HOLMES STREET BUSHLAND, SOUTHERN RIVER/HUNTINGDALE

Boundary Definition: bushland (part taken to cadastre) boundary (Areas of bushland within the boundaries of the Site have been recently cleared. The boundary has been drawn to include cleared bushland; Boundary adjusted after vegetation survey and/or negotiations with the land owner(s) in response to a submission to draft *Perth's Bushplan.*)

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 125 **Area (ha):** bushland 121.3
Map no. 54, 55, 60, 61 **Map sheet series ref. no.** 2033–I NE
Other Names: Submission Area 215, part Gosnells remnant bushland area 6 (Trudgen and Keighery 1995)
Local Authorities (Suburb): City of Gosnells (Southern River, Huntingdale)

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS
Bassendean Dunes
Bassendean Sands (Qpb: S8)
Bassendean Dunes/Pinjarra Plain
Bassendean Sands over Guildford Formation (Qpb/Qpa: S10)
Wetlands (within the Bassendean Dunes/Pinjarra Plain)
Holocene Swamp Deposits (Qrw: Sp1, Sp2)
VEGETATION AND FLORA
Vegetation Complexes
Combinations of Bassendean Dunes/Pinjarra Plain
Southern River Complex
Floristic Community Types
Supergroup 2: Seasonal Wetlands
4 *Melaleuca preissiana* damplands
S3 Wet sedgelands on sandy clays (most southerly occurrence)
Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
23a Central *Banksia attenuata — B. menziesii* woodlands
WETLANDS
Wetland Types: sumpland, dampland
Natural Wetland Groups
Bassendean—Pinjarra transition OR Bassendean with fluvial features
Bennett Brook (B/P.4)
Wetland Management Objectives: Conservation (91.6ha), Resource Enhancement
Swan Coastal Plain Lakes EPP: none identified
THREATENED ECOLOGICAL COMMUNITIES
Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, vegetated uplands
Vegetation and Flora: limited survey (Clarke and Keighery 2000b, Trudgen and Keighery 1995 (Gosn 2–5, 12–13), part Site — DEP 1998)
Structural Units: mapping (Clarke and Keighery 2000b, Trudgen and Keighery 1995 (Gosn 2–5, 12–13))
Uplands: Low Open Woodlands to Low Closed Forests dominated by combinations of *Banksia attenuata, B. menziesii, B. ilicifolia* and *Allocasuarina fraseriana*; *Eucalyptus calophylla, E. marginata* and *Allocasuarina fraseriana* Woodland to Open Forest; *Banksia attenuata, B. menziesii, B. ilicifolia, Eucalyptus marginata* and *Allocasuarina fraseriana* Low Woodland to Low Open Forest; *Banksia attenuata, B. menziesii* and *Eucalyptus todtiana* Low Woodland to Low Open Forest
Wetlands: Low Open Woodlands to Low Woodlands dominated by combinations of *Melaleuca preissiana, Eucalyptus todtiana, Allocasuarina fraseriana, Banksia attenuata* and *Nuytsia floribunda*; *Melaleuca preissiana* Low Open Woodland to Low Open Forest; *Melaleuca rhaphiophylla* Low Open Woodland to Low Open Forest; *Melaleuca incana, M. viminea* and *M. rhaphiophylla* Low Open Forest; *Melaleuca rhaphiophylla* and *M. viminea* Low Open Woodland to Open Woodland; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Astartea* sp. Brixton Street and *Regelia ciliata* Shrubland to Open Heath; *Hypocalymma angustifolium* and *Melaleuca seriata* Low Open Heath; *Evandra pauciflora* Closed Sedgeland
Scattered Native Plants: not assessed
Vegetation Condition: >80% Excellent (some areas considered Pristine, Trudgen and Keighery 1995), <20% Very Good to Good, with areas of severe localised disturbance
Total Flora: not known (estimated >200 taxa, DEP 1998)

Significant Flora: *Diuris purdiei* (R), *Caladenia huegelii* (R); *Acacia lasiocarpa* var. *bracteolata* (1), *Byblis lindleyana* (2), *Schoenus benthamii* (3); *Villarsia violifolia, Jacksonia gracilis, Blancoa canescens, Hensmania turbinata* (Trudgen and Keighery 1995); *Astroloma xerophyllum, Levenhookia preissii* (Clarke and Keighery 2000b)

Fauna: multiple survey for birds (61 species) (Submission no. 169). Significant bird species: category 1 (1), category 3 (11) and category 4 (2). Good assemblage of ducks and waterbirds, including 15 breeding species. Breeding site for Freckled Duck (Payne 1993b). Significant mammal species: Quenda (Friend 1996 D)

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

Other Special Attributes: recommended to be protected with the purpose of conservation of nature and recreation compatible with the conservation of nature in study of bushland in the City of Gosnells (Trudgen and Keighery 1995), majority 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, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation

Recommendation: Part A: Urban Negotiated Planning Solution. Part B: Strategic Negotiated Planning Solution. Part C: Proposed Parks and Recreation Reservation. Part D: Local Reserve Mechanism. Part E: Other Government Land Mechanism (see Table 3, Volume 1).

HOLMES STREET BUSHLAND, SOUTHERN RIVER/HUNTINGDALE

Boundary Definition: bushland (part taken to cadastre) boundary

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 125 **Map no.** 69

Map sheet series ref. no. 2033–I NE

Other Names
Submission Area 215; part Gosnells remnant bushland area 6 (Trudgen and Keighery 1995)

Area (ha): total 149.8; bushland 132.5

Local Authorities (Suburb)
City of Gosnells (Southern River, Huntingdale)

Zoning
MRS: Urban, Rural, Urban Deferred, Important Regional Roads, Private Recreation, Public Purposes-High School
TPS: Rural, Landscape, Parks and Recreation, Residential A

Ownership Categories
Private (including commercial organisation), Local Government, State Government, Not identified

Lot/Location/Reserve numbers (Purpose), Street name
1, 2, 3, 4, 5, 1586, 1587, 1604, 1605, 1645 Holmes St; 1578 Warton Rd; 0, 1, 1596, 1600, 1601, 1602, 1614, 1646, 1647, 1648 Balfour St; 10, 12, 1585, 1588 Harpenden St; 1592, 1595 Gay St; 1607, 1610 Lakey St; 1603, 1606, 1611, 1612, 1613 Barrett St; Road

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Bassendean Dunes
Bassendean Sands (Qpb: S8)

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

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

VEGETATION AND FLORA

Vegetation Complexes

Combinations of Bassendean Dunes/Pinjarra Plain
Southern River Complex

Floristic Community Types

Supergroup 2: Seasonal Wetlands
4 *Melaleuca preissiana* damplands
S3 Wet sedgelands on sandy clays (most southerly occurrence)

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

WETLANDS

Wetland Types: sumpland, dampland

Natural Wetland Groups

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

Wetland Management Objectives: Conservation (95.8ha), Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (Trudgen and Keighery 1995 (Gosn 2–5, 12–13); part Bushplan Site DEP 1998)

Structural Units: mapping (Trudgen and Keighery 1995 (Gosn 2–5, 12–13))

Uplands: Low Open Woodlands to Low Closed Forests dominated by combinations of *Banksia attenuata, B. menziesii, B. ilicifolia* and *Allocasuarina fraseriana*; *Eucalyptus calophylla, E. marginata* and *Allocasuarina fraseriana* Woodland to Open Forest; *Banksia attenuata, B. menziesii, B. ilicifolia, Eucalyptus marginata* and *Allocasuarina fraseriana* Low Woodland to Low Open Forest; *Banksia attenuata, B. menziesii* and *Eucalyptus todtiana* Low Woodland to Low Open Forest

Wetlands: Low Open Woodlands to Low Woodlands dominated by combinations of *Melaleuca preissiana, Eucalyptus todtiana, Allocasuarina fraseriana, Banksia attenuata* and *Nuytsia floribunda*; *Melaleuca preissiana*

Low Open Woodland to Low Open Forest; *Melaleuca rhaphiophylla* Low Open Woodland to Low Open Forest; *Melaleuca incana, M. viminea* and *M. rhaphiophylla* Low Open Forest; *Melaleuca rhaphiophylla* and *M. viminea* Low Open Woodland to Open Woodland; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Astartea* sp. Brixton Street and *Regelia ciliata* Shrubland to Open Heath; *Hypocalymma angustifolium* and *Melaleuca* sp. B; Low Open Heath; *Evandra pauciflora* Closed Sedgeland

Scattered Native Plants: not assessed

Vegetation Condition: >80% Excellent (some areas considered Pristine, Trudgen and Keighery 1995), <20% Very Good to Good, with areas of severe localised disturbance

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

Significant Flora: *Diuris purdiei* (R),*Caladenia huegelii* (R), *Acacia lasiocarpa* var. *bracteolata* (1), *Schoenus benthamii* (3); *Astroloma xerophyllum, Villarsia violifolia, Levenhookia preissii, Jacksonia gracilis, Blancoa canescens, Hensmania turbinata* (Trudgen and Keighery 1995)

Fauna: multiple surveys (Submission no. 169) for birds (61). Significant bird species: category 1 (1), category 3 (11) and category 4 (2). Good assemblage of ducks and waterbirds, including 15 breeding species. Breeding site for Freckled Duck (Payne 1993 b). Significant mammal species: Quenda (Friend 1996 D)

Linkage: adjacent bushland to the north and west; 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: recommended to be protected with the purpose of conservation of nature and recreation compatible with the conservation of nature in study of bushland in the City of Gosnells (Trudgen and Keighery 1995), majority 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

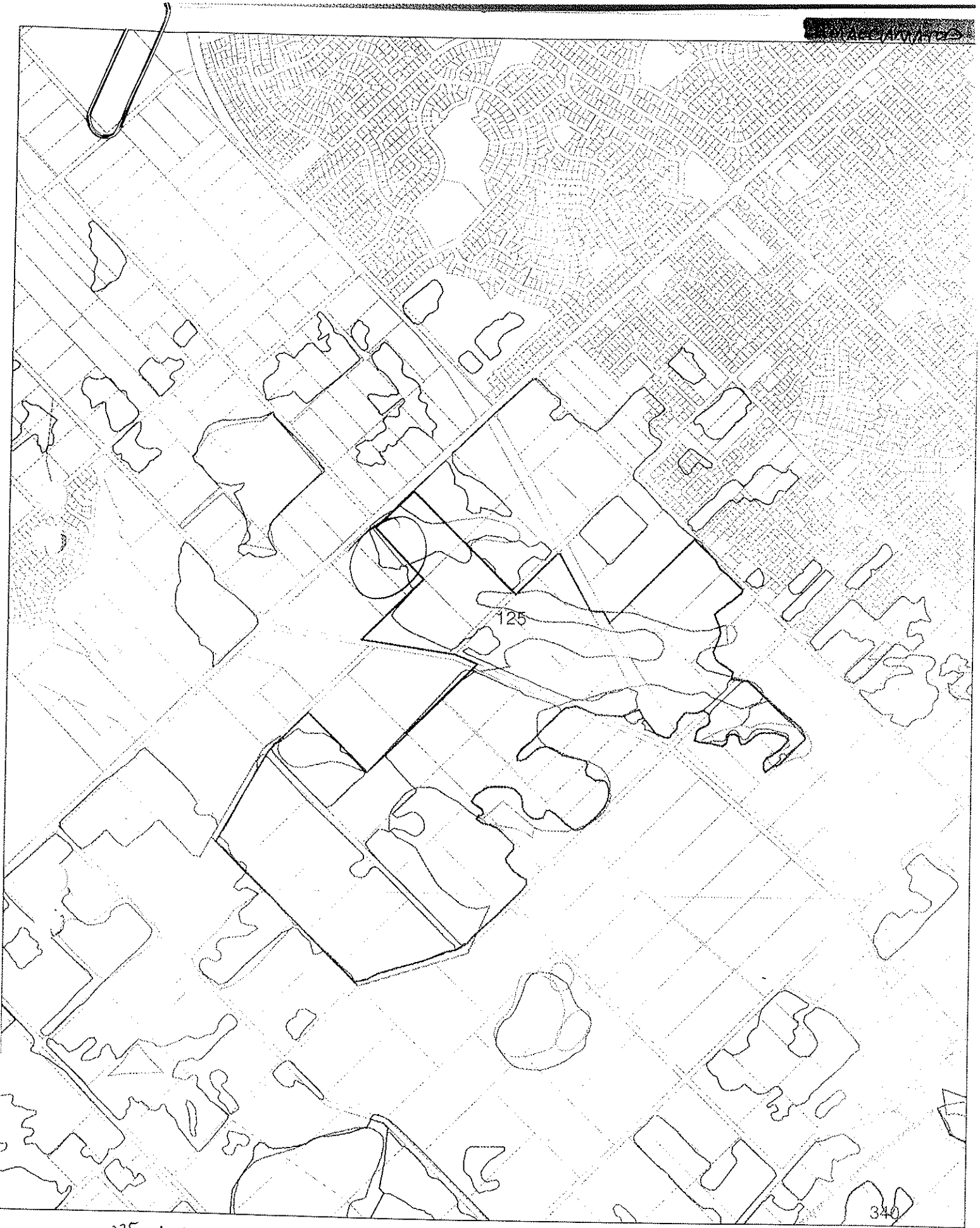
Criteria: Representation of ecological communities, Diversity, Rarity, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation

Opportunities and/or Constraints

Opportunities: Bushplan Site/part Bushplan Site subject to Swan and Canning Rivers EPP; location of Declared Rare Flora and Scheduled Fauna, conservation category wetlands; under TPS Parks and Recreation Zoning and Landscape Zoning

Constraints: private land; under MRS Urban Zoning and Urban Deferred Zoning, MRD regional road requirements

Recommendation: The most appropriate mechanism for the protection of this Bushplan Site be considered through the public comment period in consultation with the land owner(s). Note that environmental conditions apply to part of Bushplan Site (Lots 1588 and 10 Harpenden St)



125 Mundaring 1414.

BUSHPLAN SITES CORRECTED

WESTERN AUSTRALIAN PLANNING COMMISSION

CUSTOMER FOCUS WESTERN AUSTRALIA

b BK 28/10/96

N

BS 3/7

BS 125

This BS needs some discussion (ie more discussion) as from conversations with David Mitchell it appears that the lots marked with the X are the locations of DRF

BUSHPLAN SITES CORRECTED

THE GOVERNMENT OF WESTERN AUSTRALIA

WESTERN AUSTRALIAN PLANNING COMMISSION

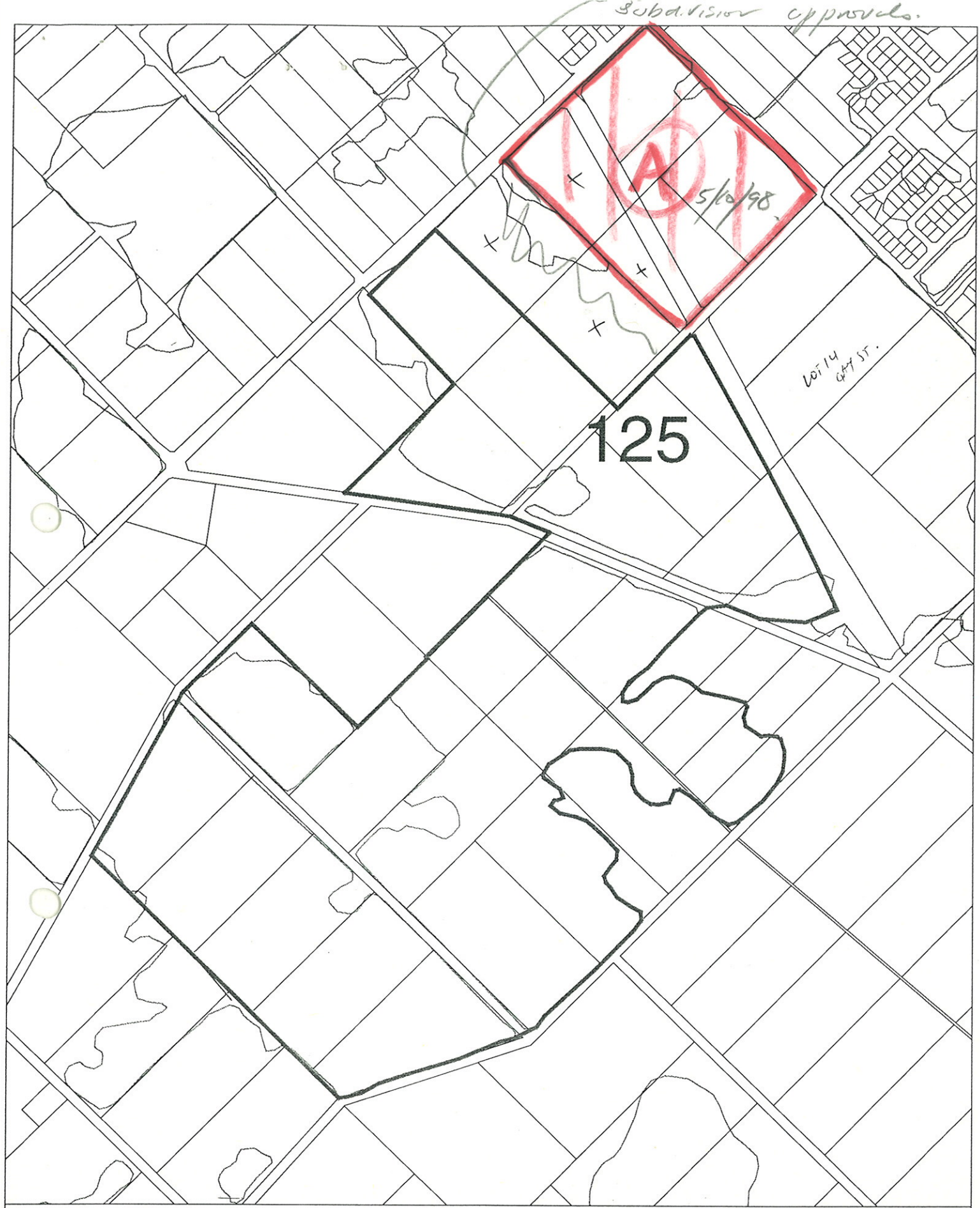
CUSTOMER FOCUS WESTERN AUSTRALIA

N

SCALE 1:2500

0 50m

Metres



BUSHPLAN SITES CORRECTED

THE GOVERNMENT OF WESTERN AUSTRALIA

WESTERN AUSTRALIAN PLANNING COMMISSION

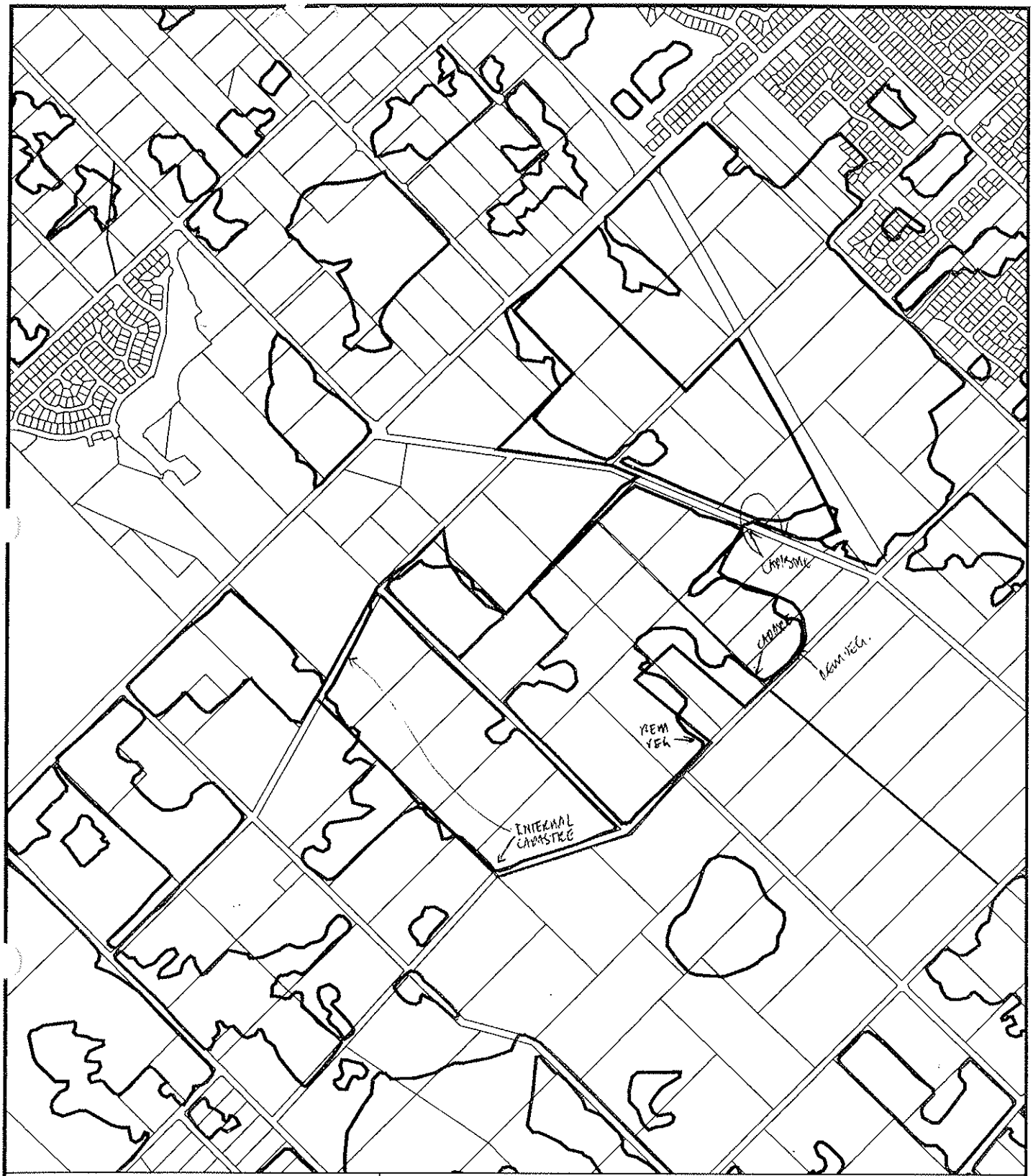
CUSTOMER FOCUS WESTERN AUSTRALIA

N

SCALE 1:2500

0 50m

Metres



bp site 125

AG VEG 1998 BOUNDARY THEME

Bushplan sites refno 1-500 SCP BOUNDARY THEME

Cadastre

MFP INTERNAL USE ONLY
Prepared By: Andrea Zappacosta
Prepared For:
Map Ident: plot980515_1
Date: 15 May 98
Scale 1:16181

10.1
169

SYSTEM 6 BUSHLAND SUBMISSION FORM
FOR CONSIDERATION IN THE UPDATE PROGRAMME

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

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

LOCATION, OWNERSHIP AND ZONING OF THE AREA

1. Location

Please give as accurate and detailed a description as possible of the site location

Please include either a hand drawn or copied map showing the area of the area

a) Bordering Roads: Holmes - Balfour streets.

b) Nearest Corner: " " "

1605 - 1604 + Parts of Lots 1-2-3-4 + 1600.

c) Lot Number: S..... Street Number: .....

d) Town/Suburb/Location: Southern River

e) Local Council: Gosnells

f) Site Name (if any): Holmes - Balfour swamp.

g) Approximate size of the area (ha): 15

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

.....

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

j) Map no.: 105

k) Grid Ref: B x 3-4

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

.....

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

Urban deferred.

.....

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

Please fill out those questions that you can answer

2. **Who owns the area?** (If owned by the person/s making the nomin... indicate) ....Private individuals.....

.....

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

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

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

5. **Why do you consider this area important?** (Refer to Guiding Issues paper)
Lots 1605 + 1604 in this swamp has excellent wetland vegetation.....
13 species of waterbirds breed in the swamp including the endangered Freckled duck and the colonial nesting little Red Cormorant.

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

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

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

If yes, what are they? .....

.....

.....

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

If yes, what kind of a wetlands is it?

a) lake

b) river

c) stream

d) swamp ✓

e) estuary

f) seasonally wet

g) other

Australia's

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? Lots 1605 + 1606 95%.

11. If the area includes regions cleared of native bushland please indicate reasons for the inclusion. To completely cover the entire swamp. For better management + includes feeding areas for waterfowl.

