I refer to your letter of 4 November 1996 in relation to the above subject. I have noted your comments that surveys of these Lots, over 3 successive years, failed to locate any *C. huegelii*.

As CALM has not been able to confirm the existence of the DRF on these Lots, I cannot raise an objection to the proposed development on these grounds.

Thank you for your advice and assistance in this matter.

Yours sincerely

for Syd Shea  
EXECUTIVE DIRECTOR

15 November, 1996  
mikest.tingay.3



? Condition of connection  
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**Water Authority**  
of Western Australia

**Wetlands in the  
City of Armadale**

**Full document  
available  
on request**

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