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

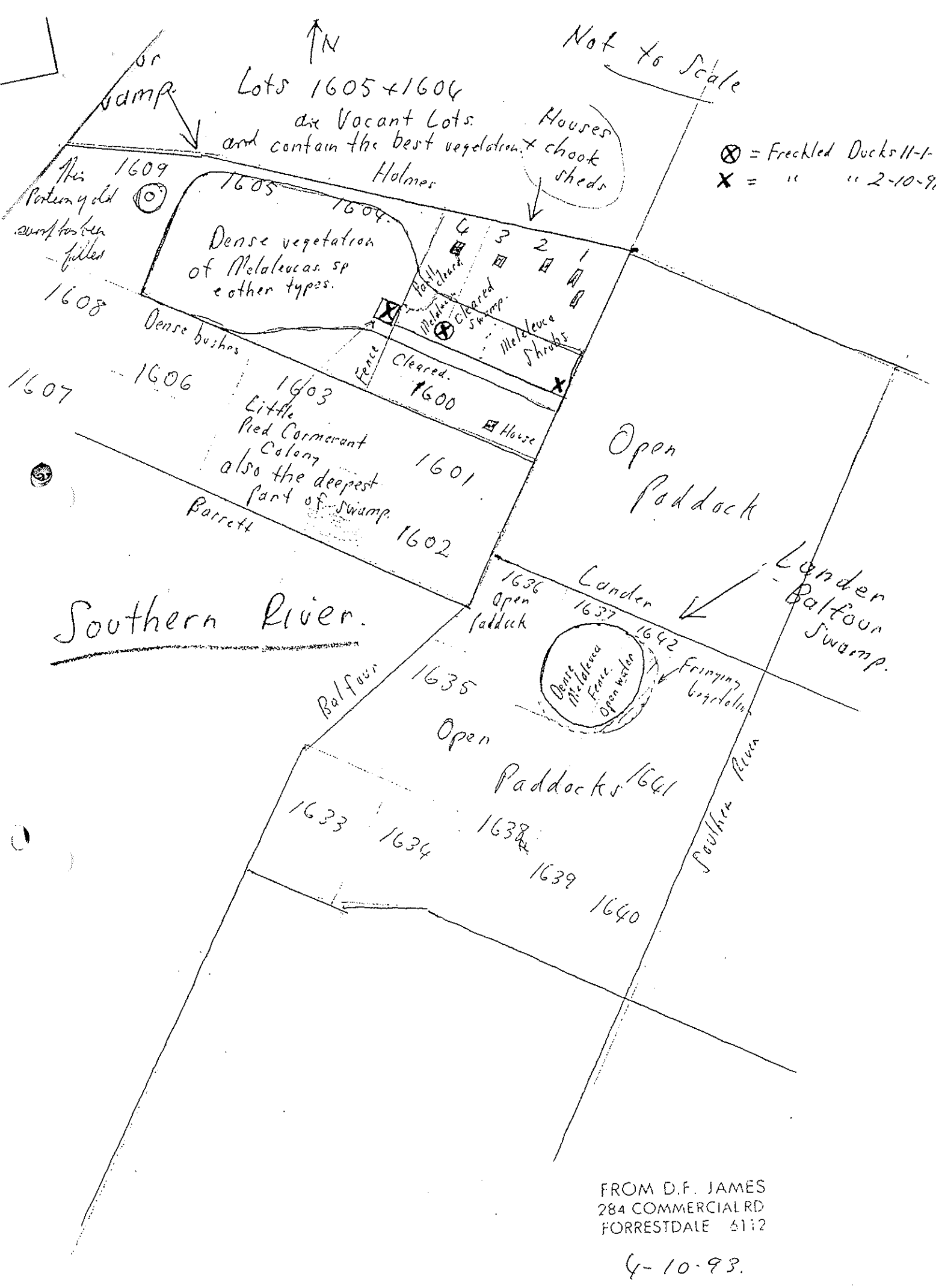
If yes, please give details of the work I personally done many surveys of waterbirds for the "Scapewest" (Swan Coastal Plain Wetland Study) (RAOU + WAWA) 1989-92. and have done some limited flora surveys.

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

a) pristine
b) excellent ✓ – Lots 1605 + 1604.
c) very good
d) good } Lot 1-2-3-4 + 1600.
e) degraded }
f) completely degraded
g) don't know

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

(a) Partial clearing Lots 1 – 4.
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 – Lots 1 – 4.
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



FROM D.F. JAMES
284 COMMERCIAL RD
FORRESTDALE 6112

4-10-93.

168.C.

SYSTEM 6 BUSHLAND SUBMISSION FORM
FOR CONSIDERATION IN THE UPDATE PROGRAMME

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

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

LOCATION, OWNERSHIP AND ZONING OF THE AREA

1. Location

Please give as accurate and detailed a description as possible of the site location

Please include either a hand drawn or copied map showing the area of the area

a) Bordering Roads: Holmes - Balfour Streets wet land

b) Nearest Corner: Wanton Rd / Holmes St.

c) Lot Number: Lot 605, 1604, Part 4 3, 2 + 11 " 1600, 1601, 1602, 1605, 1607, 1606 + 1603. Street Number: .....

d) Town/Suburb/Location: Southern River

e) Local Council: City of Gosnells

f) Site Name (if any): Holmes - Balfour wet land

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

h) Please locate the area on a map and give us map references if possible: See EPA Bulletin (927/33 MRS) No. 717 Nov. 1993

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

j) Map no.: .....

k) Grid Ref: .....

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

.....

m) Are you aware of any development proposals that are likely to affect the area? Excluded from urban for the moment - deleted from MRS.

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

Please fill out those questions that you can answer

2. Who owns the area? (If owned by the person/s making the nomination please indicate) Not known. On private ownerships (Think, Real Estate developers)

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

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

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

5. Why do you consider this area important? (Refer to Guiding Issues paper) Near permanent wetland. Recorded breeding site for Freckled duck, one of a number of interrelated wetland sites in the area used by waterbirds

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

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

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

If yes, what are they? .....

.....

.....

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

If yes, what kind of a wetlands is it?

a) lake

b) river

c) stream

d) swamp

e) estuary

(f) seasonally wet

g) other

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

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

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

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

.....

12. Has any previous flora or fauna survey work been done on the area?
RAOU. PEP. MMRA. Wetlands Study "Wetlands in the City of Gosnells"
Lemmick Study
If yes, please give details of the work ....Check PEP.....

.....

.....

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

'High' conservation management category wetland, EPA Bull. 374

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

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

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

n) Proliferation of tracks, fire breaks and walk trails

o) Off-road vehicle use

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

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

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

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

.....

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

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

.....

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

If yes, please name them and indicate source of information

.....

.....

CAN YOU TELL US A LITTLE ABOUT THE SURROUNDING AREA

18. Are there any bushland areas (including wetlands) near to this area?
yes: Lender Swamp Furley/Southern Rivers wetlan Balannup Swamp

If yes, how close are they ? Within 500 metres — 1Km

.....

.....

Are they already conservation reserves? Part of Balannup Swamps

What is their approximate size? Rang from a few ha up to 30-

19. Does the submitted area link other bushland areas? Could be linked to Furley/Southern Rivers Road wetland & maybe Lender Swamp.

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

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.

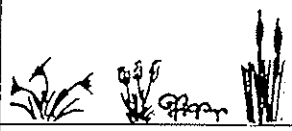
3. VEGETATION STRUCTURE AND COVER

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			Euc tod Allo fras Nayt thom Bak ca, mena, ilic		

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			2m 1m
COVER CLASS (%)		2-10% (chunks to 50%)	
DOMINANT SPECIES		Mel thy Ac pul Xand occi	Bos sp

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				1m
COVER CLASS (%)		30 - 70%	10 - 30%	
DOMINANT SPECIES		Phleb sil Pest occ	Lyg bick	

4. VEGETATION CONDITION

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

COMMENTS

Occ. Ehr only, Glad, Ursin

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS 125 SITE NUMBER SITE C

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.

N

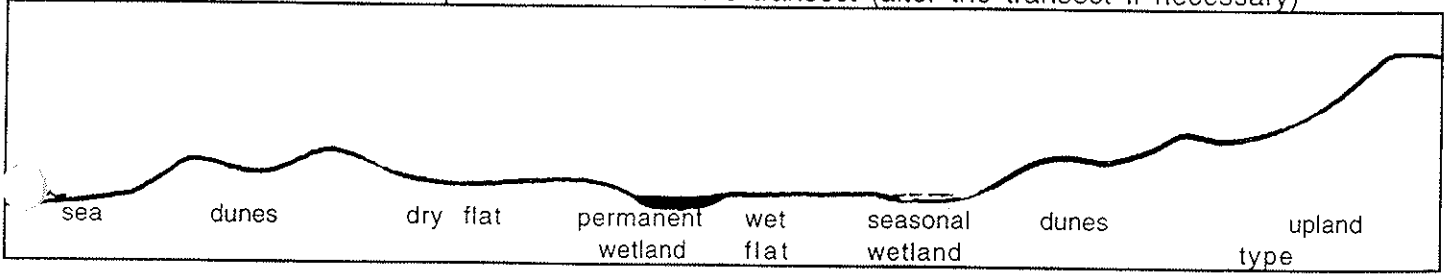
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil *Colour*

Exposed rock *type* % surface

Sub-surface Soil *Colour*

Rock *type* depth to rock

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

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

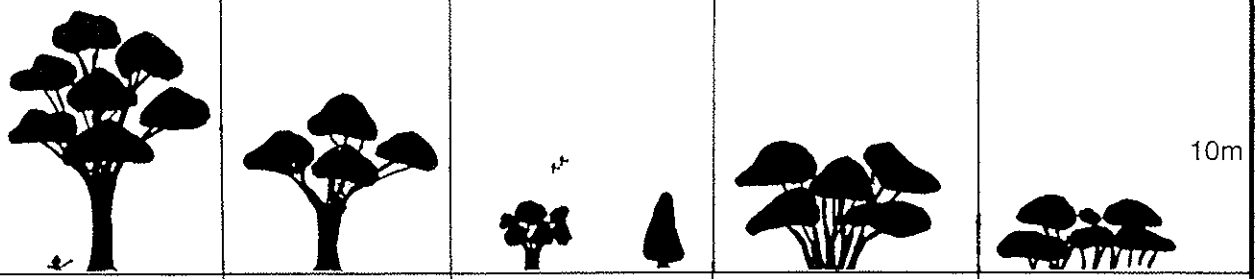
BUSHLAND PLANT SURVEY RECORDING SHEET 2 - use pencil only

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

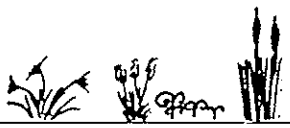
3. VEGETATION STRUCTURE AND COVER

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					
COVER CLASS (%)			Scattered		
DOMINANT SPECIES			Mel pra		

	SHRUBS		SHRUBS
	over 2m	2m - 1m	under 1m
LIFE FORM	occ emerg. Kunzea Jack bus	patches each + mixed	
COVER CLASS (%)		70%	2-10%
DOMINANT SPECIES		Peri ellip	Euch. tm
		Reg. inops	

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				1m
COVER CLASS (%)		10 - 30%	30 - 70%	
DOMINANT SPECIES		Phleb cil	Shoen arg =	Isol other

4. VEGETATION CONDITION

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

COMMENTS

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS 125 SITE NUMBER S1768

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

1. LOCATION of the QUADRAT

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

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

N

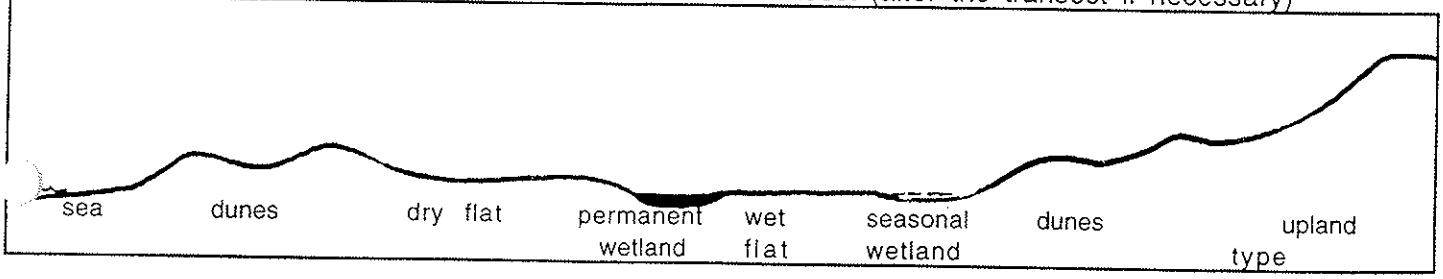
Road Location

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

Reference Map

Photograph Photographer's Name 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 Sand (humic bit) ***Colour*** 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	% cover	***Bare Ground***	%cover
Depth	cm		

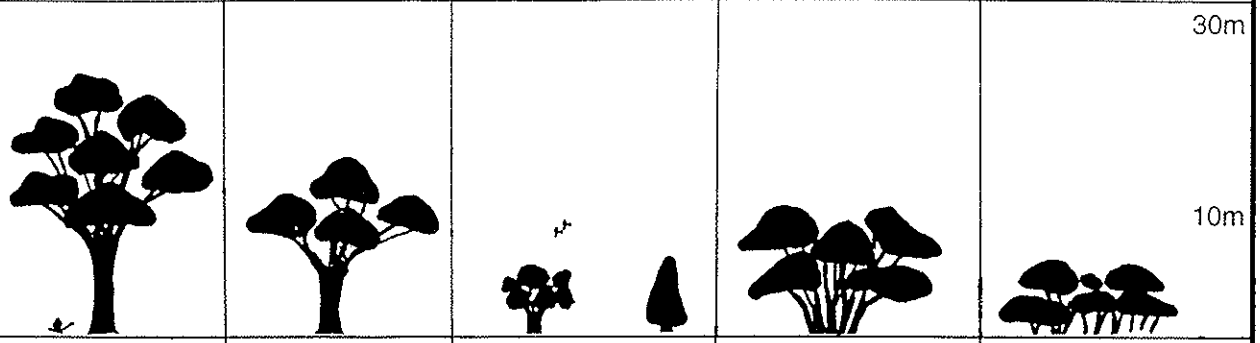
BUSHLAND PLANT SURVEY RECORDING SHEET 2 - use pencil only

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					
COVER CLASS (%)			10-30%		
DOMINANT SPECIES			Bank ott Bank mena		

	SHRUBS		SHRUBS
	over 2m	2m - 1m	under 1m
LIFE FORM			
COVER CLASS (%)		2-10%	30-70%
DOMINANT SPECIES		Mel thy. Ac pulc	Ere. pauc Leuc cono Hibb subdec

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				
COVER CLASS (%)		30-70%	2-10%	
DOMINANT SPECIES		Rhadcil Ptil exc Lat occ	Lyg bore.	

4. VEGETATION CONDITION

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

COMMENTS

Occ Glad emy, Vis orch, Eluc emy.

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA HARPENDEN SITE NUMBER SITE A

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

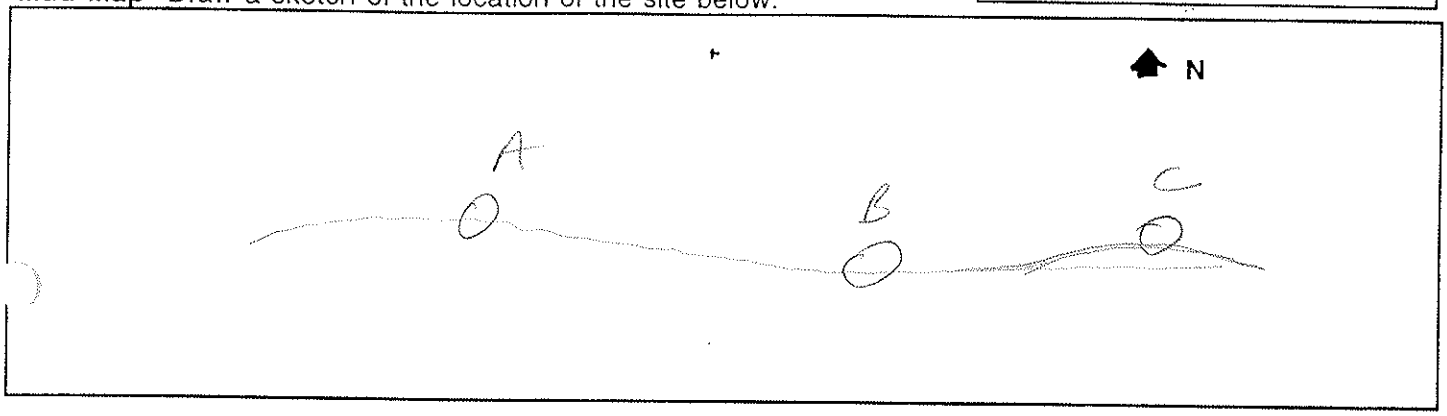
DATE TRIP _____ RECORDERS _____

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.



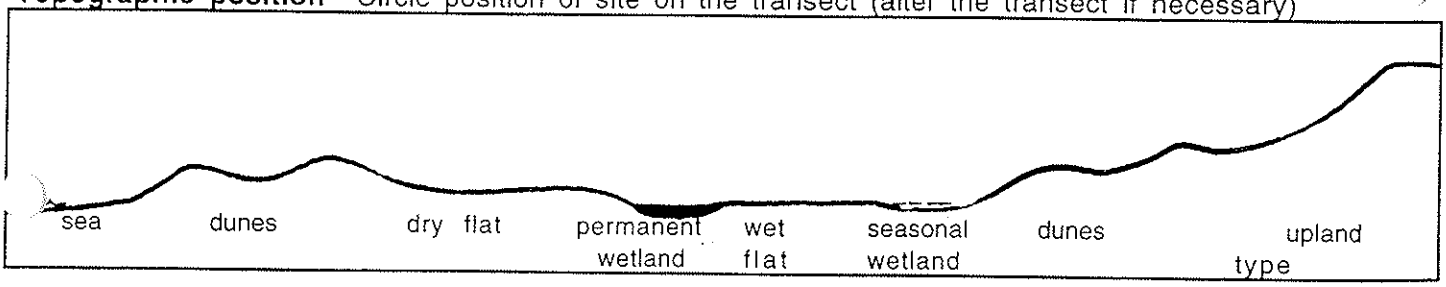
Road Location

Geographic Location **Latitude** . . **S Longitude** **E Altitude**

Reference Map

Photograph Photographer's Name BJK Photo No 22 (Slides)

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



2. SITE DATA Circle the correct response.

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

Surface Soil Sand ***Colour*** grey

Exposed rock ***type*** % surface

Sub-surface Soil as above ***Colour***

Rock ***type*** depth to rock

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

Litter	% cover	***Bare Ground***	%cover
Depth	cm		

BS 95/451

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

There are some plant communities that are now considered to be threatened because of the extensive clearing that has taken place. For example natural vegetation associated with the heavier soils of the eastern side of the Swan Coastal Plain is estimated to be at least 97% cleared. As a result many of the small pockets of vegetation remaining in this area are likely to contain threatened or inadequately reserved plant communities.

Large areas containing a range of ecological communities are generally a better proposition for protection than several smaller isolated areas. These larger areas often support a far greater biodiversity and exhibit a greater capacity to resist degradation, particularly from outside influences. They also contain a range of habitats that may provide for a more intact fauna community.

However, even where larger areas can be protected, replication of these community types in several separate reserves/areas is an essential attribute for achieving an adequate conservation status.

Consideration also needs to be given to consolidating already existing conservation areas, particularly those that are small in size or contain significant biota/ecological communities. Increasing the size of the protected area enhances its long-term value and viability.

The establishment of naturally vegetated corridors or links connecting existing or proposed conservation areas is an important issue. The primary role for these vegetated links is to facilitate the movement or migration of fauna. There are also benefits for the flora such as pollination and seed dispersal by the animals moving through the corridors. Corridors may be linear, in which case they should be as wide as possible, or they may be bushland pockets located close to each other.

The region is rich in animal species from mammals and birds through reptiles and amphibians to the invertebrates such as insects and spiders. Many of the animal communities of the region have been severely impacted by the loss of habitat through factors such as clearing, new fire regimes as well as introduced predators (foxes, cats, etc). Areas that still retain a diverse assemblage of animals or a relatively intact animal community are likely to be of high conservation significance.

Landforms and landscapes that still retain their natural vegetation fall within the scope of the programme, particularly those that are unusual (for example coastal limestone cliffs, mound springs, and river gorges). These can contain unique ecological communities or, as is the case for wetlands, provide essential habitat for many species of fauna.

Please send your submissions to:

The System 6 Study Team
Department of Environmental Protection
141 St Georges Terrace
PERTH WA 6000

The deadline for submissions is Friday 18 August 1995.

VEGETATION AND FLORA VALUES OF LOTS 1588 AND 10 HARPENDEN ST, SOUTHERN RIVER

SUMMARY

Lots 1588 and 10 are part of a larger area of bushland that encompasses area of vegetated wetland and upland (Map 1). Containing vegetated wetlands and uplands in excellent condition the bushland in the two lots is typical of the larger area and is a core part of 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). Lots 1588 and 10, and the larger area of which they are part, are excellent examples of this the Southern River Vegetation Complex. Therefore in the context of government's policy, outlined in the Urban Bushland Strategy, which aims protect to protect 10% of each vegetation complex the two lots are regionally significant.

The regional values of the larger area have also been identified by two recent studies, Trudgen and Keighery (1995) and Evangelisti & Associates *et al.* (1995). In consideration of the flora and vegetation values of the area Trudgen and Keighery (1995) recommended that the area (Remnant Area 6, Map 2) "...be protected with the purpose of conservation of nature and recreation compatible with the conservation of nature." While the study by Evangelisti & Associates *et al.* (1995) on the wetlands of the Middle Canning Catchment identified Category One wetlands in the both Lots 1588 and 10 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."

Therefore Lots 1588 and 10 are considered to be of regional conservation value.

DESCRIPTION OF LOTS 1588 AND 10.

REGIONAL INFORMATION

LANDFORM AND SOILS

Bassendean Dunes
Bassendean Sands (Qpb: S8)

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

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

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: sumpland, dampland
Consanguineous suite
Bassendean - Pinjarra transition OR Bassendean with fluvial features
Bennett Brook (B/P.4)
Wetland Management Objective: Conservation, Resource Enhancement, Multiple Use
Lake EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES (English and Blyth 1997)
Not assessed

AREA DETAIL

Landscape Features: vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (Trudgen and Keighery 1995, DEP 1997)

Structural Units: mapping (Trudgen and Keighery 1995)

Uplands: of *Banksia attenuata* and *B. menziesii* Low Open Woodlands to Low Closed Forests; Low Very Open Woodlands dominated by combinations of *Banksia attenuata*, *B. menziesii*, *B. ilicifolia*, *Eucalyptus marginata*, *E todtiana, Nuytsia floribunda* and *Allocasuarina fraseriana*

Wetlands: *Melaleuca preissiana* Low Very Open Woodlands; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Astartea* sp. Brixton Street and *Regelia ciliata* Shrubland to Open Heath; *Hypocalymma angustifolium* and *Melaleuca* sp. B Low Open Heath

Vegetation Condition: Excellent (Trudgen and Keighery 1995)

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

DRF/Priority and significant flora: Two species, *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),*Caladenia huegelii* (R), *Drakaea elastica* (R), *Acacia lasiocarpa* var. *bracteolata* (1) and *Schoenus benthamii* (3) have been found and could occur in Lots 1588 and 10. also

Fauna: Significant mammal species: Quenda (*Isoodon obesulus*) (Friend 1996) and diggings observed (DEP 1997).

Linkage: bushland to north available

larger provides linkage between the Southern River and protected bushland to the south west. It The block is a component of one of the remaining regional bushland linkage corridors ~~remaining~~ in the Perth Metropolitan Coastal Plain.

References

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 & and Associates, Landvision and The V & C Semeniuk Research Group 1995 Water Resurces Management Plan. Middle Canning Catchmet Study. Satge 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.)

Heddle, 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

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.

Urban Bushland Strategy

Vegetation, flora and habitat values of Lots 1588 and 10 Harpenden Street, Southern River

Summary

As the entire area of Lots 1588 and 10, as shown on the Map in Appendix 3, are naturally vegetated (bushland) these lots are of regional conservation value and represent plant communities and habitat that are poorly reserved. The clearing and destruction the habitat on Lots 1588 and 10 is considered to have unacceptable environmental impacts.

Lots 1588 and 10 are part of a larger area of bushland that encompasses an area of vegetated wetland and upland (Map in Appendix 3). Containing both vegetated wetlands and uplands in excellent condition the bushland in the two lots is typical of the larger area and is a core part of 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). Lots 1588 and 10, 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 the largest remaining unprotected area 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, the two lots are considered to be regionally significance.

The regional values of the larger area have also been identified by two recent studies, Trudgen and Keighery (1995) and Evangelisti & Associates *et al.* (1995). In consideration of the flora and vegetation values of the area Trudgen and Keighery (1995) recommended that the area (Remnant Area 6, Map 2) "...be protected with the purpose of conservation of nature and recreation compatible with the conservation of nature." While the study by Evangelisti & Associates *et al.* (1995) on the wetlands of the Middle Canning Catchment identified 'Category One Wetlands' in the both Lots 1588 and 10 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." These Category One Wetlands in Lots 1588 and 10 have also been identified as 'Conservation Category' wetlands by Hill *et al.* (1996b and Map, Appendix 3). Recognition of the wetlands in Lots 1588 and 10 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..".

Description of Lots 1588 and 10

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)

Wetlands (within the Bassendean Dunes/Pinjarra Plain)

Holocene Swamp Deposits (Qrw: Sp1)

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: sumpland

Appendix 4: Vegetation, flora and habitat values of Lots 1588 and 10, Southern River

Consanguineous suite
Bassendean - Pinjarra transition OR Bassendean with fluvial features
Bennett Brook (B/P.4)
Wetland Management Objective: Conservation
Lake EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES (English and Blyth 1997)
Not assessed (not expected to occur in the area)

AREA DETAIL
Landscape Features: vegetated wetland, vegetated uplands
Vegetation and Flora: limited survey (Trudgen and Keighery 1995, DEP 1997)
Structural Units: mapping (Trudgen and Keighery 1995)
Uplands: of *Banksia attenuata* and *B. menziesii* Low Open Woodlands to Low Closed Forests; Low Very Open Woodlands dominated by combinations of *Banksia attenuata, B. menziesii, B. ilicifolia, Eucalyptus marginata, E todtiana, Nuytsia floribunda* and *Allocasuarina fraseriana*
Wetlands: *Melaleuca preissiana* Low Very Open Woodlands; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Astartea* sp. Brixton Street and *Regelia ciliata* Shrubland to Open Heath; *Hypocalymma angustifolium* and *Melaleuca* sp. B Low Open Heath
Vegetation Condition: Excellent to Pristine with patches of disturbance associated with tracks (Trudgen and Keighery 1995, DEP 1997)
Total Flora: > 200 taxa (estimated, DEP 1997)
DRF/Priority (codes after Atkins 1996 in brackets) and significant flora: Two species *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),*Caladenia huegelii* (R), *Drakaea elastica* (R), *Acacia lasiocarpa* var. *bracteolata* (1) and *Schoenus benthamii* (3) have been found and could occur in Lots 1588 and 10.
Fauna: Significant mammal species: Quenda (*Isoodon obesulus*) (Friend 1996) and diggings observed (DEP 1997).
Linkage: adjacent bushland to the east, north west, northeast and north but much is presently being cleared for housing; 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.

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 & and 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.)

Heddle, 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.

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.

5113 WA 3169(C) METRO REGIONAL AREA & EXT. RUN 13 (5082-5157) 1:20000 15-DEC-92 920676

21/11/97

Julie

Same idea as previously (showing as wished below)

Reg

Map area to be developed?

Show

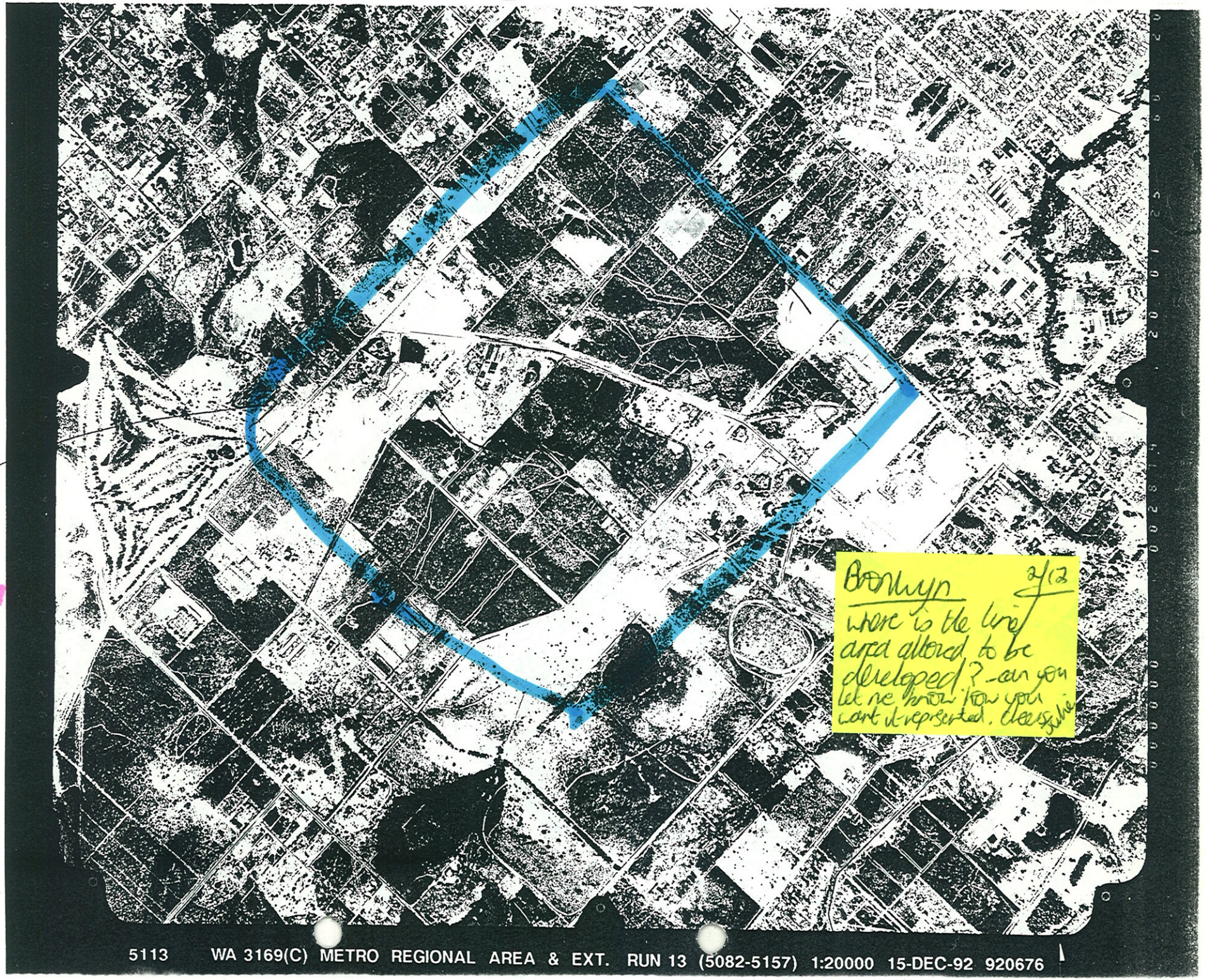
Wetlands Conservation Reserve Boundary

Aerial photo (Panorama)

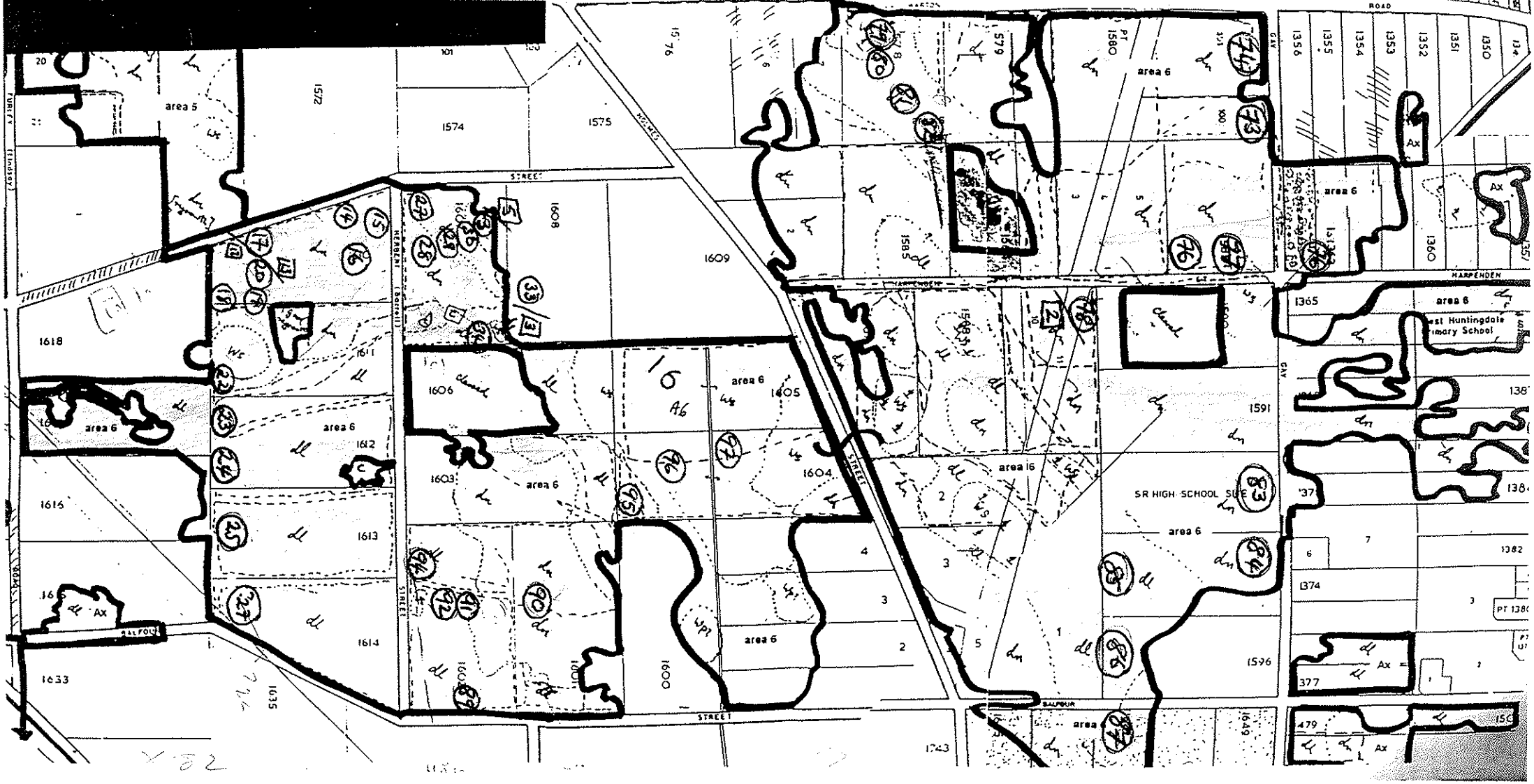
Lake EPP

Lot boundaries and numbers

Cadastral boundaries



5113 WA 3169(C) METRO REGIONAL AREA & EXT RUN 13 (5082-5157) 1:20000 15-DEC-92 920676


area 5
area 6
1572
1574
1575
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PT 1580
1608
1609
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1603
1604
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1613
1614
1633
1600
1596
1365
1360
1374
1377
1379
1382
1384
1387
SR HIGH SCHOOL SITE
area 16
STREET
HARPENDEN
ROAD
ALLFOUR
BALFOUR
Ax

URGENT

Facsimile Message

TO: Sean Collingwood

FAX NO: 92647566

FROM: Karen Clarke

POLICY COORDINATION

DATE: 7/6/00

TELEPHONE: 92227093

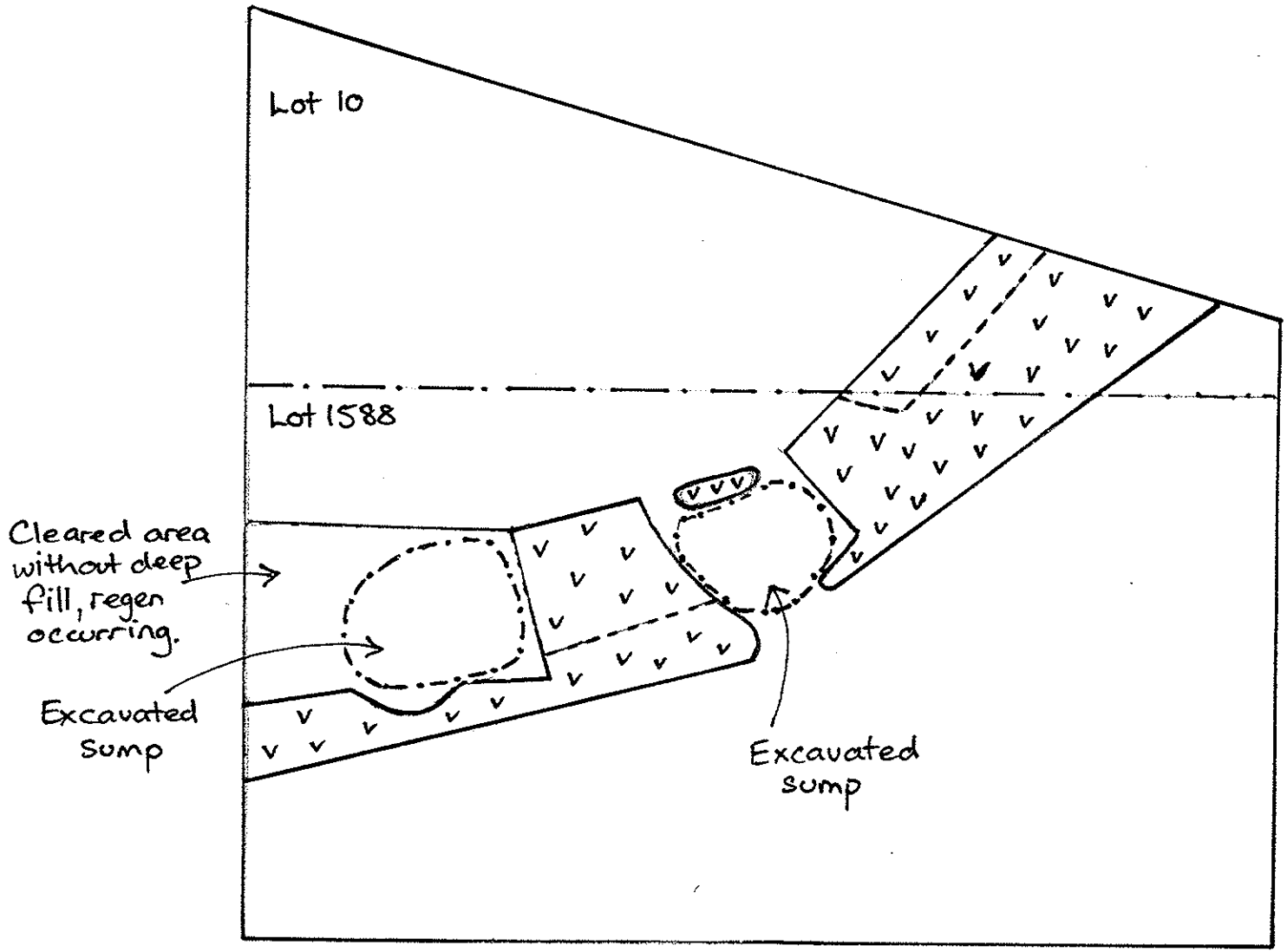
OUR FAX: 94851187

PAGES: 4

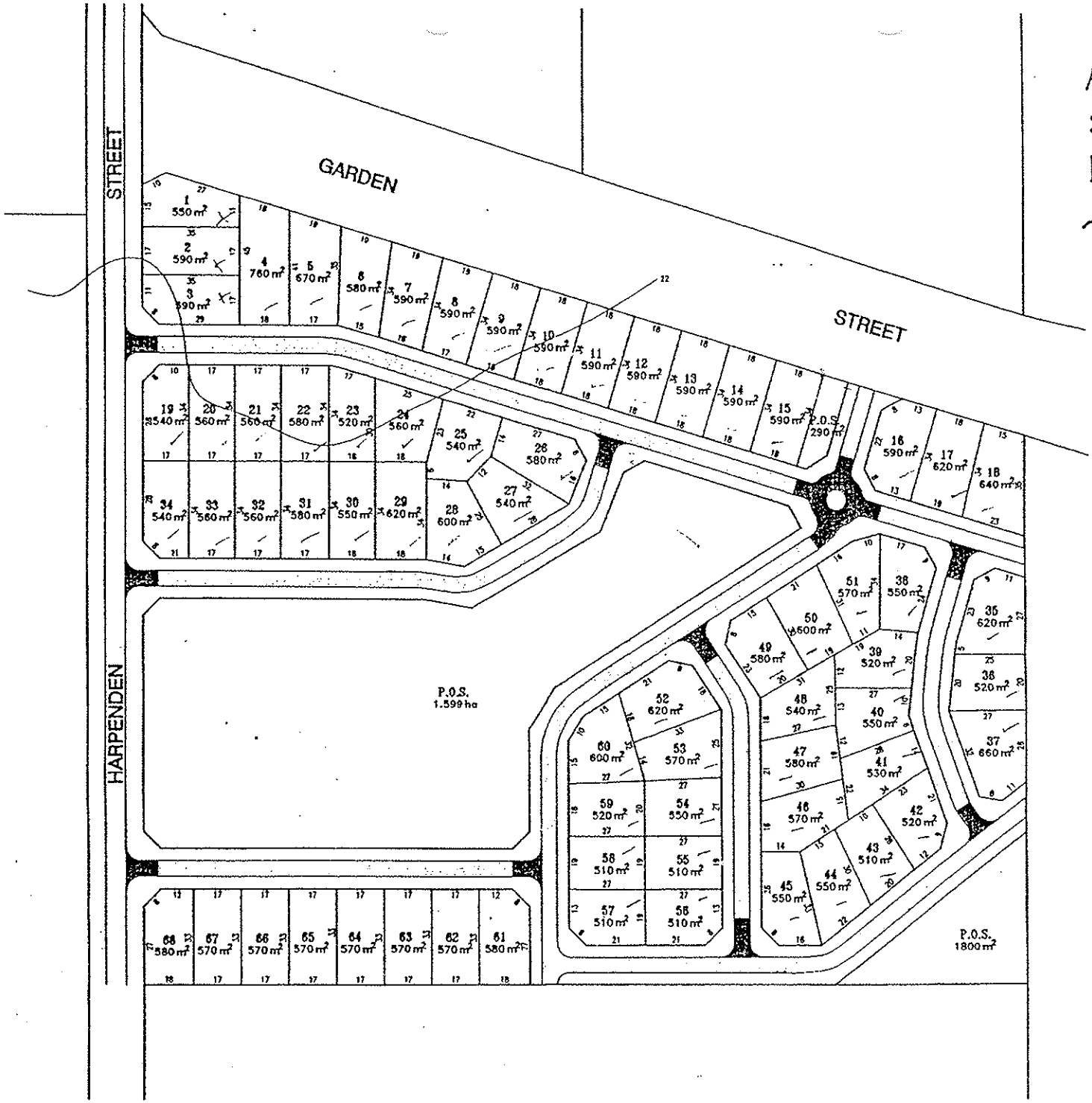
SUBJECT: Harpenden St Subdivision

Department of Environmental Protection
Westralia Square, 141 St. George's Terrace, Perth, Western Australia, 6000.
Telephone: (09) 9222 7000 Facsimile: (09) 9322 1598

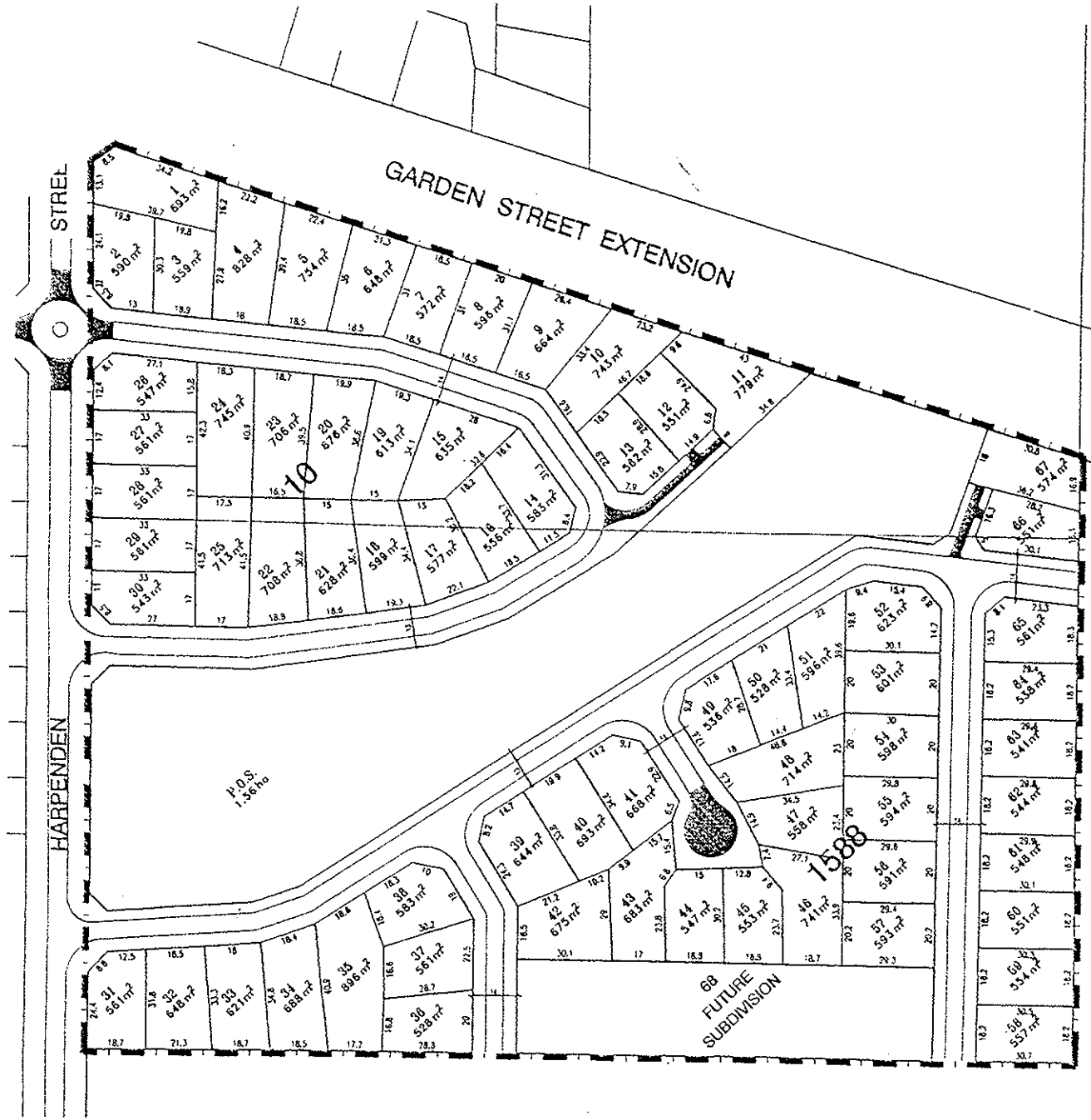
MAP 1: Remnant Vegetation on Lots 10 & 1588 Harpenden St, Southern River as at 1/6/01



Scale
1:2,000



Approved
Subdivision
Design
~1:2000



Revised
Subdivision
Design

~ 1:2,000

Remnant 6 flora

i, Bg
Ba, Bm, Allof, Adencyg, Apulch, Jack sercea (swamp form)
Compht, Bossario, Dasybroom, Phleb calif, Hypo ex,
Amphi turb, Pet lin, Boronia sp., Trach pil,
Waitz suav, Anigom, Mel ser, Phleb fili, hyg bar,
Bard umb, Siloz humi, Schol in, Hoxo fas
Nf, Hens turb, Schoenus sub-b., Sty pil, Cal flav,
Lom soric, Eriospic, Cono pithy, Lax squar.
Hov dri, Caes oca, Aeac. stenopt, Tric tenella,
Hemi pung, Thy multi, Mel thy, xp,
Arno pikiti, Cono aurea, Hoxoflex, Hib trac,
Pat occ, Macro end, Jack furcell, Kunzeri,
Drosera (climbing), Damp. lin, Sty brun.
Persacc, Sty sep. Acacia kirkegelii, Lom. caespit;
Epem. arteroc, Lob tenuior, Stu lat, Thys abusc.
Leuco cono, Caly ang, Cono preiss, Nemera
capitata, Phocarpa pulchella, Hib aurea
Stip comp, Lom. nig, Astro xerophila, Allo'h,
Cono pend, Hib vag, Lepid angustat,
Lob. alata, Cono aciculata, Hib laxiana tamosa
Cyanthus juncea, Thysan thyrs, Mono grand
Styl. Cord. Leuco pend. Haemo spicia, Hh,
Reg ad, Cono set, Leuco pend, Mel prei,
Astrot aff. fasci, Schoen. sod, Cal dat, Iso marg.
Iso stell., Kpro, Jun pal, Cass racem, Styl get
Peri ell, Hypo an, Lesch exp, Cyatho chaete averaea
Leptocarpus scoroses & aristatus & rayeei, Graphsphor
Lepid long, Lepid-spheto, Mel lat, Drosera nit.
M thapsh, Mel incana, M. teretif, Astartea
Sp. Boxton St. Centro muticus, drum, glabra
Vell ? pomaus, P. im hispid, Lemna disperma, Alt. nodos
Epil. hirtig, Stylid adnicul., Crassulatons.

*Utr, *Ec. *Gc, *Bm *Carpo * *Hg. *Monopsis simplex
*Rumex acet *So, *Sal nig *Lotus suav *Vulpia myuros
*Juncus, Poly monsp. *Goat pond *Juncus bufon

Villarsia ovat, Iso product, Styl longit,
Trig procera, Sty duchot, Cot cavonop,
Good pulch, * Iso con, Cass glab,
Mela leptoclada, Ha varia,
Eragrostis elongata, Sty gutt, Sty div,
Sty calc, Dros occi?, Calandrinia sp.
Aptheca cyperoides, F tod, Mel sp. B,
Leuc gracil, * Asteridea pulverulenta
Drosera, Verticordens, Schoenus aff breviculmis,
Restio lepto corp., Kunzea recurva,
Schoenus rigens, Podo angustif, Schoenus odont,
Loxocarya micrippa, Drosera pulcella
Selaginella gracillima, Quinetia urvillei
Dros glanduligera, Euchilopsis linearis,
Amphi laguroides, Caesia occi, Xan hueg,
Homalo homalo, Danthonia pilosa,
Thysan tenax, Dasdeca, Hib stell,
Neesenia graciliceps, Loman micran,
Schoenus asperoc. Schoenus aff. breviculmis
Mavri, Leucophyta procera, Viminaria
Leuco australis, Evandra pauciflora, Leuco stypha,
Byblis, Haloca sulcata. Hib subvag

Cyathochaeta

185 native species
* & 24 weeds

* Cyp. tenellus, * Bi mox * Anagallis, * Lupinus
* Agrostis ave * Monoplus simplex, * Era cant,

Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

N

0 50 100m

Scale 1:3,000

Department of Environmental Protection
Bush Forever Site 125 K. Clarke & B. J. Keighery. October, 2001

Map 6: Vegetation Map for the North-West Section of Bush Forever Site 1
Holmes Street Bushland, Southern River/ Huntingdale (includes Prelimin
Mapping for the North-East Section)

Department of Environmental Protection
Bush Forever Site 125 K. Clarke & B. J. Keighery. October,

Notes 14/07/03 BJ Keighery
'New wetland identified Clarke et al 2001 = Cons. cat
Conservation Category after Clarke et al 2001
Resource Enhancement after Clarke et al 2001

Annotated 14/07/03 By BJ Keighery

3/03 additional clearing track widened for pipeline work (WRC/DPI details)

Public Open Space

Plantings

8/07/03 Additional clearing into Bush Forever Site by WRC for works.

(Garden St)

Harpenden

Gay St

TK83

TK84

TK85

TK86

TK87

(Balfour St)

1592

1595

1596

1647

1646

1645

1588

1587

10

1

3

5

4

12

2

AfEmOW VG 1585

XpOSh Ex-VG

PeRcCH Ex-VG

BaLW Ex-VG

BLW G-D

BLW G-VG

MpW G-D

MiLOW Ex-VG

MiLOW VG

MiLOW VG-G

WMI Ex-VG

SlS VG-Ex

XplOSh VG-Ex

VG-G

Excavated Wetland Areas

Recent Clearing

Holmes St

C1

x1 x2 x3 x4 x5 x6 x16 x17 x18 x19 x20 x21 x24 x46

8/07/03 Edge Inspection Clearing ongoing in these remnants, understorey being removed by ?grazing, ?active clearing Lot 1587.

8/07/03 Clearing evident in 1588 less so in MiS vege in Section Lot 2

Observed 8/06/03 from edge possible horse grazing clearing at Lot 2. areas

Bush Forever Site 125 – includes Preliminary

f Environmental Protection
Site 125 K. Clarke & B. J. Keighery. October, 2001

STUDY AREA BOUNDARY
LOCAL AUTHORITY BOUNDARY
MAJOR ROADS
CADASTRAL
IMPORTANT ECOLOGICAL ELEMENTS
WETLAND (ENS Significant) (refer to Table 1.) 19
REMNANT VEGETATION ADJACENT TO WETLANDS
100m MULTIPLE PURPOSE BUFFER
VEGETATION
REMNANT VEGETATION
UPLAND VEGETATION (refer to Table 1.) A
OPPORTUNITIES/ CONSTRAINTS TO URBANISATION
CATEGORY ONE AREAS
Areas considered inappropriate and/or unsuitable for any development.
CATEGORY TWO AREAS
Areas considered unsuitable and/or undesirable for urban development but may be used for passive and active recreation, to enhance the urban setting or incorporated in multiple use corridors.
LINKAGE CORRIDORS
SCHEDULE OF SIGNIFICANT WETLANDS
SCHEDULE OF IMPORTANT UPLAND VEGETATION
NOTE: This area is subject to re-assessment by CALM, DEP & MRP.

City of Canning
City of Gosnells
City of Cockburn
City of Armadale
Shire of Serpentine- Jarrahdale
Forrestdale Lake
ROAD
WARTON ROAD
RANFORD ROAD
SOUTHERN RIVER
FORREST ROAD
ARMADALE ROAD
NICHOLSON ROAD
SOUTHERN LAKE ROAD
RIVER ROAD
EPP

V & C Semeniuk Research Group
LANDVISION
0m 500 1000 1500 2000m
SCALE 1:40000 (AT A3SIZE)

WATER RESOURCES MANAGEMENT STUDY
MIDDLE CANNING CATCHMENT STAGE 2

ECOLOGICAL CONSIDERATIONS

4

MAP 1: Remnant Vegetation on Lots 10 & 1588 Harpenden St, Southern River as at 1/6/01

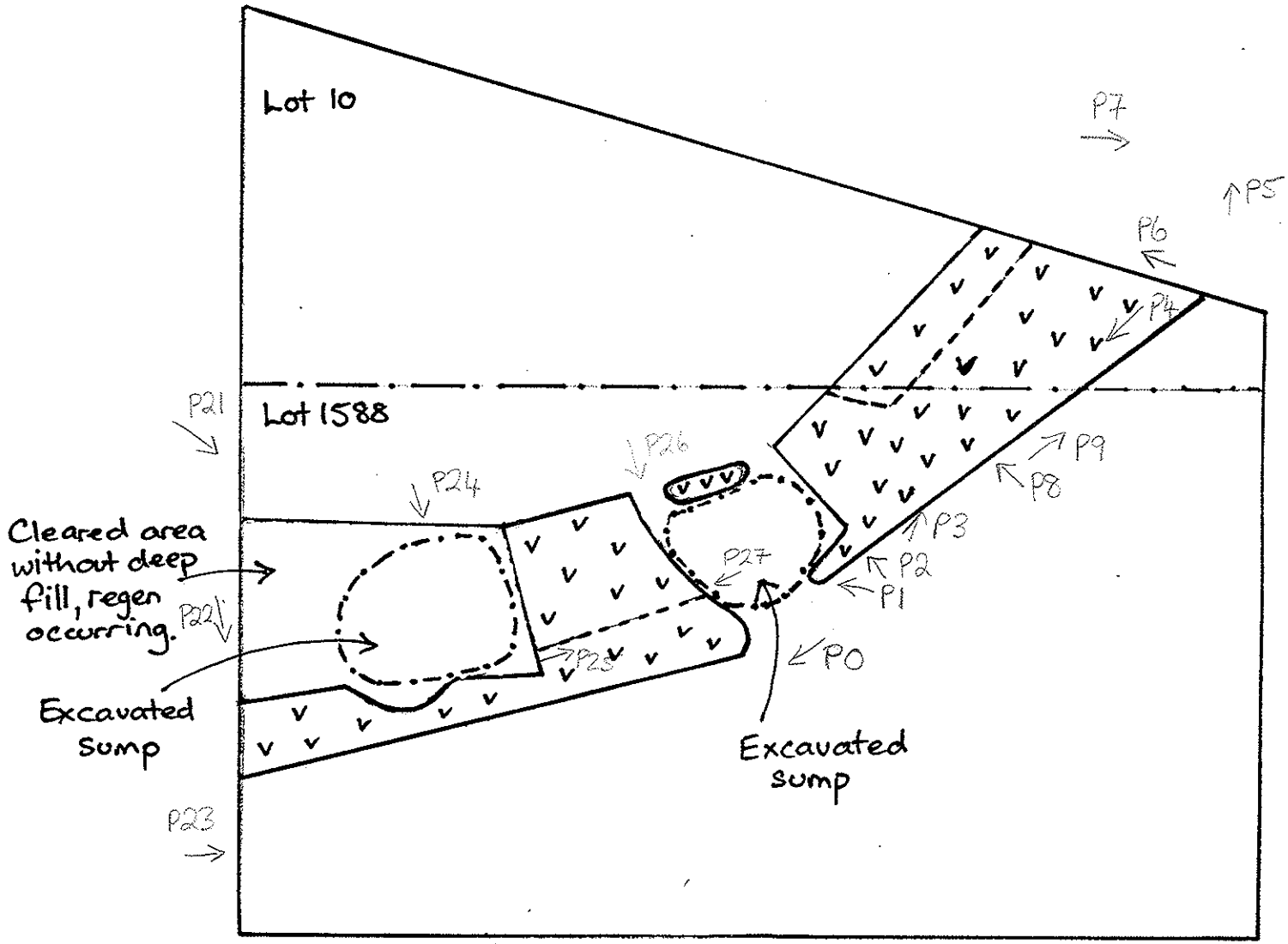


Photo Points 1/6/01

V V Remnant Vegetation

Sump boundary

Tracks

Boundary between Lots 10 & 1588

Scale 1:2,000

lots 10 & 15 & 8
BS125 Harpenden St
Subdivision

1/6/01

See Map for
location

Plate 1: View across buffer area to neighbouring property

Plate 2: View looking south west

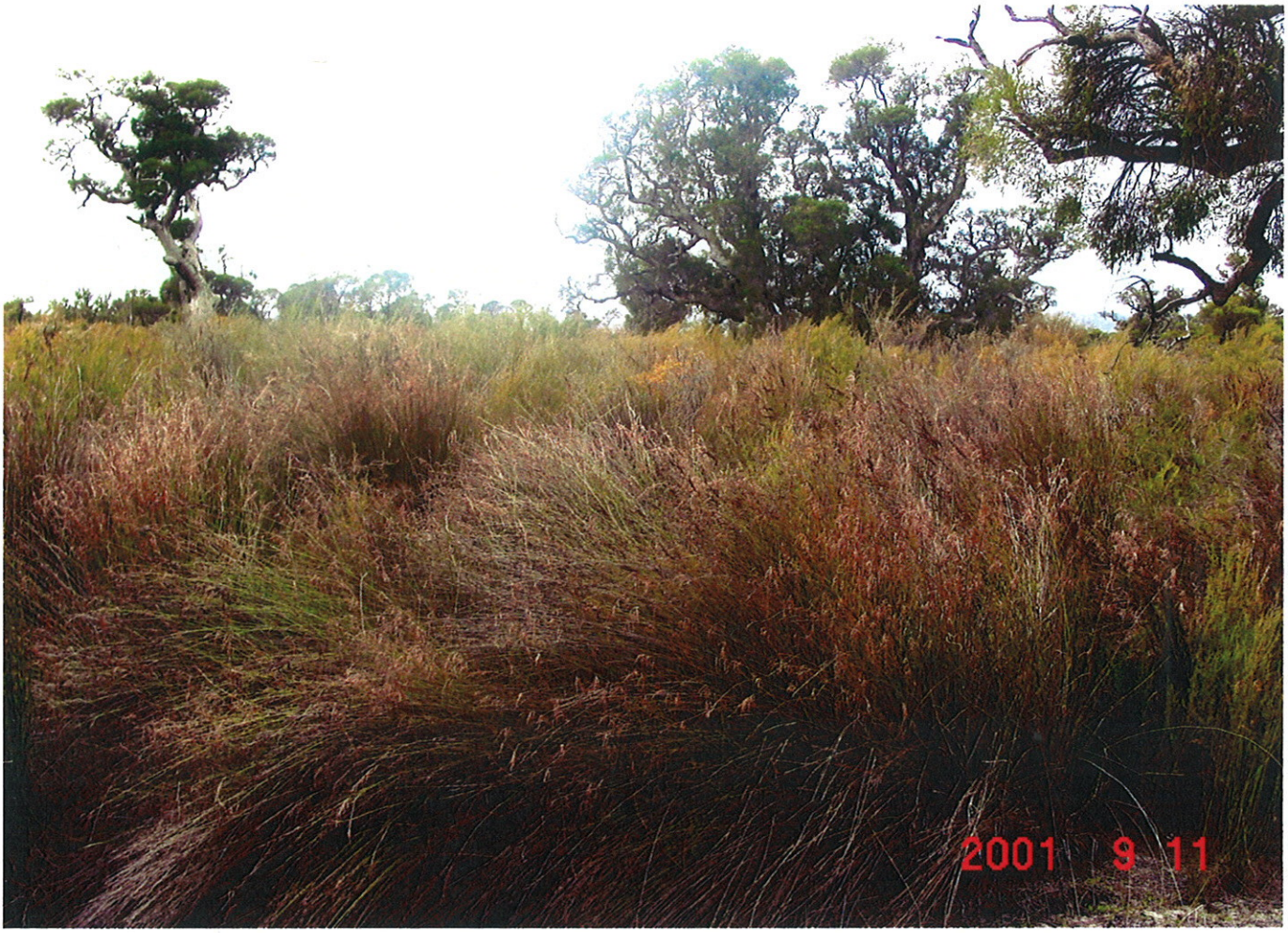
Plate 3: View across core wetland area

Plate 4: View looking north east

Plate 5: View looking west towards existing urban development

2001 9 11

2001 9 11

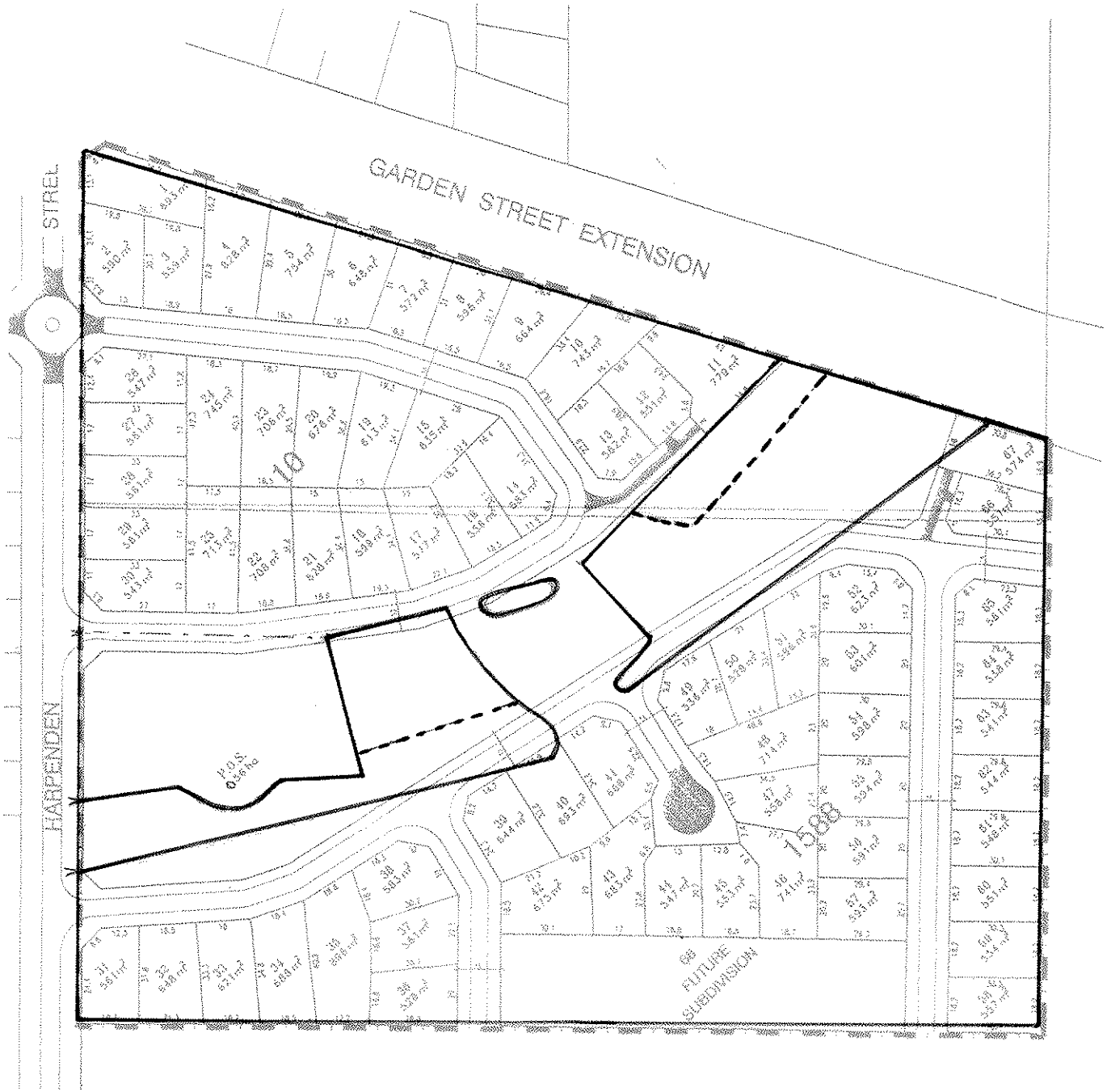

2001 9 11

2001 9 11

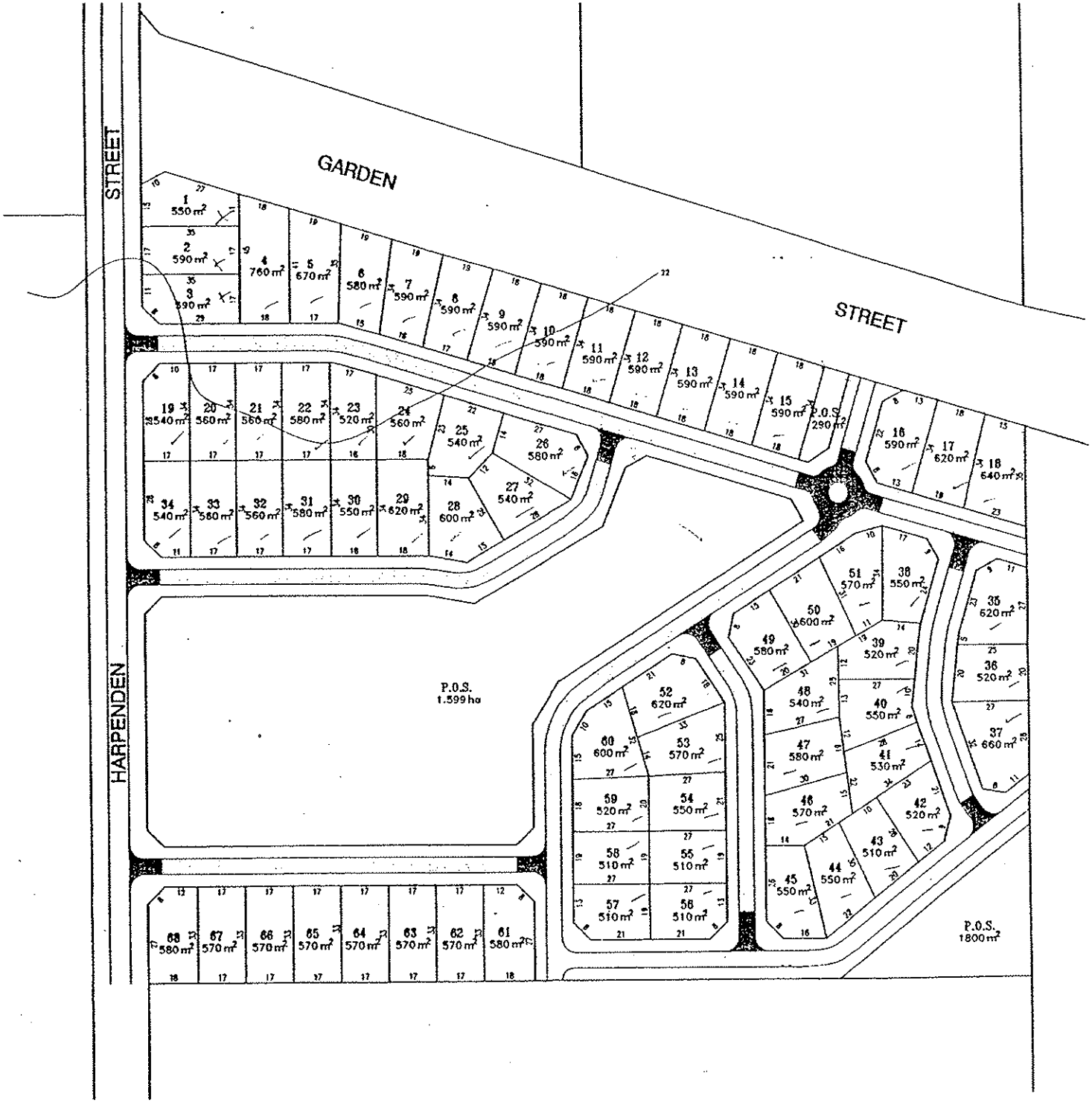
2001 9 11

N

BS125 1998


GARDEN STREET EXTENSION
STREET
HARPENDEN
P.O.S.
0.56 ha
10
1588
FUTURE SUBDIVISION

Scale
1:2,000


GARDEN
STREET
STREET
HARPENDEN
P.O.S.
1.599 ha
P.O.S.
290 m²
P.O.S.
1800 m²
1 550 m²
2 590 m²
3 590 m²
4 760 m²
5 670 m²
6 580 m²
7 590 m²
8 590 m²
9 590 m²
10 590 m²
11 590 m²
12 590 m²
13 590 m²
14 590 m²
15 590 m²
16 590 m²
17 620 m²
18 640 m²
19 540 m²
20 560 m²
21 560 m²
22 580 m²
23 520 m²
24 560 m²
25 540 m²
26 580 m²
27 540 m²
28 600 m²
29 620 m²
30 550 m²
31 580 m²
32 560 m²
33 560 m²
34 540 m²
35 620 m²
36 520 m²
37 660 m²
38 550 m²
39 520 m²
40 550 m²
41 530 m²
42 520 m²
43 510 m²
44 550 m²
45 550 m²
46 570 m²
47 580 m²
48 540 m²
49 580 m²
50 600 m²
51 570 m²
52 620 m²
53 570 m²
54 550 m²
55 510 m²
56 510 m²
57 510 m²
58 510 m²
59 520 m²
60 600 m²
61 580 m²
62 570 m²
63 570 m²
64 570 m²
65 570 m²
66 570 m²
67 570 m²
68 580 m²

Panairama 1999/98 ?

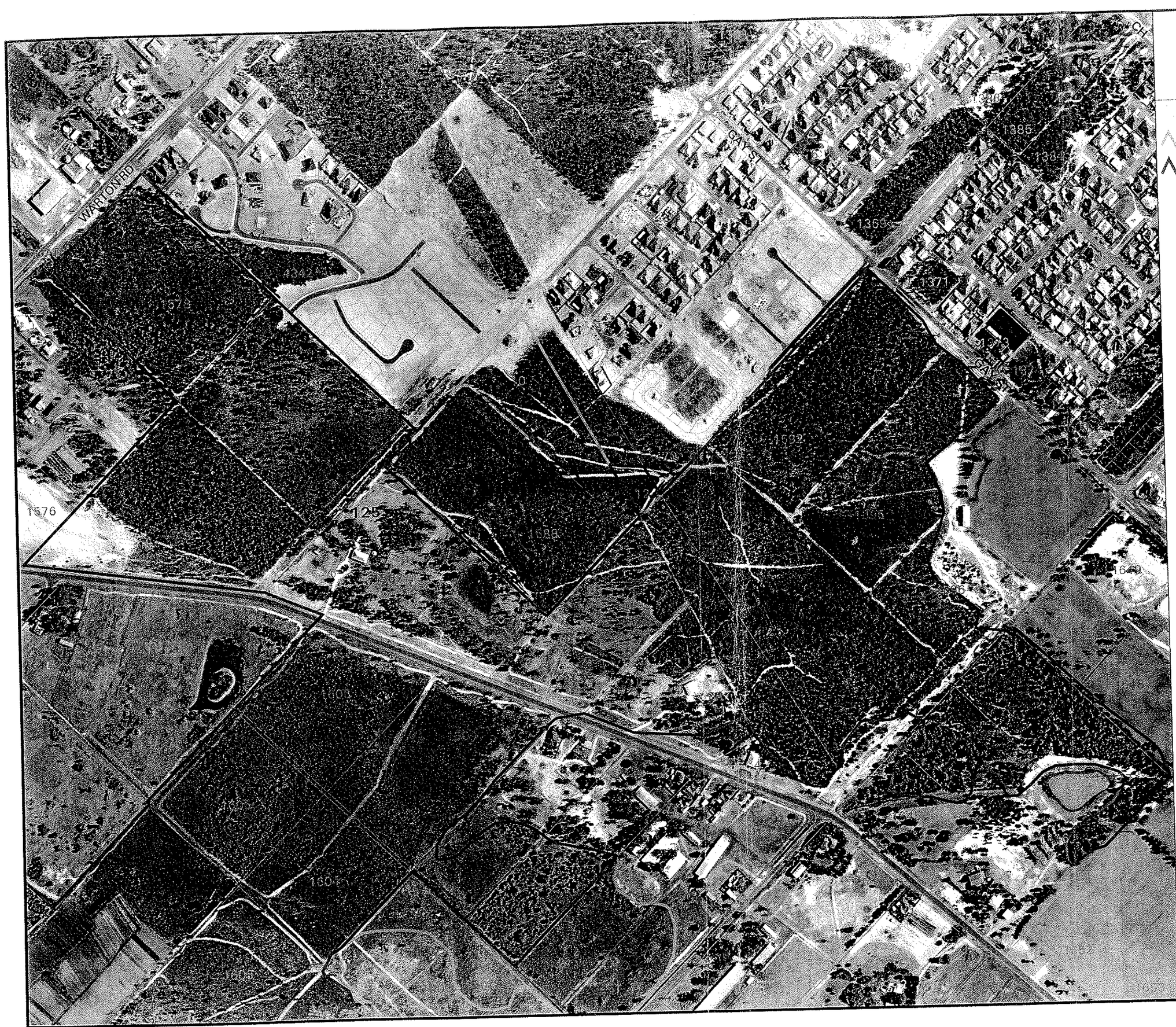
Panairama 2001

BS 125
North of Holmes Rd
Southern River
Aerial 2000

Cadastre with Lot Numbers Blue - Overlay Imag

Bushplan Sites Draft (Boundaries)

Bush Forever 2000 - Site Boundaries



Map Ident: plot010509_1

Prepared By: Sean Collingwood

Prepared For: SPC

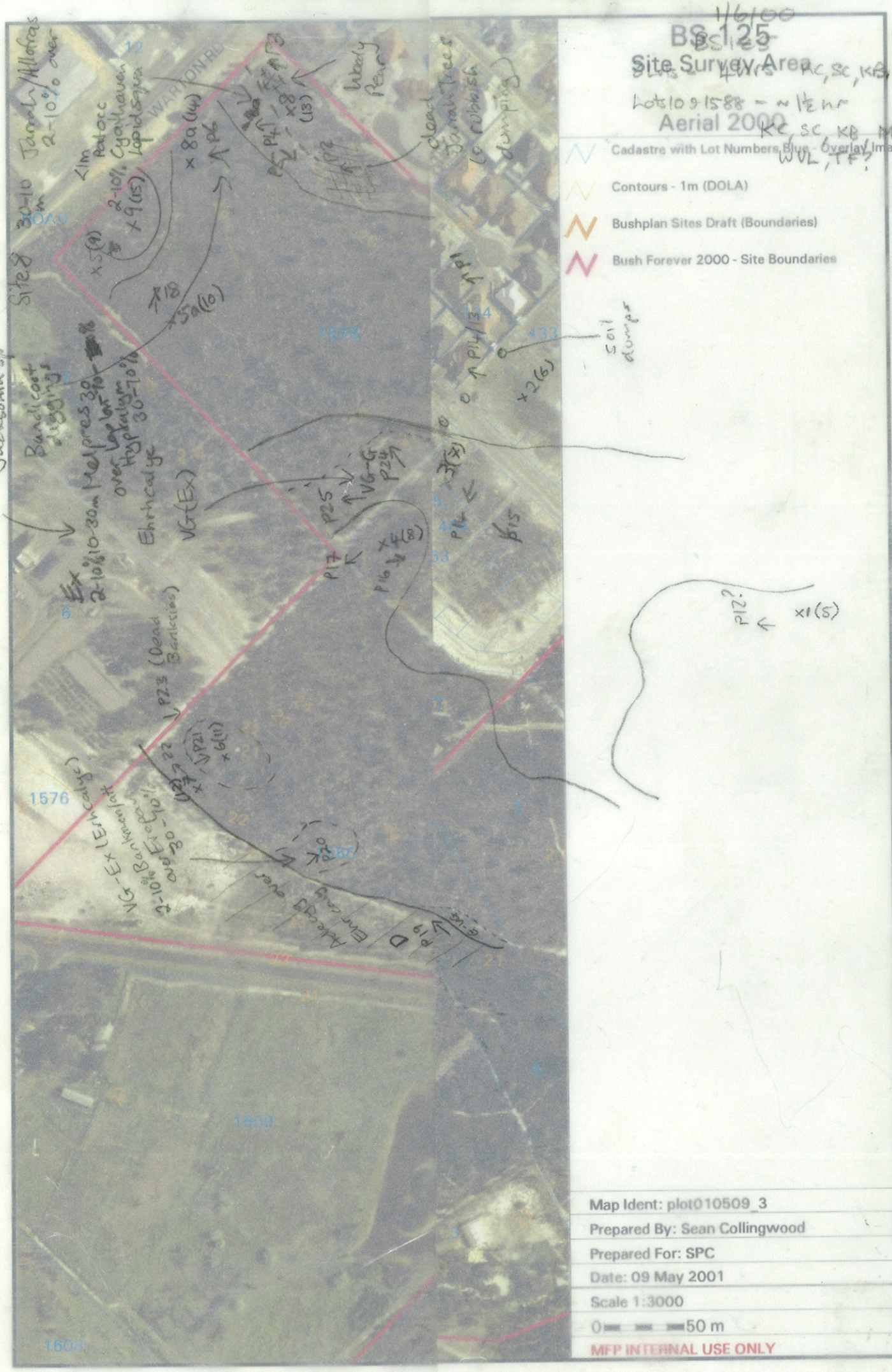
Date: 09 May 2001

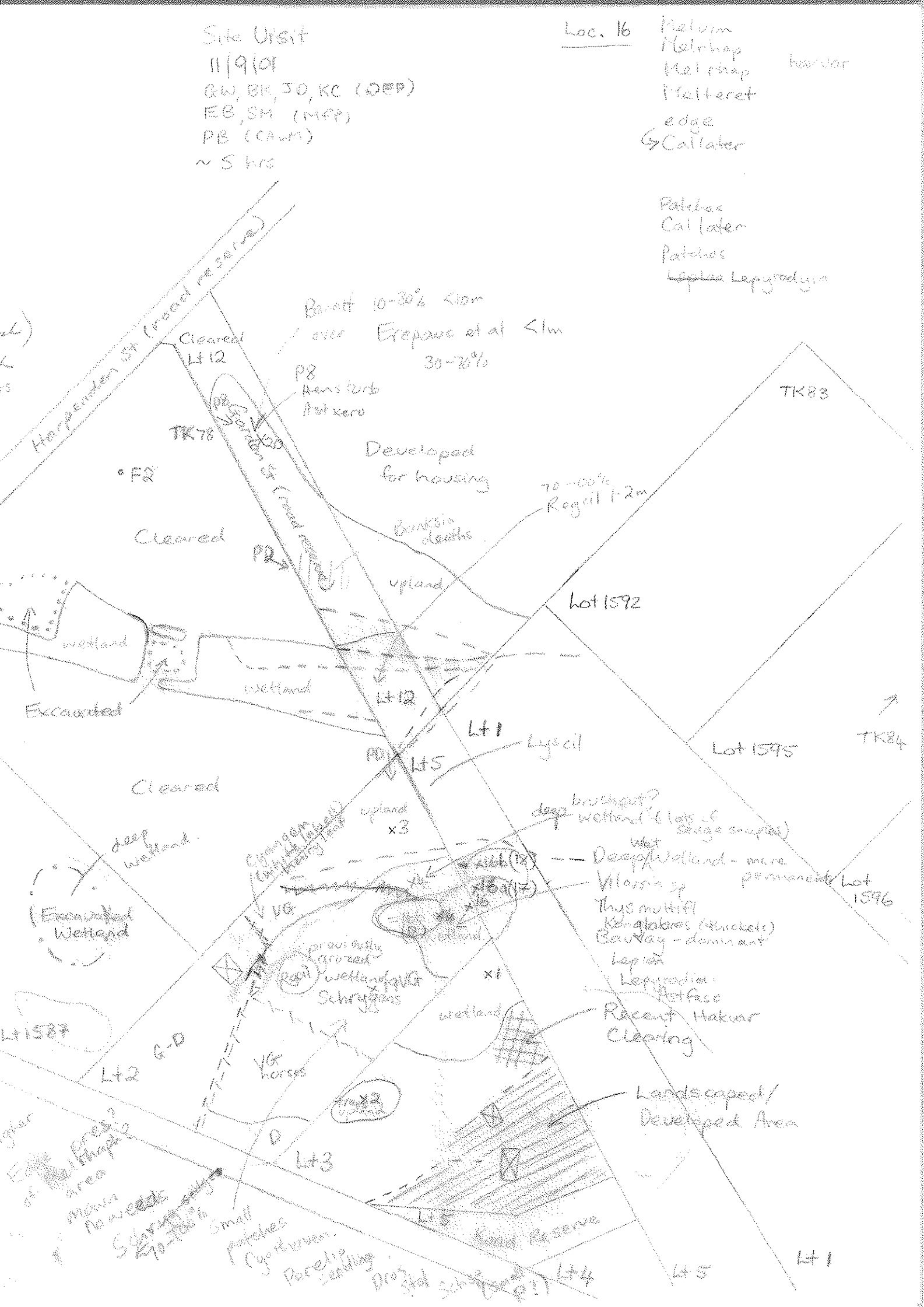
Scale 1:5000

0 125 m

MFP INTERNAL USE ONLY

Karen Clarke's
Notes for Clarke,
Keighley & Dell
Oct 2001


BS 125
Site Survey Area
Aerial 2000
Cadastre with Lot Numbers Blue - Overlay Imag'
Contours - 1m (DOLA)
Bushplan Sites Draft (Boundaries)
Bush Forever 2000 - Site Boundaries
Map Ident: plot010509_3
Prepared By: Sean Collingwood
Prepared For: SPC
Date: 09 May 2001
Scale 1:3000
0 50 m
MFP INTERNAL USE ONLY


Site Visit
11/9/01
GW, BK, JO, KC (DOEP)
EB, SM (MPP)
PB (CALM)
~ 5 hrs
Loc. 16
Melrhap
Melrhap
Melrhap
Melleret
edge
Callaler
harakeke
Patelax
Callaler
Patelax
Lepyrodyn
Bkmnt 10-30% clon
over Erepanc et al <1m
30-70%
TK78
TK83
TK84
P8
Mensturb
Melxero
P2
P1
Developed for housing
Cleared
Lot 1592
Lot 1595
Lot 1596
Lot 1587
Lt 1
Lt 2
Lt 3
Lt 4
Lt 5
Lt 12
wetland
upland
Excavated
Cleared
deep wetland
(Excavated Wetland)
Lysoil
Deep Wetland - more permanent
Mixed
Thysmultifl
Rel globulus (stunted)
Baeway - dominant
Lepyrodium
Hotface
Recent Hakuar Clearing
Landscaped/ Developed Area
Reserve
Small potatoes
Parcelling
Schrygalea
Yor horses
Dr'ed
G-D
D
x1
x3
x16a(1?)
x16(1?)
x8(1?)
VG
Yor

Site Visit
11/9/01
GW, BK, JO, KC (OEP)
EB, SM (MFP)
PB (CALM)
~ 5 hrs

Loc. 16
Melaleuca
Melaleuca
Melaleuca
Melaleuca
Melaleuca
edge
↳ Callatea
harvar

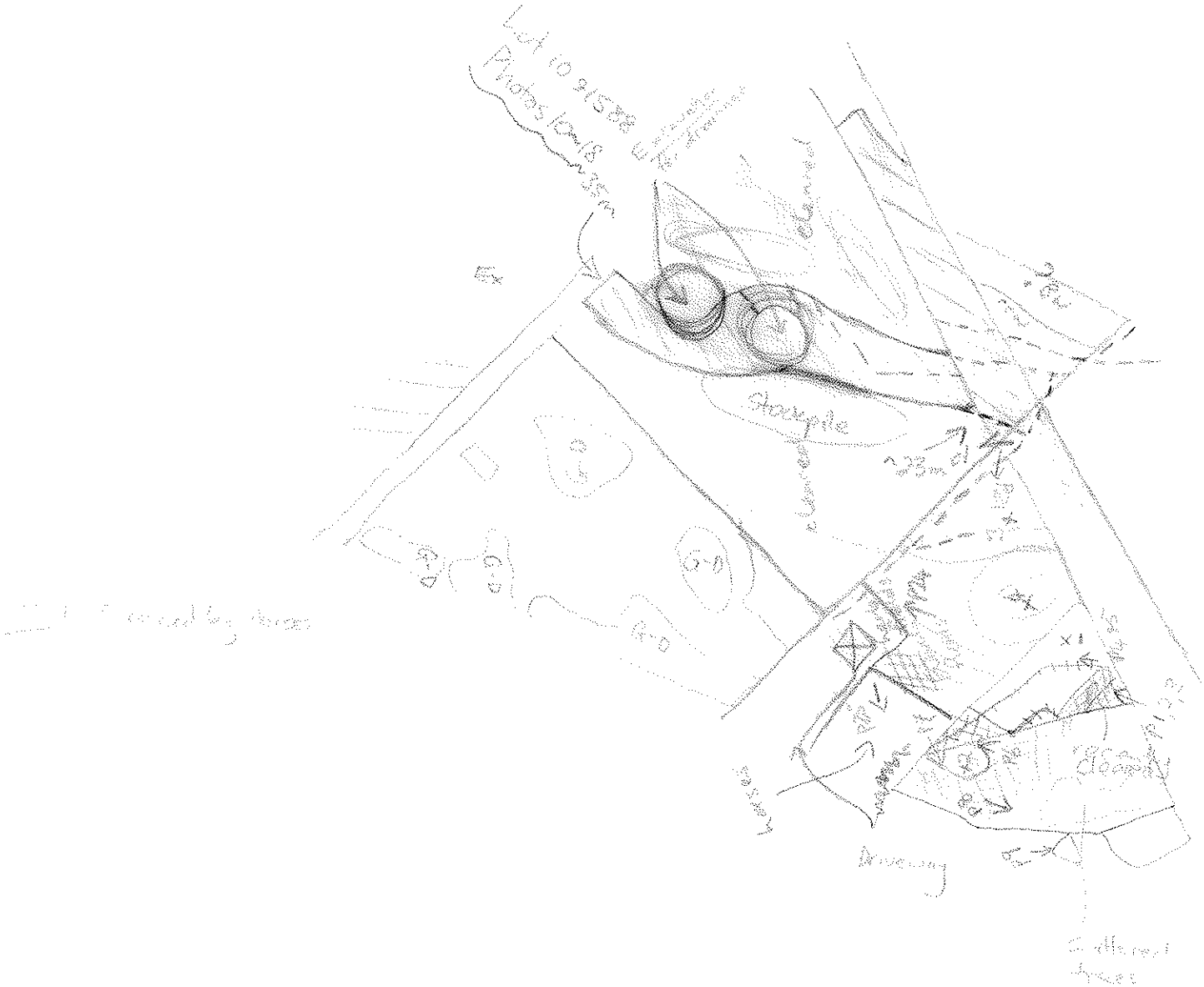
Patches
Callatea
Patches
~~Leptos~~ Lepyrodia

Lot 1578
TK81
TK80
TK79
TK82
TK78
TK83
TK84
Lot 1585
Lot 1586
Lot 1592
Lot 1595
Lot 1596
Lot 1587
BS125
Lt 1
Lt 2
Lt 3
Lt 4
Lt 5
Lt 6
Lt 7
Lt 8
Lt 9
Lt 10
Lt 11
Lt 12

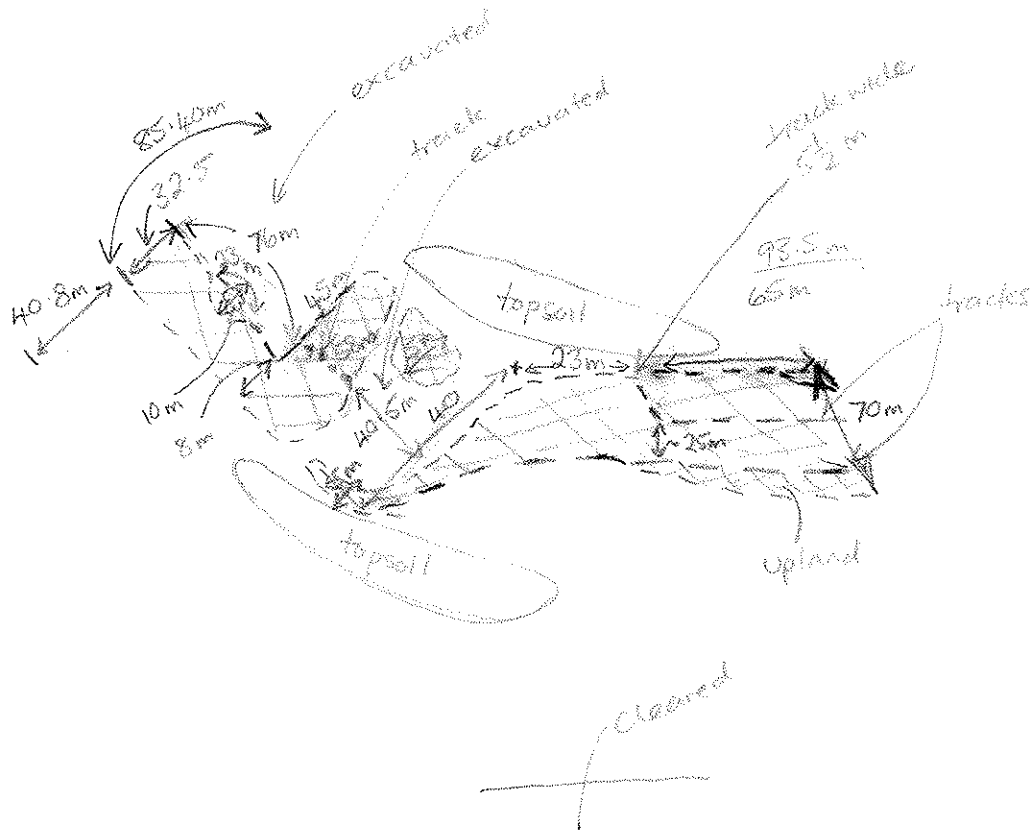
Dam - Melaleuca
- Sedge 2
Harvar
Melaleuca

deep wetland
upland
wetland
Callat
Cleared
Degraded
Excavated
Excavated Wetland
Developed for housing
Landscaped/ Developed Area
Recent Mining Clearing
Regal 1-2m
Regal 10-20% <1m over Eremaea et al <1m 30-40%
Banksia ericifolia
Banksia grandis
Banksia attenuata
Banksia menziesii
Hibbertia
Lepidosperma
Lyginia
Lyginia
Hakea
Schoenus
Schoenus
Callat
Callat
Callat

Site Visit KC, SC & MP
8/5/01 BS125
~5 hrs



Site visit 1/6/00
KC, SC, MP, KE



40.5m

40.0m

BFS 125
North of Holmes Rd
Aerial 2000

Cadastre with Lot Numbers Blue - Overlay Imag

Contours - 1m (DOLA)

Conservation Category Wetlands

Bush Forever 2000 - Site Boundaries

WARTON RD

GAY ST

GAY ST

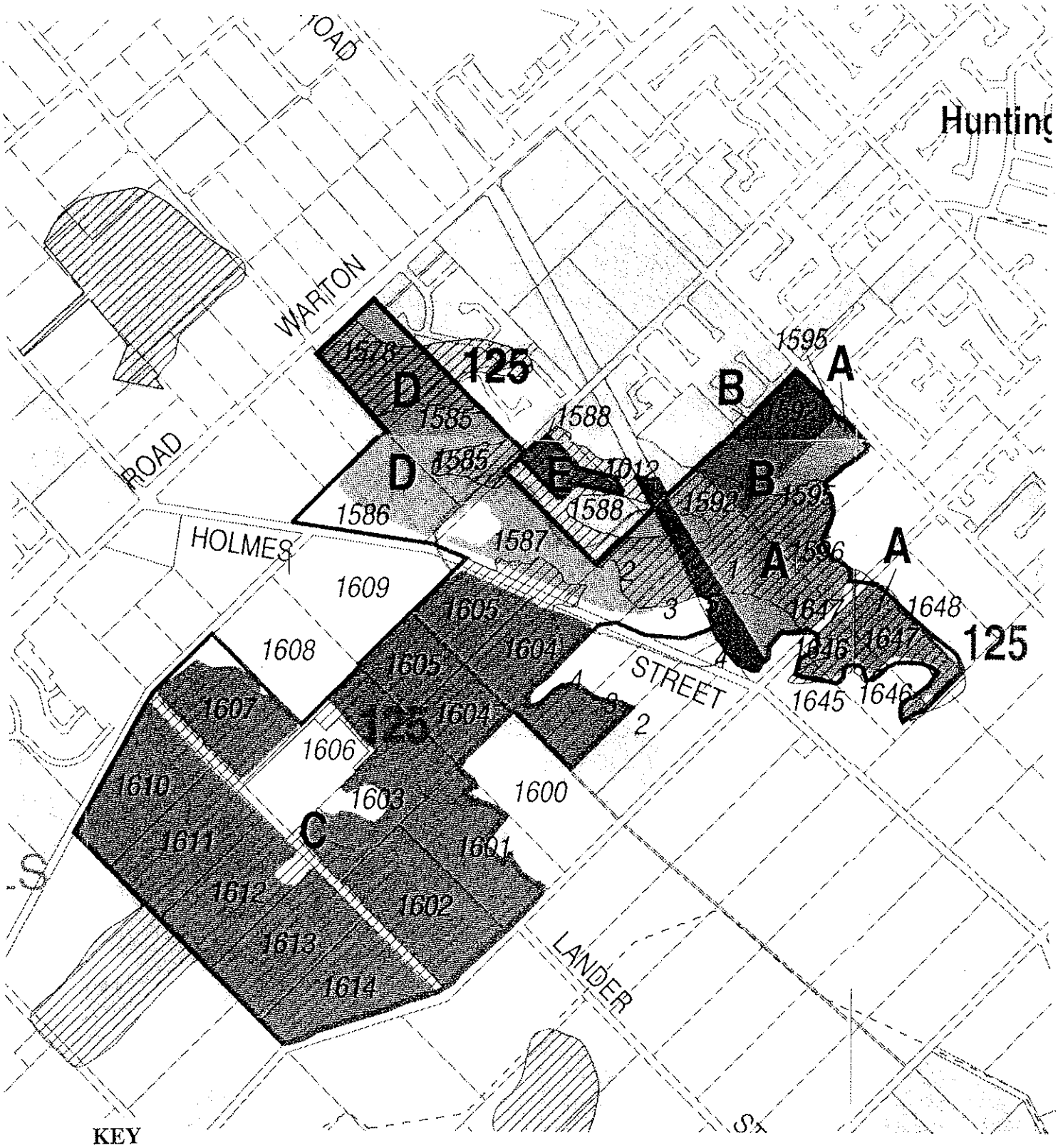
125

Map Ident:	plot010518_2
Prepared By:	Sean Collingwood
Prepared For:	SPC
Date:	18 May 2001
Scale	1:5000
0	125 m

MFP INTERNAL USE ONLY

Bush Forever Site 125

Map 1: Bush Forever Site 125 – Holmes Street Bushland, Southern River/Huntingdale (Government of Western Australia 2000a)



KEY

▬	Bush Forever Site boundary
▨	Regionally Significant Bushland
▥	Conservation Category Wetlands
	Other Native Vegetation

Bush Forever Implementation Mechanisms:

A	Site with Some Existing Protection; Existing Parks and Recreation Reserve
B	Proposed Parks and Recreation Reservation
C	Other Government Land Mechanism (land owned in freehold by government agencies, Crown Reserves vested in government agencies, unallocated Crown land)

Location 1

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER 8 Lot 3 No1

DATE TRIP 8/5/01 RECORDERS K Clarke

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

1. LOCATION of the QUADRAT

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

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

N

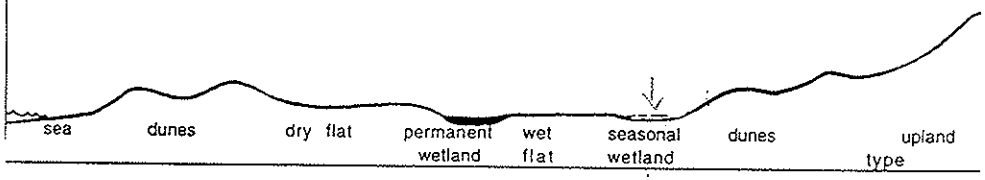
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name 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 Sandy loam *Colour* Dark Grey

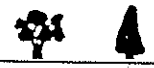
Exposed rock *type* % surface

Sub-surface Soil *Colour*

Rock *type* depth to rock

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

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

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

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			2m 1m
COVER CLASS (%)	70-100%	70-100%	
DOMINANT SPECIES	In places Regal or Kegal	Perelip	

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				1m
COVER CLASS (%)			2-10%	
DOMINANT SPECIES			Schefo or Lepyroidia sp	

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		Ex-V good where intact. Dead trees removed, clearing on edges, cleared bush pushed up into bush.
2 EXCELLENT	I	
3 VERY GOOD		
4 GOOD		
5 DEGRADED		

Melleret, Casrac, Acapul, Acasal, Melpre/~~thym~~, Phical, Astfasc, Sedge tassels, Regal/Inops, Scho.syn right; Kunsri, Thysmut, Schefol, Dasbrom, Mucflor, Leptocarp sp?

Location 2

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER Lot 3, No 2
DATE TRIP 8/5/01 RECORDERS K. Clarke
DATE TRIP _____ RECORDERS _____
DATE TRIP _____ RECORDERS _____
BOTANIST _____

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

1. LOCATION of the QUADRAT

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

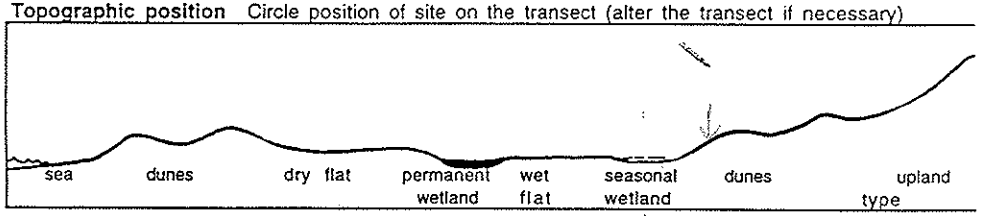
N

Road Location

Geographic Location Latitude S Longitude E Altitude
Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

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

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

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

Litter	% cover	***Bare Ground***	%cover
Depth	cm		

	TREES			MALLEES	
	over 30m	10 - 30m	under 10m	over 8m	under 8m
LIFE FORM					30m 10m
COVER CLASS (%)		Buntad/			
DOMINANT SPECIES		Banksia/Banksia sessilis var.			

	SHRUBS over 2m	2m - 1m	SHRUBS under 1m
LIFE FORM			2m 1m
COVER CLASS (%)			2-10%
DOMINANT SPECIES			Xanpre

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM			1m	
COVER CLASS (%)		30-70%	2-10%	
DOMINANT SPECIES		Phlox Dasbrom	Lepsimb	

4. VEGETATION CONDITION

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

COMMENTS
V.G in core -> G on edges, heavily * Ehr caly infestation around. * Brizmax, * Gladcary, * Ehrcary

Adedoav, Lyglnb, Dasbro, Melsp B, Xanpre, Patcre, Bosser, Acapul, Hypcal, Hypeas, Conspi, Acasten, Damla, Kunera,

NB Blancan (P) near driveway by house in cleared area.

Location 3

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER Lot 2 No 3

DATE TRIP 9/5/01 RECORDERS K. Clarke

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

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

1. LOCATION of the QUADRAT

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

N

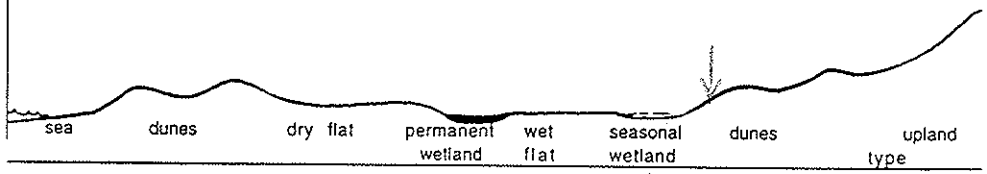
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil *Colour*

Exposed rock *type* % surface

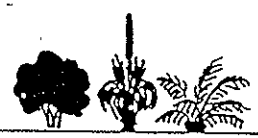
Sub-surface Soil *Colour*

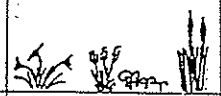
Rock *type* depth to rock

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

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

	TREES			MALLEES	
	over 30m	10 - 30m	under 10m	over 8m	under 8m
LIFE FORM					
COVER CLASS (%)			2-10%		
DOMINANT SPECIES			Banksia / Nuytsia / Eucalyptus	Banksia / Eucalyptus	Scaevola

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			
COVER CLASS (%)		2-10%	
DOMINANT SPECIES		Melaleuca	

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				
COVER CLASS (%)		30-70%	2-10%	
DOMINANT SPECIES	Phlebocarya Desbrowsia		Lyginia / Lyg	

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		
2 EXCELLENT	I	Ex-VG
3 VERY GOOD		
4 GOOD		*Gladiolus
5 DEGRADED		

Hardenbergia, Lyginia, Schoenus, Schizaea, Baeckea, Xanthorrhoea, Calothamnus, Patersonia, Desbrowsia, Melaleuca, Acacia pulchella, Gompholobium, Leucopogon (Beard), Jacksonia, Persoonia, Blancoa/Haemodorum?, Phlebocarya, Hypocalymma,

Location 4

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER Lot 2 No 4

DATE TRIP 8/5/01 RECORDERS K. Clarke

DATE TRIP _____ RECORDERS _____

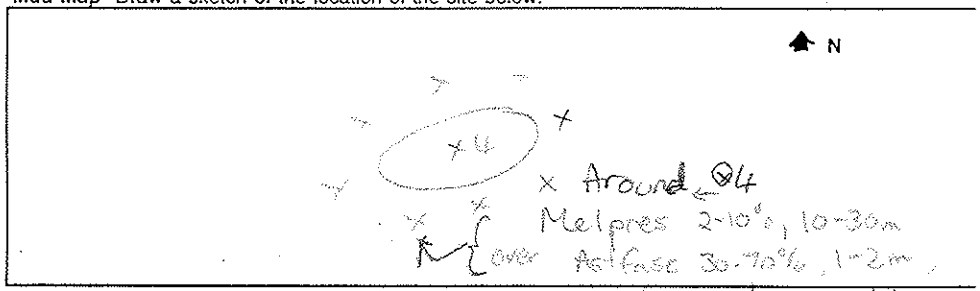
DATE TRIP _____ RECORDERS _____

BOTANIST _____

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

1. LOCATION of the QUADRAT

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



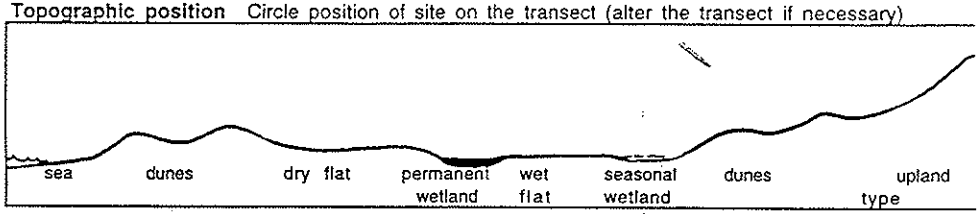
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No 22

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



2. SITE DATA Circle the correct response.

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

Surface Soil ***Colour***

Exposed rock ***type*** % surface

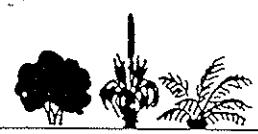
Sub-surface Soil ***Colour***

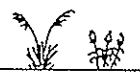
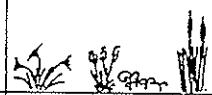
Rock ***type*** depth to rock

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

Litter	% cover	***Bare Ground***	%cover
Depth	cm		

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

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

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				
COVER CLASS (%)		2-10%	70-100% Lusbar (Mid)	
DOMINANT SPECIES		Patcal	(Lepton)	

4. VEGETATION CONDITION

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

COMMENTS NB:
VG-Ex Burnt? Brush cut? Grazed?
P24 esp. near house to east, in front of house. Paddock definately at front grazed.

Platcor, Hypcas, Dasybrom, Arcsten, Hakvar, Austrodanthsp, Haemsp, Regal, Jacsar? Schsch? Perelp, Lygbar, Evandsp?, Arnsal, Anthsub,

Location 5

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 Lot 1585 SITE NUMBER x1

DATE TRIP 1/6/00 RECORDERS K. Clarke

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

1. LOCATION of the QUADRAT

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

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

N

see air photo

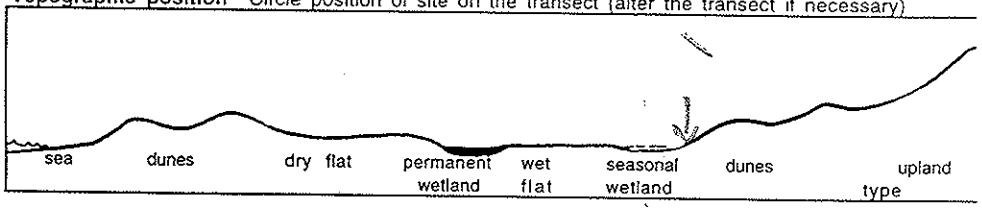
Road Location

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

Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil ***Colour***

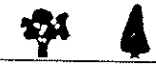
Exposed rock ***type*** % surface

Sub-surface Soil ***Colour***

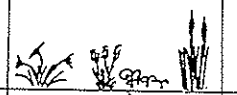
Rock ***type*** depth to rock

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

Litter	% cover	***Bare Ground***	%cover
Depth	cm		

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

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			
COVER CLASS (%)		2-10%	2-10%
DOMINANT SPECIES		Xanthorrhoea preissii	Eremaea (in patches) Schinus, Banksia

	GRASSES	HERBS	SEDGES	OTHER 30-70%
LIFE FORM				
COVER CLASS (%)	2-10%	2-10%	10-30%	
DOMINANT SPECIES	Amphipogon	Patersonia	Lyginia barbata Schoenus (Tetraria) exsul	

4. VEGETATION CONDITION

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

COMMENTS

add weed *Gladiolus

Banksia regenerating due to long term drought?

Hibbrac? Odd dead Banksia, * scattered Gladiolus, Eriosp Blancoa (P3?), Patersonia, Baeckea, Styphelia, Schinus, Phlebocarya, Amphipogon, Arnocrinum, Patersonia, Acaena, Lomandra (grey), Caladenia, Grantsburnia, Drosera, Hypocalymma

Location 6

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS 125 SITE NUMBER 2

DATE TRIP 11/6/00 RECORDERS

DATE TRIP RECORDERS

DATE TRIP RECORDERS

BOTANIST

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

1. LOCATION of the QUADRAT

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

N

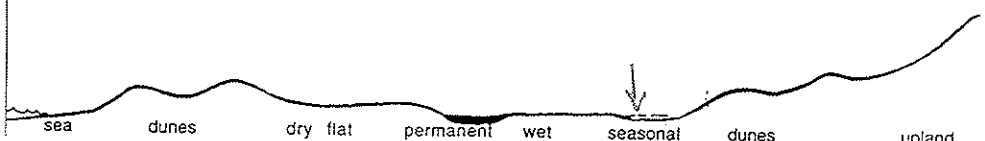
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No 13

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



2. SITE DATA Circle the correct response.

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

Surface Soil *Colour*

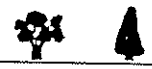
Exposed rock *type* % surface

Sub-surface Soil *Colour*

Rock *type* depth to rock

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

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

	TREES			MALLEES	
	over 30m	10 - 30m	under 10m	over 8m	under 8m
LIFE FORM					30m 10m
COVER CLASS (%)		2-10%			
DOMINANT SPECIES		Melpre (mostunder 10m)	Melpre		

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			2m 1m
COVER CLASS (%)	2-10%	70-100%	
DOMINANT SPECIES	Xanpie	Perole	

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

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		Black Native Smoke present.
2 EXCELLENT	✓	
3 VERY GOOD		
4 GOOD		
5 DEGRADED		lots of moss on ground.

Astfasc, Acapul, Perole, Hypang, Dasbrom, Amptorb, Lomsp, Hypexs, Nytflor, Cassrac, Phicil ✓ Banlit Nuyflor, Acaster, Adeovo Cyathaven MeSolgracilceps

Location 7

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER 3

DATE TRIP 1/6/00 RECORDERS

DATE TRIP RECORDERS

DATE TRIP RECORDERS

BOTANIST

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

1. LOCATION of the QUADRAT

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

N

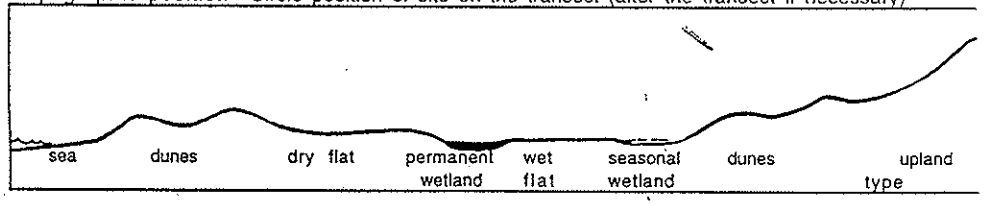
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No 14-15

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



2. SITE DATA Circle the correct response.

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

Surface Soil *Colour*

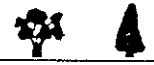
Exposed rock *type* % surface

Sub-surface Soil *Colour*

Rock *type* depth to rock

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

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

	TREES over 30m	TREES 10 - 30m	TREES under 10m	MALLEES over 8m	MALLEES under 8m
LIFE FORM					30m 10m
COVER CLASS (%)		2-10%			
DOMINANT SPECIES		Allotros Eucmac			

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			2m 1m
COVER CLASS (%)	2-10% ?		<2% ?
DOMINANT SPECIES	Acacpul Adecyn ?		Bossen Lomlan

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM			1m	
COVER CLASS (%)	2-10%	10-30%	2-10%	
DOMINANT SPECIES	Amphtur	Patocc Blancan	Lygsar	

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		
2 EXCELLENT		
3 VERY GOOD	✓	* few Banksias, Big timber cut in past - large stumps. Hibbsabpra, where an old jarrah cut down. Australian with some Burnt patches (~~Eucmac~~ *) Nyttflor, Adecyn, Acacora pra. Lepidsqua, Persac, Blancan, Amigmang, Patocc, Hibbsabpra, Desmflex, Amphturb, Phlcil, Amphturb, Dasbrom, Stlyrap, Bossen, Lygsar, Lomlan (grey gr), Bird und.
4 GOOD		
5 DEGRADED		

Location 8

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER 4

DATE TRIP 1/6/00 RECORDERS

DATE TRIP RECORDERS

DATE TRIP RECORDERS

BOTANIST

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

1. LOCATION of the QUADRAT

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

N

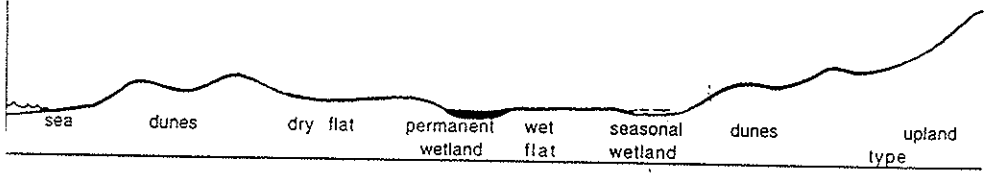
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil *Colour*

Exposed rock *type* % surface

Sub-surface Soil *Colour*

Rock *type* depth to rock

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

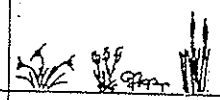
Litter % cover

Depth cm

Bare Ground %cover

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

	SHRUBS		SHRUBS
	over 2m	2m - 1m	under 1m
LIFE FORM			2m 1m
COVER CLASS (%)		2-10%	30-50%
DOMINANT SPECIES		Acacpul Stirlat	Eremaea in patches

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM			 1m	
COVER CLASS (%)	10-30%	2-10%	2-10%	
DOMINANT SPECIES	Amphitrib	Patcra	Lyg par	

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		
2 EXCELLENT		Ex-VG Glad easy scattered, ground under draw down?
3 VERY GOOD		
4 GOOD		
5 DEGRADED		Banksia Banatt few dead ? a leave

Pettin, Blancan, Calflav, Stirlat, Acapul, Amp turb, Jackfore, Bosseri, Hibbhyp, Pyrnig, Conspres? Dasybrom, Hensturb, Persac, Erepave, Banksilic, Burchumb, Gomtom, Austrodanth, Lariisp, Phlfilifolia

Location 9 & Location 10

Sedgeland - 5

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER 5 & 5a

DATE TRIP 7/6/00 RECORDERS

DATE TRIP RECORDERS

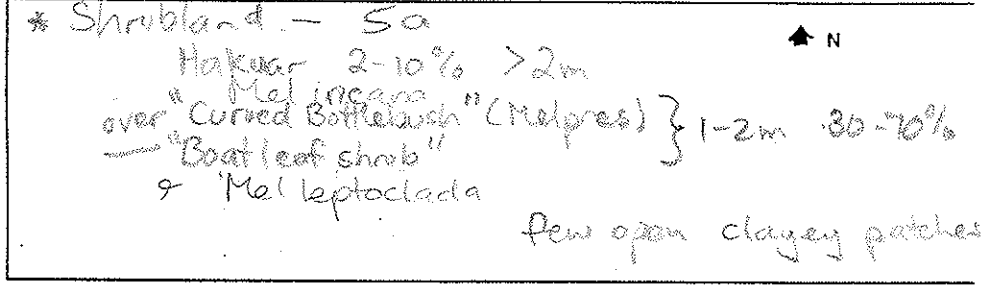
DATE TRIP RECORDERS

BOTANIST

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

1. LOCATION of the QUADRAT

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



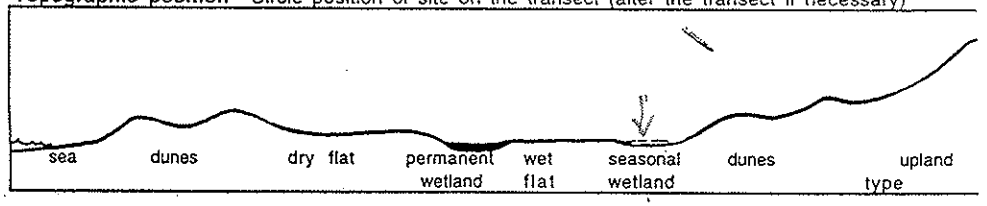
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil Colour

Exposed rock type % surface

Sub-surface Soil Colour

Rock type depth to rock

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

Litter	% cover	Bare Ground	%cover
Depth	cm		

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

	SHRUBS		SHRUBS
	over 2m	2m - 1m	under 1m
LIFE FORM			
COVER CLASS (%)	10 - 30%		
DOMINANT SPECIES	Mal shaw Mal pres		

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				
COVER CLASS (%)			30-70%	
DOMINANT SPECIES			Jointed Wadey Sedge	(?) = Meeboldina coangustata?

4. VEGETATION CONDITION

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

Acapul, Leplan, Melteret, Casvac, Peritrip, Aloe Astfasc, Hakvar, Chaeiris,

Leptocarpus aristatus (= Chaetanthus aristatus)

location 11

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER 6

DATE TRIP 1/6/00 RECORDERS

DATE TRIP RECORDERS

DATE TRIP RECORDERS

BOTANIST

1. LOCATION of the QUADRAT

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

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

N

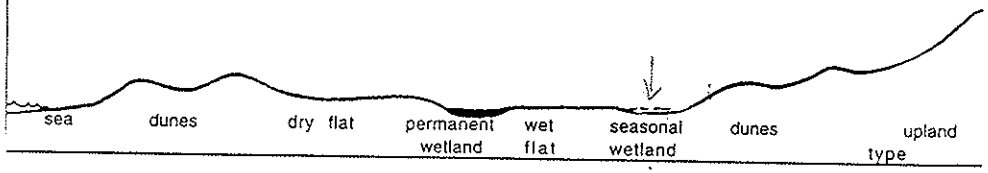
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No 21

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



2. SITE DATA Circle the correct response.

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

Surface Soil *Colour*

Exposed rock *type* % surface

Sub-surface Soil *Colour*

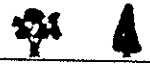
Rock *type* depth to rock

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

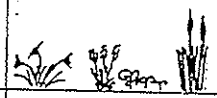
Litter % cover

Depth cm

Bare Ground %cover

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

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			2m 1m
COVER CLASS (%)		70-30%	
DOMINANT SPECIES		Regel or Astfasc	

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

4. VEGETATION CONDITION

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

Actuscord, Prickly pea Pultret, Astfasc, Hibbrac, Const longlw, Phlcil, Bankilic (edge), Pink stylid, Patocc,

Location 12

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER 7

DATE TRIP 1/6/00 RECORDERS

DATE TRIP RECORDERS

DATE TRIP RECORDERS

BOTANIST

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

1. LOCATION of the QUADRAT

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

N

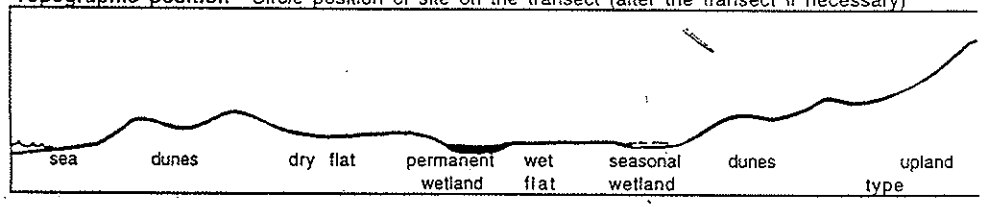
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No 22

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



2. SITE DATA Circle the correct response.

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

Surface Soil ***Colour***

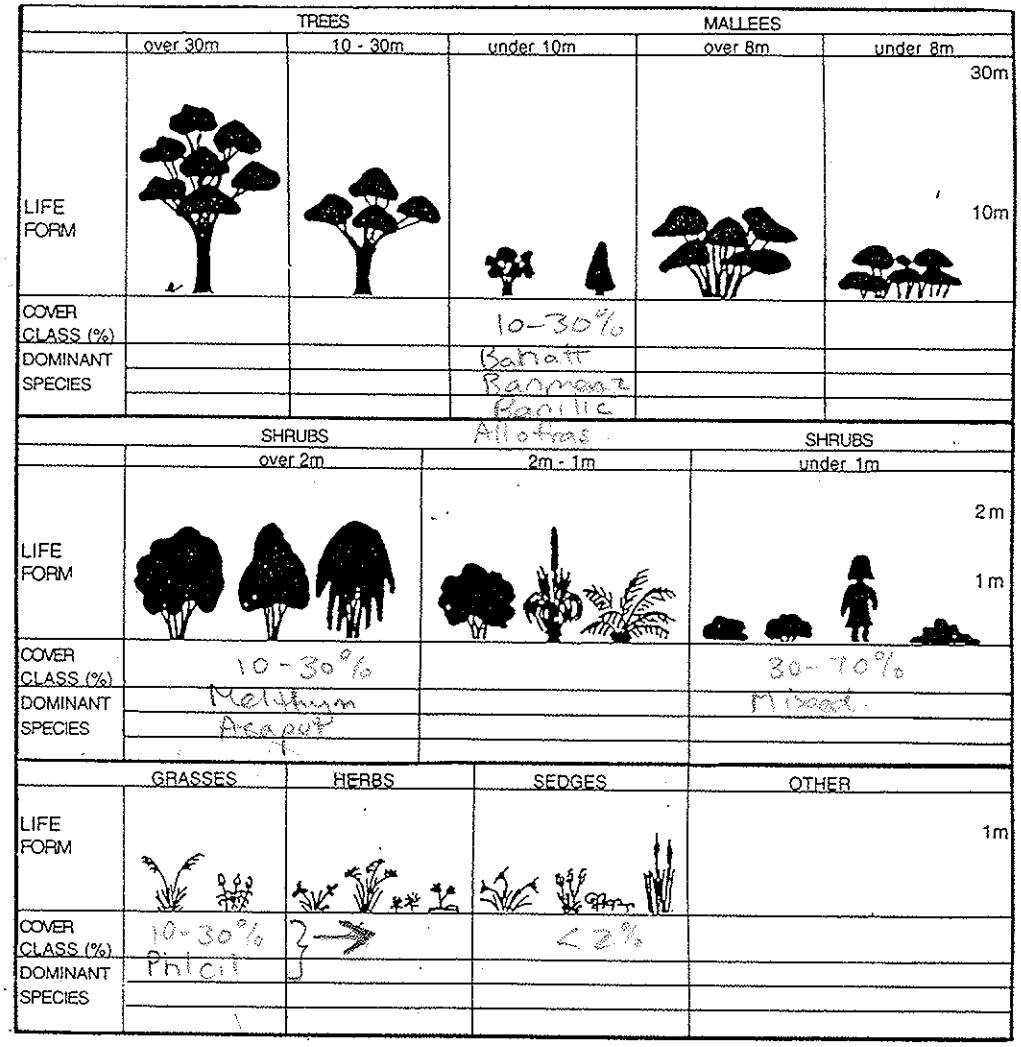
Exposed rock ***type*** % surface

Sub-surface Soil ***Colour***

Rock ***type*** depth to rock

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

Litter	% cover	***Bare Ground***	%cover
Depth	cm		



4. VEGETATION CONDITION

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

@ Gladiolus (few)

Lepsqu, Petlin, Baseri, Hibbrac, Desmflex, Schinv, Namret, Schcurv, Gomtom, Hypexsul, Dasybrom, Xanpres, Calfras, Lomhaem (upright) Amphtub, Erepauc, Blancanes, Hibshyp,

Locations 13, 14 & 15

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 SITE NUMBER 8, 8a & 9

DATE TRIP 1/6/00 RECORDERS

DATE TRIP RECORDERS

DATE TRIP RECORDERS

BOTANIST

1. LOCATION of the QUADRAT

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

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

N

Site 8a

Melpres 10-30cm, 2-10%

Act fasc & Acapul 1-2m, 70-100%

Site 9 - Melvim >2m 30-70% over open grassland peaty

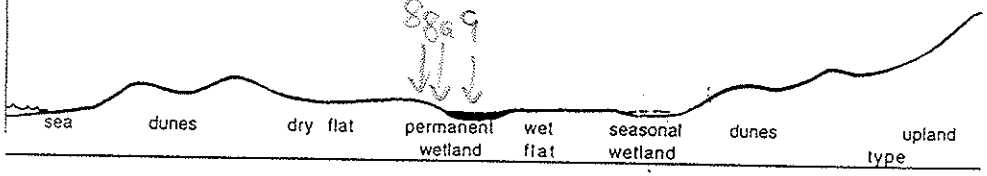
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil *Colour*

Exposed rock *type* % surface

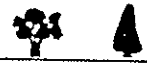
Sub-surface Soil *Colour*

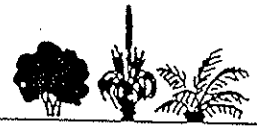
Rock , *type* depth to rock

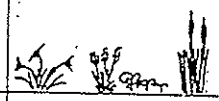
Drainage well mod poor depth water cm *Wet* all year winter/spring

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

Site 8

	TREES over 30m	TREES 10 - 30m	TREES under 10m	MALLEES over 8m	MALLEES under 8m
LIFE FORM					30m 10m
COVER CLASS (%)		2-10%			
DOMINANT SPECIES		Eucrah Allofras			

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

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM			 1m	
COVER CLASS (%)		2-10%	10-30%	
DOMINANT SPECIES		Patarc Phlcil Dasbrom	Cyamar Lepcam	

4. VEGETATION CONDITION

		COMMENTS
1 'PRISTINE'		VG-Ex Trees cut down at edge, rubbish / soil dumping, tracks,
2 EXCELLENT	I	
3 VERY GOOD		
4 GOOD		
5 DEGRADED		

(Mat eim, Hempost near wetland)

Hempyrg, Blancun, Dasmofasc, Droanen, Lam (grey-gr), Hovtrip, Bosen, Pimsulp, Lavesp, Scalp, Hemping, Angmang, Hemping, Stirlat, Woodypear, Dawlin, Amptorb, Lygbar, Carflav,

Locations 16, 17 & 18

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS125 Lot 2 & Garden St SITE NUMBER 16, 16a, 16b

DATE TRIP 11/9/01 RECORDERS

DATE TRIP RECORDERS

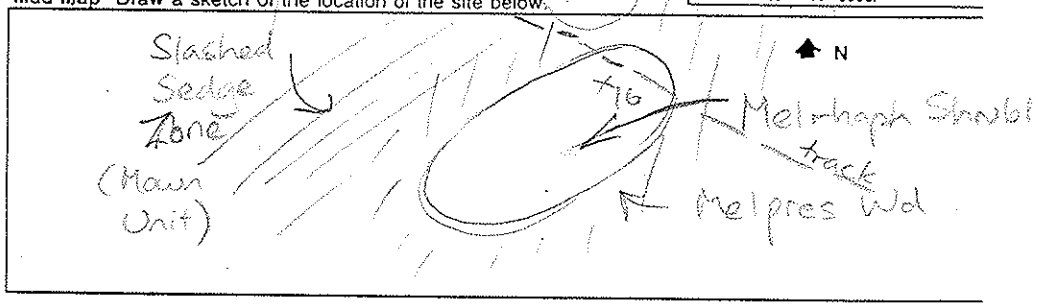
DATE TRIP RECORDERS

BOTANIST

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

1. LOCATION of the QUADRAT

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



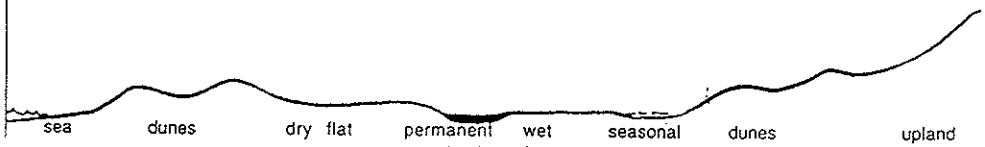
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil *Colour*

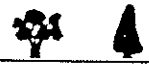
Exposed rock *type* % surface

Sub-surface Soil *Colour*

Rock *type* depth to rock

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

Litter	% cover	*Bare Ground*	%cover
Depth	cm		

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

	SHRUBS over 2m	SHRUBS 2m - 1m	SHRUBS under 1m
LIFE FORM			2m 1m
COVER CLASS (%)	70 - 100%	70 - 100%	but patchy
DOMINANT SPECIES	Melrhaph (Shrub form) (regrowth from stumps / burnt?)	Melteret	(patches) of Callat (patches)

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				1m
COVER CLASS (%)			varies	
DOMINANT SPECIES			Lepyrodia sp1 (sedge)	

4. VEGETATION CONDITION

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

Adjacent to mown unit & track

Variations

(6a) 70 - 100% patchy Sedge 2 & Astfas & Shrubs > 2m Peri elo, Kuneri, Rogoi & 1-2m Acopul & 2-10% Lint

(16b) Melpres over Lepbon >70% at 2-10% patchy

(NB: Location 19 → 23 see notes on location 24 / map)

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA BS 125 Lot 2 SITE NUMBER 17

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

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

1. LOCATION of the QUADRAT

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

N

edge of Melpres area

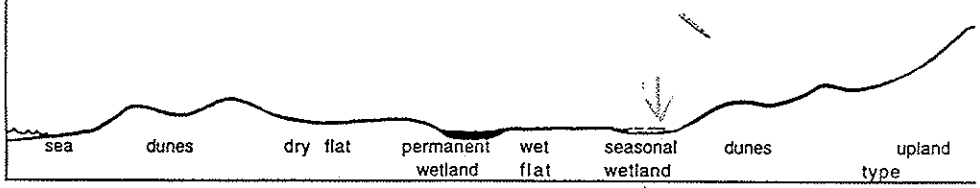
Road Location

Geographic Location Latitude S Longitude E Altitude

Reference Map

Photograph Photographer's Name Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil ***Colour***

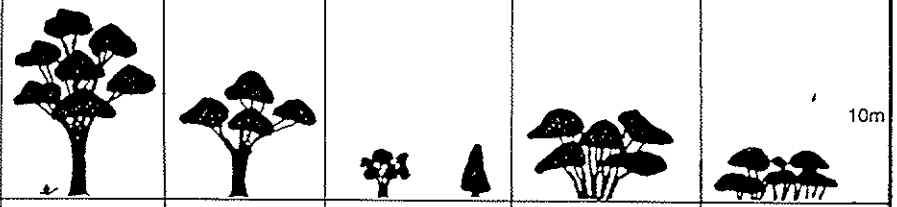
Exposed rock ***type*** % surface

Sub-surface Soil ***Colour***

Rock ***type*** depth to rock

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

Litter	% cover	***Bare Ground***	%cover
Depth	cm		

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

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

	GRASSES	HERBS	SEDGES	OTHER
LIFE FORM				
COVER CLASS (%)			70-100%	
DOMINANT SPECIES			Schoenus	

4. VEGETATION CONDITION

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

Shrubs recently burnt

Cyathaea present, Drosera, Perelip seedlings, Schoenus benth (P3?)

Warton Rd – ~~Meeboldina~~ conc.
Lot
Chaetanthus aristatus (Leptocarpus sp)

Ast aff. fasc
Mel inc (Melhueg-similar)

Lot 2 – Schoenus rygans
small Schoenus benthamii (P3) D'?
Baumea ?vaginalis (Sedge terrolo)
Lepyrodia sp. (SedgeB)

Loc 16 Meeboldina ? (Lepyrodia sp 1 = =
coangustata ? Lepyrod sp 2)
Loc 16 Leptocarpus tenax ? (Sedge 2)
General Lots – Mecarthonia australis
Lewcopogon (Trudgen ref list)
Conocarpus pithyroides (Signi spp)

Warton Rd Lot.

Melaleuca leptoclada
Triglochin linearae

Policy & Coordination and SRT Group

	Location	Branch Briefings
8.30 am	Waste Management Division 4th Floor Meeting Room	Regional Operations
9.00 am	Waste Management Work Area (4th)	Waste Management
9.30 am	ESD 8th Floor Meeting Room	Air Quality Management
10.00 am	9th Floor Amenities Room	MORNING TEA
10.30 am	Roger Payne's Office (8th)	Communications; Legal Services; Finance & Admin
11.00 am	9th Floor PPD Meeting Room	Env Regulations Executive; Licensing
11.30 am	9th Floor Amenities Room	Land & Water Quality; Response & Audit; Business Coordination
12 noon		LUNCH
12.30 pm		LUNCH
1.00 pm	Pick-up from Mounts Bay Road	Bus to Hyatt Centre
1.30 pm	Seminar Room	Corporate Services Executive; Information Services; Business & Strategic Planning; Human Resources
2.00 pm	SRT Boardroom	Resource Science Executive; Aquatic Science
2.30 pm	Boardroom	Resource Information; Hydrology & Water Resources; Salinity & Land Use Impact
3.00 pm	Seminar Room	AFTERNOON TEA
3.30 pm	Room 2.05	Resource Management Executive; Resource Allocation; Catchment Management
4.00 pm	Lunchroom	Strategic Development & Planning; Resource Quality
4.30 pm	Pick-up from Plain Street	Bus to Westralia Square
5.00pm	9th Floor Conference Room	FUNCTION

Group Members

Silvia	Affolter
Rob	Atkins
Josie	Bailey
Nick	Casson
Karen	Clark
Ruth	Clark
Ben	Cohen
Karen	Crawley
David	Dean
John	Dell
Denis	Doak
Alanna	Fandry
David	Fardig
A	Gartner
Roweena	Hart
Bob	Hay
Ila	Hayward
Barry	Johnson
Bronwen	Keighery
Kevin	McAlpine
Brady	McKenzie
Melissa	McLean
Darryl	Miller
Des	Mills
Ross	Montgomery
Andrew	Moore
Julio	Navarrette
Caroline	Raphael
Melinda	Reid
Kelly	Rylander
Craig	Scott
David	Skene
Vaughan	Smith
Maria	Spencer
Rita	Sputore-Keller
Carmel	Staniland
Ivan	Stork
Victor	Talbot
Peter	Tapsell
Adrian	Tomlinson
Mara	Vlaar
Natarsha	Woods
Wendy	Yorke

11/9/01 RS125 Urban Zoned Area West of Proposed Garden St

Lot 2 Schoenus sp ~~significant~~ priority sp? (small ~10cm high, long awn in bandh (P3?) flw head)

Lot ? Hens turb.

Lot ? Wetland areas Euc lin (pea)

Garden St (nr Lot 2) upland ~ Lys cil ?

Lot 2 & Lot 1587? (by Warton Rd) Sch nodw?

City Grosnells lots & Warton Rd private lot ~ Leuc sp ~ signif?

Lot 2 Slashed area by Garden St boundary

Lepyrodia (= Meeboldina coangustata?) sp 1 ~~Lepyrodia~~ ~~[illegible]~~ ? ?

Sedge B (Lepyrodia sp) ~~[illegible]~~

Sedge terete (= Baumea virginalis) NB: ~~Lepyrodia~~ ~~[illegible]~~

(? Lot 2 Location (16 ~~or~~ OR) Garden St Loc: 16 a

Lepyrodia sp ♀♀♂ (= Lepy sp 1 ?) ✓

Lepyrodia ~~[illegible]~~

Garden St (Loc 16 a) OR 16 b Sedge 2 ♀♀♂ = Leptocarpus tenax ? (droopy fine head)

Warton Rd Lot

Leptocarpus? sp ♂♀♀ (ball head)

~~Meeboldina~~ ?

Chaetanthus aristatus

Management of School Grounds to Ensure Bushland Conservation

There are some issues concerning management of the School Grounds that directly impact on the bushland. We would like to see the following procedures adopted and would welcome the opportunity to discuss these further with the staff involved:

1. Dump weeds, non-native plant material, lawn clippings etc. in the bin or use in a School composting pile.
2. Do not dump any material including leaf litter, compost, weeds, mulch, sand or soil in the Bushland, even in highly disturbed areas, eg. a more appropriate area for storing material for the Permaculture garden is shown on the map attached.
3. Do not whipper snip along roads and pathways other than just to remove material directly overhanging pathway. Allow low growing shrubs to grow along paths and roads. Planting of low growing, fire retardant shrubs may be required and could be undertaken by the Friends group.
4. No herbicides or pesticides to be used in or near the Bushland e.g. avoid spray drift/runoff.
5. Do not mow or whipper snip native plants growing in the lawn of the School grounds e.g. grass trees (if not wanted, remove fully).
6. Do not dump leaves and rubbish from road sides on top of native plants in the Bushland.
7. Width of fire breaks to be no greater than 3m.
8. Fencing of Bushland to restrict movement to the major paths - this was completed in January 1999.
9. Do not rake away natural litter cover and expose bare ground, this encourages weed invasion and increases fire risk.
10. Avoid planting species in landscaped areas that can become invasive weeds in the Bushland e.g. Flinders Range Wattle, Geraldton Wax and Bottlebrush (we can provide a list if desired).
11. Remove weeds from school grounds, landscaped areas as well as unused areas (eg. around tennis courts) to prevent spread of weeds into the Bushland.
12. Maintain good mulch cover in landscaped areas to decrease weed germination and thus spread into the Bushland.
13. Leave any fallen branches in the Bushland as this aides regeneration by protecting young seedlings and provides habitat for fauna.
14. Recommendations by Sue Davies, Environmental Officer, Fire & Emergency Services Authority for management of area surrounding the Switch Transformer Building after inspection on 20/10/2000:
    i) Tracks are already wide enough for this size bushland and not necessary to clear vegetation from sides of paths or roadways.
    ii) Recommends low fuel out to 3m from Switch Transformer Building only and not necessarily every plant to be removed. Leaves should be raked back particularly from around and under the gas meter - this area can only be assessed by unlocking padlock which we presume the school gardener holds.
    iii) Do not clear away the vegetation from the edge of pathway and road as this only encourages annual weeds to grow which are

BS125
8/5/01
Lot 2 Site 4
Jackgrass.

Site 9 →
Melvimea

8a Jackgrass

Site 5 (pasture / agroforestry)
Mel Vitex floribunda ? var acuminifolia.

Ast sp Baker
Melvim
Melvincana.

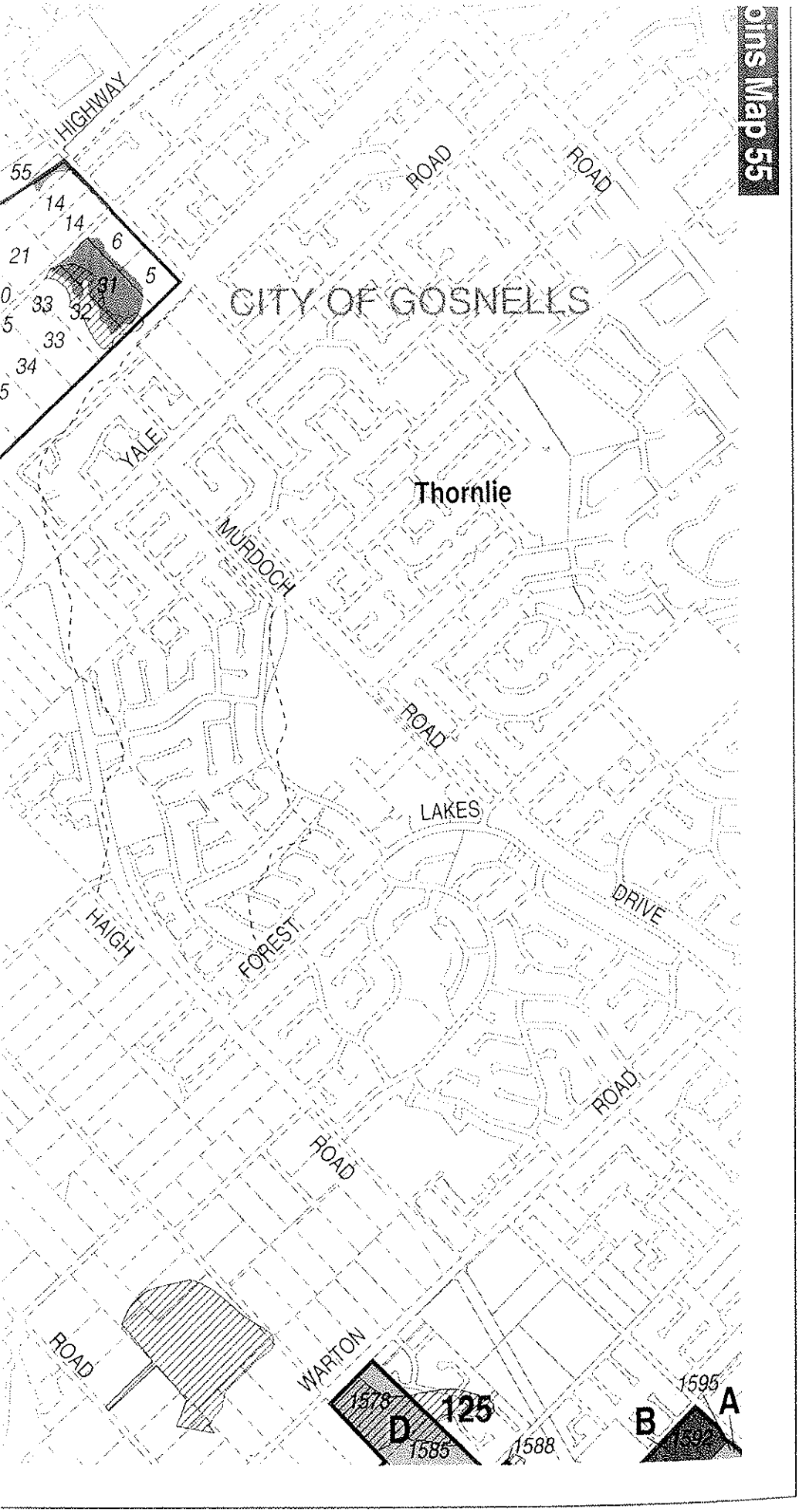
Site Visits

8/5/01 — Mr Phil Logan: Lot 1587, Lots 2 & 3 (Lots 10 & 1588) — Mr Sippett: Lots 1587 & 2 grazed by horses; Lot 3 illegal clearing

1/6/01 — Lots (10 & 1588) in detail

Lots 1586, 1585 (City of Gosnells) & Lots 1578 (Mr Paul Bafile)

11/9/01 — All Lots


Joins Map 55
HIGHWAY
ROAD
ROAD
CITY OF GOSNELLS
55
14
14
6
21
5
33
32
33
34
YALE
Thornlie
MURDOCH
ROAD
LAKES
DRIVE
HAIGH
FOREST
ROAD
ROAD
ROAD
WARTON
1578
D
125
1585
1588
B
1595
A
1592

Joins Map 5

1

Karen Clarke

From: PATT Melissa [melissa.patt@wrc.wa.gov.au]
Sent: Tuesday, 17 April 2001 9:45
To: 'karen.clarke@environ.wa.gov.au'
Subject: FW: Site inspection Southern River

ATT12428.htm

-----Original Message-----
From: Nikki Havelberg [mailto:nhavelberg@gosnells.wa.gov.au]
Sent: Tuesday, 17 April 2001 9:06
To: 'melissa.patt@wrc.wa.gov.au'; 'sean.collingwood@planning.wa.gov.au'; 'karen.clark@dep.wa.gov.au'
Subject: Site inspection Southern River

TUESDAY 8TH MAY

It's all organised..(at last). There are a few sites which are owned by the City of Gosnells which you may access, the remaining sites are privately owned and permission for access has been approved by each landowner.

Details:

1. Lot 1587 & adjoining Lot 2 Holmes Street is owned by Phil Logan who is expecting you around 9.30am. ✓ 8/5/01

2. Lot 3 Holmes Street (next to Lot 2 Holmes) is owned by Mr Sippett and he is expecting you around 10.30am. ✓ 8/5/01

3. Lot 1578 Warton Road is owned by Paul Bafile who has given permission for you to access the site. He won't be there, it is a vacant site. I told him you may be there between 11.15 & 12.00 but it is unlikely he will appear. 1/6/01

The two landowners mentioned above are aware that the site visit is for technical data gathering purposes only.

If you need any more info please let me know.

Thanks & Regards
Nikki Havelberg

Planning Projects Officer
9391 3315

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Lot 10 & 1588 Harpenden Southern River

LEGEND

- Sealed & other roads
- Bush Forever - MFP 07/01
- Conservation
- Multiple Use
- Resource Enhancement

Swan Coastal Plain North 1m Orthomosaic - DOLA 01/02

N

0 125 m

Scale 1:4,708
(Approximate when reproduced at A4)

Geocentric Datum of Australia 1994

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

Prepared by: McGuirM
Prepared for: Megan McGuire
Date: Wednesday, 9 July 2003 14:02

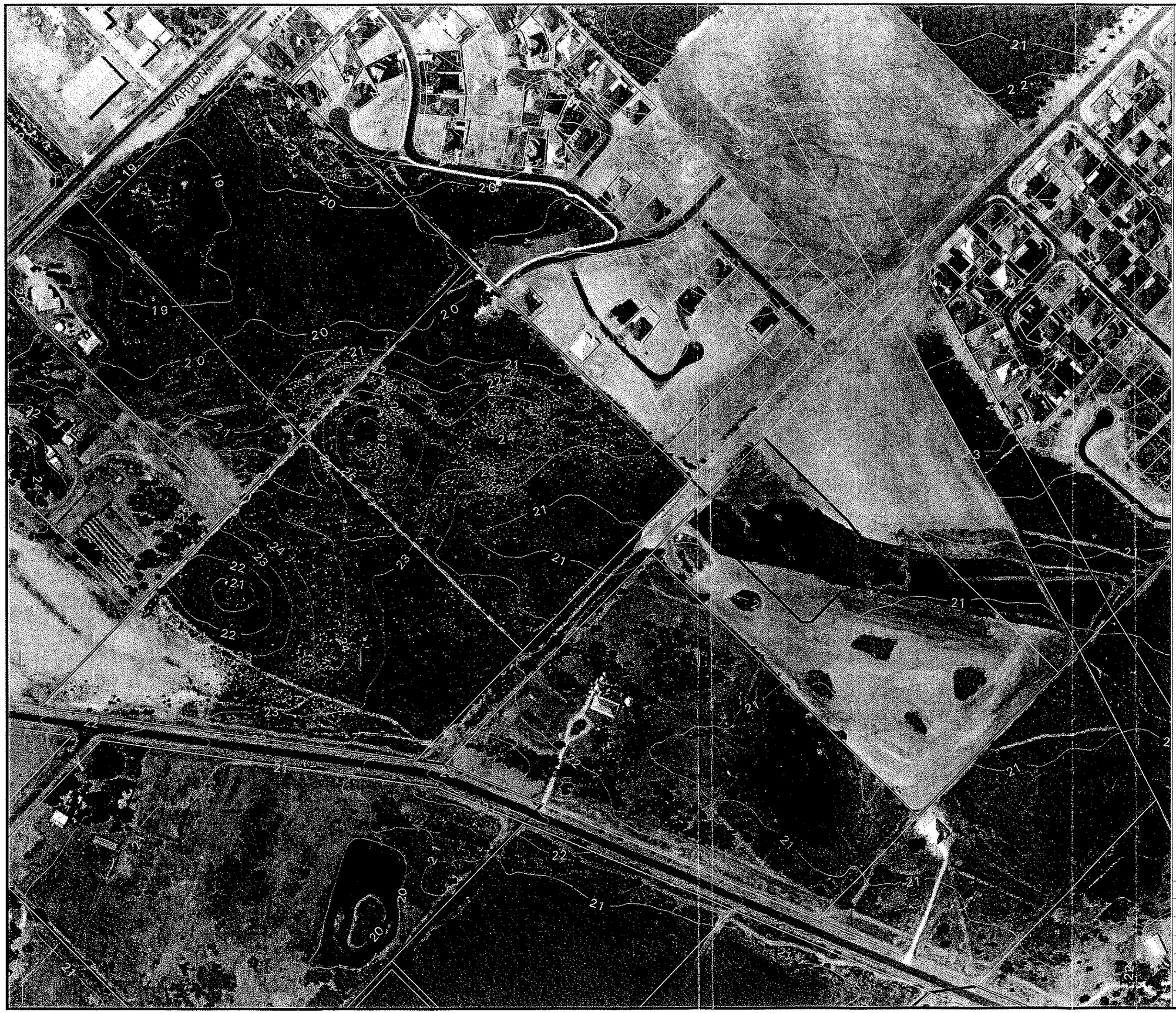
Information derived from this map should be confirmed with the data custodian acknowledged by the agency acronym in the legend.

Department of Environmental Protection
Water and Rivers Commission

WA Crown Copyright 2002

ORIG MAPS

BUSH FOREVER 125
2001 AERIAL PHOTOGRAPHY
CONTOURS & CADASTRE



Bush Forever 2000 - Site Boundaries

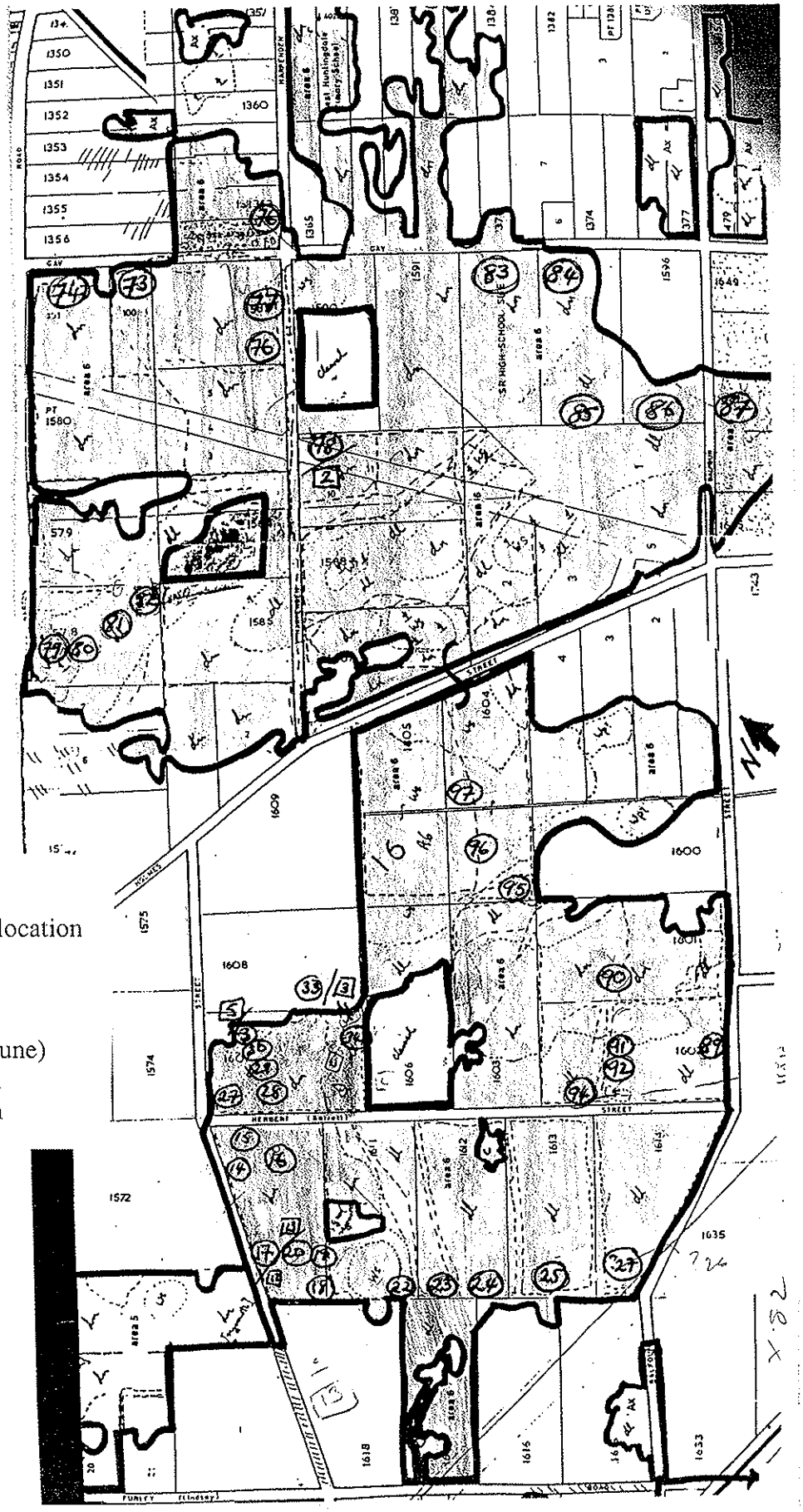
Cadastre

Contours - 1m (DOLA)

Map 3: Year 2001 Aerial Photograph of the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale

Map Ident: plot010913_2
Prepared By: Andrea Zappacosta
Prepared For: KAREN CLARKE
Date: 13 Sep 2001
Scale 1:3000
0 50 m
DPI INTERNAL USE ONLY

Map 4: Gosnells Remnant Bushland Area 6 (Trudgen and Keighery 1995)



KEY

— Bushland Area boundary

85 Vegetation unit description location

3 floristic plot location

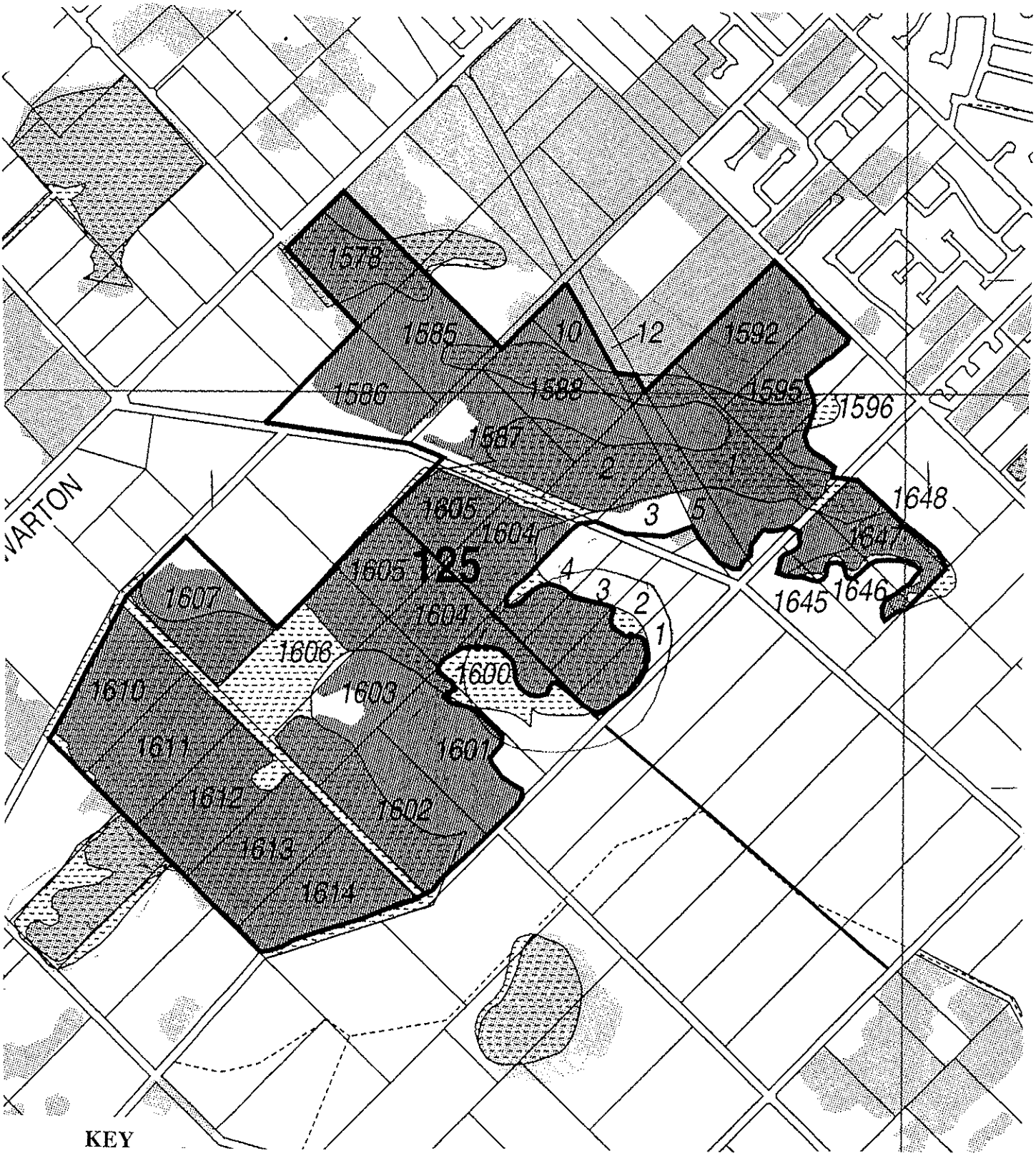
Mapped vegetation units

dn upland vegetation (dune)

ws sumpland vegetation

dl dampland vegetation

Map 5: Perth's Bushplan Site 125 – Holmes Street Bushland, Southern River/Huntingdale (Government of Western Australia 1998)



Department of Environmental Protection
Bush Forever Site 125 K. Clarke & B. J. Keighery. October, 2001

Key to Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

General Features

Bush Forever Site Boundary

Lot Boundary

1585 Lot No.

Track

Fence

Existing made roads

Building

×1 Plant Community Description Location (DEP 2001)

•TK80 Plant Community Description Location (Trudgen & Keighery 1995)

Cl Cleared

Remnant Vegetation
(Note that the boundaries between upland & wetland communities & individual plant communities are not definitive but represent transitional zones between these communities)

Upland Vegetation

Wetland Vegetation

Upland plant community boundary (dotted lines indicate approximate boundaries)

Wetland plant community boundary

Condition Rating Scale (Keighery 1994)

Ex Excellent

VG Very Good

G Good

D Degraded

Key to Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

Plant Communities

Uplands

EmAfOW — *Eucalyptus marginata-Allocasuarina fraseriana* Open Woodland
(over *Patersonia occidentalis, Phlebocarya ciliata & Dasypogon bromeliifolius* Very Open Herbland and *Lepidosperma squamatum & Schoenus rodwayanus* Open Sedgeland)

AfEmOW — *Allocasuarina fraseriana-Eucalyptus marginata* Open Woodland
(over *Acacia pulchella & Adenanthos cygnorum* Open Shrubland over *Amphipogon turbinatus* Very Open Grassland, *Patersonia occidentalis & Blancoa canescens* Very Open Herbland and *Lyginia barbata* Very Open Sedgeland)

BaLOF — *Banksia attenuata* Low Open Forest
(over *Acacia pulchella & Melaleuca thymoides* Open Heath over *Phlebocarya ciliata & Dasypogon bromeliifolius* Herbland)

BaLW — *Banksia attenuata* Low Woodland
(over Mixed Open Low Heath)

BmLW — *Banksia menziesii* Low Woodland
(over *Acacia pulchella & Stirlingia latifolia* Open Shrubland with patches of *eremaea pauciflora* over *Amphipogon turbinatus* Open Grassland, *Patersonia occidentalis* Very Open Herbland and *Lyginia barbata* Very Open Sedgeland)

BLW — *Banksia* Low Woodland
(mixed over storey of *Banksia* spp. over heavily grazed understorey)

MiLW — Mixed Low Woodland
(mixed over storey of *Banksia* spp. and *Allocasuarina fraseriana* over *Melaleuca thymoides & Acacia pulchella* Tall Shrubland mixed Open Low Heath over *Phlebocarya ciliata* Open Herbland)

MiLOW — Mixed Low Open Woodland
(mixed over storey of *Banksia* spp. over *Melaleuca thymoides* Open Shrubland over *Phlebocarya ciliata* and *Dasypogon bromeliifolius* Herbland and *Lyginia imberbis* Very Open Sedgeland)

AcTOSc — *Adenanthos cygnorum* Tall Open Scrub

Wetlands

MpW — *Melaleuca preissiana* Woodland
(over *Regelia ciliata* or *Astartea* aff. *fascicularis* Open Heath)

MpOW — *Melaleuca preissiana* Open Woodland
(over *Astartea* aff. *fascicularis & Acacia pulchella* Closed Heath)

PeRcCH — *Pericalymma ellipticum-Regelia ciliatum* Closed Heath

XpOSh — *Xanthorrhoea preissii* Open Shrubland
(over *Eremaea pauciflora* Low Open Shrubland over *Amphipogon turbinatus* Very Open Grassland, *Patersonia occidentalis* Very Open Herbland and *Lyginia barbata & Schoenus sp.* Open Sedgeland)

XpLOSh — *Xanthorrhoea preissii* Low Open Shrubland
(with scattered emergent *Eucalyptus todtiana, Banksia ilicifolia* and *B. attenuata* over *Phlebocarya ciliata* and *Dasypogon bromeliifolius* Herbland and *Lyginia barbata* Very Open Sedgeland)

WM1 — Wetland Mosaic 1
(deeper wetland with a mosaic of communities including:
- *Melaleuca rhaphiophylla* Closed Tall Scrub over patches of *Melaleuca teretifolia* or *Calothamnus latifolia* Close Heath and *Meeboldina ?coangustata* Closed Sedgeland
- Patches of *Pericalymma ellipticum, Kunzea ericifolia & Regelia ciliata* Closed Tall Scrub and patches of *Astartea* aff. *fascicularis, Acacia pulchella & Calothamnus latifolia* Open Shrubland interspersed with *?Leptocarpus tenax* Closed Sedgeland
- *Melaleuca preissiana* Open Woodland over *Astartea* aff. *fascicularis & Acacia pulchella* Open Heath over *Lepidosperma longitudinale & Meeboldina ?coangustata* Closed Sedgeland)
- *Regelia ciliata* Tall Closed Scrub alternating with *Regelia ciliata* and *Pericalymma elliptica* Closed Heath, both with emergent scattered *Melaleuca preissiana,* over *Schoenus rodwayanus* or *Meeboldina ?coangustata* Very Open Sedgeland)

WM2 — Wetland Mosaic 2
(deeper wetland with a mosaic of communities including:
- *Melaleuca viminea* Tall Open Scrub over *Triglochin lineare* Very Open Herbland
- *Melaleuca incana & Melaleuca leptoclada* Open Heath over *Chaetanthus aristatus* Open Sedgeland
- *Hakea varia* Tall Open Shrubland over *Melaleuca incana & Melaleuca leptoclada* Open Heath
- *Melaleuca rhaphiophylla & Melaleuca preissiana* Tall Shrubland over *Meeboldina ?coangustata* Sedgeland
- *Melaleuca preissiana* Open Woodland over *Astartea* aff. *fascicularis & Acacia pulchella* Closed Heath)

SlS — Slashed Sedgeland
(wetland modified by frequent slashing, contain a mosaic of communities including:
- *Schoenus rodwayanus* Closed Sedgeland
- *Phlebocarya ciliata* Very Open Herbland and *Lyginia barbata* and *Lepidosperma longitudinale* Closed Sedgeland
- *Baumea vaginalis, Lepidosperma longitudinale & Meeboldina ?coangustata* Sedgeland)

TK83
TK84
1592
C1
1595
1596
TK85
C1
(Balfour St)
1
TK86
C1
TK87
WMI
Ex-VG
PeRcCH
Ex-VG
C1
Recent
clearing
5
C1
1647
MiLOW
VG-E
5 C1
4
C1
C1
1646
1645

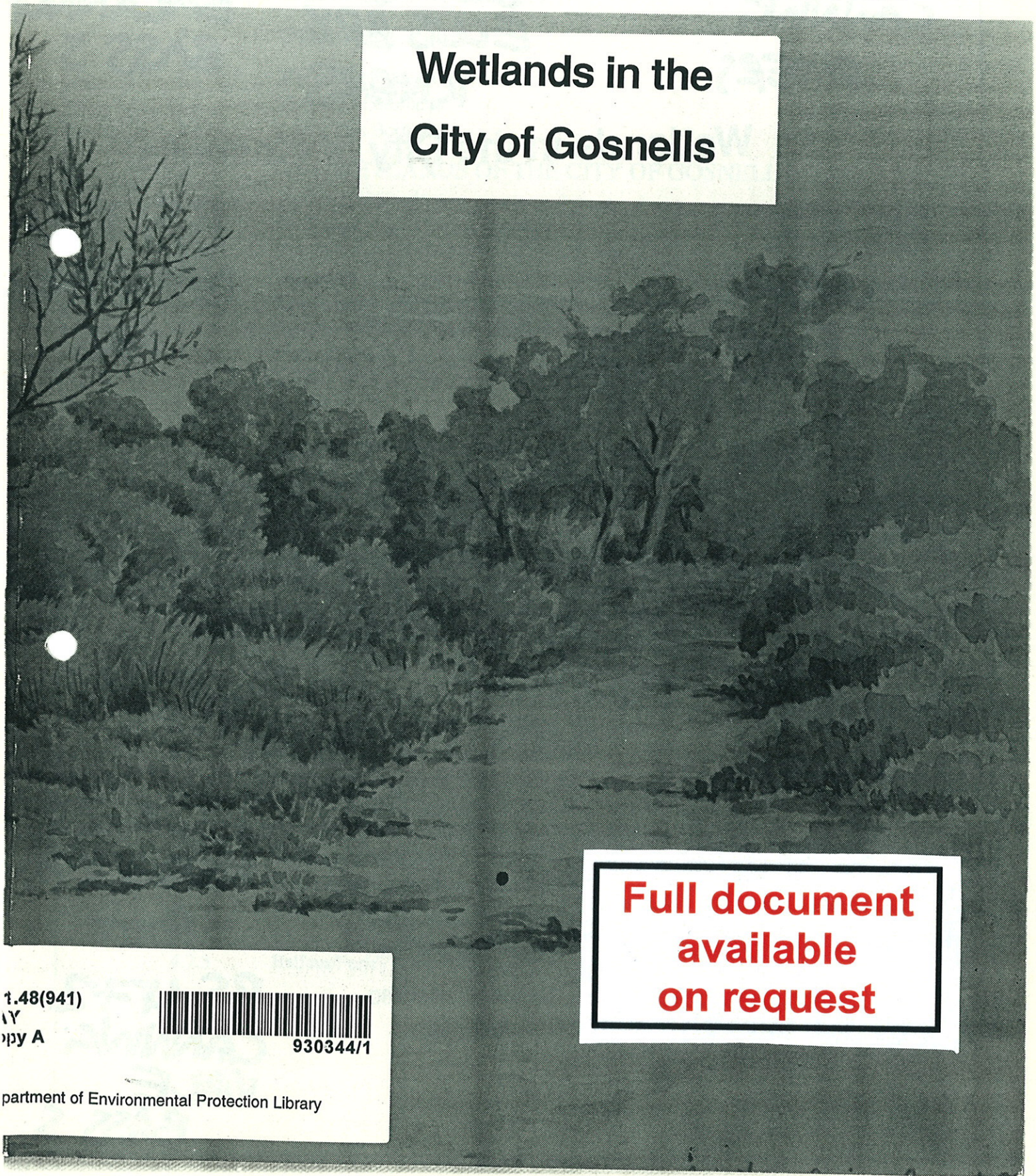
Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

Department of Environmental Protection
Bush Forever Site 125

BS 125/454
Bass.5

Water Authority
of Western Australia

Wetlands in the City of Gosnells



Full document
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on request

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partment of Environmental Protection Library

Southern River - Forrestdale - Brookdale - Wungong Draft Structure Plan

Western Australian Planning Commission

A submission by the Environmental Protection Authority under Section 16(j) of the Environmental Protection Act

Full document available on request

Environmental Protection Authority
Perth, Western Australia
Bulletin 987
August 2000

Signed to DPS for "Ensuring by Design" Guidance

AREA SPECIFIC (LOT BASED) BUSH FOREVER VEGETATION, FLORA AND VERTEBRATE FAUNA ASSESSMENT

PART BUSH FOREVER SITE 125 - Holmes Street Bushland, Southern River/Huntingdale

For WRC

Previously sent 2001 in Oct

Lee Simpkin 9224 8030

Department of Environmental Protection
Karen Clarke, Bronwen Keighery and John Dell
October 2001

GENERAL BACKGROUND

Bush Forever Site 125 is one of the largest remaining areas of the Southern River Vegetation Complex in the Perth Metropolitan Region (PMR). The Southern River Vegetation Complex lies at the interface between the Bassendean Dunes and Pinjarra Plain (Heddle *et al.* 1980) and supports vegetation elements of both. The area of the Southern River Vegetation Complex proposed for protection under Bush Forever is just 10 % (Government of Western Australia 2000a). The description of Bush Forever Site 125 (see Appendix 1 and Map 1) comprehensively outlines the conservation values of this Bush Forever Site (Government of Western Australia 2000b). The Site contains a diversity of vegetated upland and vegetated wetlands and areas of open water. The bushland in the Site is typical and representative of vegetation of the Southern River Vegetation Complex.

Bush Forever Site 125 is a very significant area of the Southern River Vegetation Complex in respect to its representativeness and size. A significant proportion of the area of the Southern River Vegetation Complex that remains is in small remnants. Such remnants can maintain significant vegetation and flora conservation values but are less desirable for protection over time because of the more intensive management they need, their generally lower diversity of vegetation units and flora (ie they are less representative of the complex in which they lie) and their lower values for maintaining populations of larger fauna and possibly in the longer term populations of other species (both flora and fauna).

There are relatively few relatively large remnants of Southern River Vegetation Complex remaining in the Perth Metropolitan Region. The other larger remnants, include Perth Airport (part Bush Forever Site 366), much of which is subject to development proposals, part Bush Forever Sites 196/198 south-east of Gnangara Lake, part Bush Forever Site 342 north of Forrestdale Lake and a few in the southern part of the distribution of the complex. Even these remnants have irregular outlines and some are crossed by transport and service corridors.

CURRENT STUDY - AREA SPECIFIC (LOT BASED) BUSH FOREVER VEGETATION, FLORA AND VERTEBRATE FAUNA ASSESSMENT

BACKGROUND

As part of the on-going planning for the Southern River area the City of Gosnells have identified the need for an Outline Development Plan (ODP) for the Holmes St Precinct in Southern River of the Southern River/Forrestdale/Brookdale/Wungong Structure Plan (WAPC 2001). Turner Master Planners Australia have been engaged to prepare this ODP. The Holmes St Precinct includes the north-western part of Bush Forever Site 125.

This report further documents the conservation values of the Bush Forever Site 125 with particular reference to the lots within the north-western section of Site and is intended to contribute to this planning process. This area, Lots 2, 3, 4, 5, 10, 12, 1578, 1585, 1586, 1587, 1588, between Holmes Rd, Warton Rd and the proposed Garden St extension, is hereafter referred to as the study area (see Maps 2 and 3).

AREA SPECIFIC FIELD WORK

This lot specific assessment of the study area was based on a series of recent site visits and previous work on Site 125. The following field inspections were made in 2001:

- 8 May 2001:Inspection by Karen Clarke (MfP at the time of the inspection, now DEP), Sean Collingwood (MfP) and Melissa Patt (WRC).
- 1 June 2001: Inspection by Karen Clarke (MfP at the time of the inspection, now DEP), Sean Collingwood and Kieron Beardmore (MfP) and for part of time Melissa Patt (WRC).
- 11 September 2001: Inspection by Gary Whisson, Bronwen Keighery, John Dell and Karen Clarke (DEP), Emma Bamforth and Sally Madden (DPI, formerly MfP) and Paul Brown (CALM).

During each inspection approximately 5 hours was spent traversing the bushland by vehicle and on foot. During the May/June inspections there were relatively few plants flowering and annually renewed plants (annuals that grow from seed or perennials that die back in summer to a bulb or rhizome and grow back again in autumn/winter) were dormant. Therefore, vegetation condition assessments are subject to revision on a mid/late spring inspection. Condition ratings are based on Keighery (1994).

VEGETATION, FLORA AND WETLANDS

Background

The description of Bush Forever Site 125 (see Appendix 1 and Map 1) comprehensively outlines the conservation values of the entire Bush Forever Site (Government of Western Australia 2000b).

The Site description was based on a previous vegetation and flora study - botanical survey of the entire area of the Site and adjacent bushland was undertaken in 1994 (Gosnells Remnant Bushland Area Six in Trudgen & Keighery 1995, see this report Map 4). Gosnells Remnant Bushland Area Six was one of a series of remnants described in the Trudgen & Keighery study which covered the entire area of the Swan Coastal Plain in the City of Gosnells. Within Area Six over 40 vegetation units were described and the upland and wetland areas mapped. In addition a series of floristic plots were placed in Lots 10, 1607 and 1610 during this survey (Plots Gosn 2–5, 12–13). Trudgen & Keighery (1995) recognised Area 6 as one of the core bushland areas recommended for protection in that study. It was recommended that Area 6 be protected with the purpose of conservation of nature and recreation compatible with the conservation of nature because of its conservation value, which they described in the following way:

> "This remnant (or group of remnants) has a range of habitat types and a large range of vegetation types, including:
>
> - a range of *Banksia* woodland vegetation from that found on very low sand drifts through to that found on moderate sized dunes.
> - a range of wetland vegetation including areas dominated by *Melaleuca rhaphiophylla* and other *Melaleuca* species.
> - a range of dampland vegetation types including areas with heaths, areas with *Melaleuca preissiana* (Paperbark) and various shrub and sedge communities (including some found on heavy soils). The *Melaleuca preissiana* stands include one that is probably the best remaining in the City of Gosnells although, it has been recently burnt (this species regenerates well from the branches).'

The conservation values of the area proposed for protection in Perth's Bushplan (Government of Western Australia 1998a&b and see this report Map 5) and Bush Forever (Government of Western Australia 2000a&b and see this report Map 1) were checked during the preparation of Bushplan and Bush Forever. This included perusal of recent aerial photography, field visits and the preparation of a report on the Site in 2000 (Clarke and Keighery 2000).

The majority of the Site is also classed as a Category One Area under the Middle Canning Catchment Study where it is recommended no development be permitted (Evangelisti & Associates, 1995)

Vegetation of the Study Area (Maps 3 and 6)
The Site is a complex mosaic of uplands (very low sand drifts through to moderate sized dunes), sumplands and damplands and the majority of the Site is naturally vegetated. The plant communities present in the study area are shown on Map 6 and described below.

The plant community boundaries shown are indicative of broad transitional zones between one type of community and another. This is particularly important when considering the boundaries between upland and wetland communities, these boundaries are not clearly defined lines in nature and change in response to periodic changes in hydrology such as climatic fluctuations.

Uplands — 60% OOP Area

EmAfOW *Eucalyptus marginata-Allocasuarina fraseriana* Open Woodland over *Patersonia occidentalis, Phlebocarya ciliata & Dasypogon bromeliifolius* Very Open Herbland and *Lepidosperma squamatum & Schoenus rigens* Open Sedgeland

AfEmOW *Allocasuarina fraseriana-Eucalyptus marginata* Open Woodland over *Acacia pulchella & Adenanthos cygnorum* Open Shrubland over *Amphipogon turbinatus* Very Open Grassland, *Patersonia occidentalis & Blancoa canescens* Very Open Herbland and *Lyginia barbata* Very Open Sedgeland

BaLOF *Banksia attenuata* Low Open Forest over *Acacia pulchella & Melaleuca thymoides* Open Heath over *Phlebocarya ciliata & Dasypogon bromeliifolius* Herbland

BaLW *Banksia attenuata* Low Woodland over Mixed Open Low Heath)

BmLW *Banksia menziesii* Low Woodland over *Acacia pulchella & Stirlingia latifolia* Open Shrubland with patches of *eremaea pauciflora* over *Amphipogon turbinatus* Open Grassland, *Patersonia occidentalis* Very Open Herbland and *Lyginia barbata* Very Open Sedgeland

BLW *Banksia* Low Woodland (mixed over storey of *Banksia* spp.) over heavily grazed understorey

MiLW Mixed Low Woodland (mixed over storey of *Banksia* spp. and *Allocasuarina fraseriana*) over *Melaleuca thymoides & Acacia pulchella* Tall Shrubland and mixed Open Low Heath over *Phlebocarya ciliata* Open Herbland

MiLOW Mixed Low Open Woodland (mixed over storey of *Banksia* spp.) over *Melaleuca thymoides* Open Shrubland over *Phlebocarya ciliata* and *Dasypogon bromeliifolius* Herbland and *Lyginia imberbis* Very Open Sedgeland

AcTOSc *Adenanthos cygnorum* Tall Open Scrub over weedy grasses.

Wetlands 20% OOP Area) with 50m buffer

MpW *Melaleuca preissiana* Woodland over *Regelia ciliata* or *Astartea* aff. *fascicularis* Open Heath

MpOW *Melaleuca preissiana* Open Woodland over *Astartea* aff. *fascicularis & Acacia pulchella* Closed Heath

PeRcCH *Pericalymma ellipticum-Regelia ciliatum* Closed Heath

XpOSh *Xanthorrhoea preissii* Open Shrubland over *Eremaea pauciflora* Low Open Shrubland over *Amphipogon turbinatus* Very Open Grassland, *Patersonia*

occidentalis Very Open Herbland and *Lyginia barbata & Schoenus* sp. Open Sedgeland

XpLOSh *Xanthorrhoea preissii* Low Open Shrubland with scattered emergent *Eucalyptus todtiana, Banksia ilicifolia* and *B. attenuata* over *Phlebocarya ciliata* and *Dasypogon bromeliifolius* Herbland and *Lyginia barbata* Very Open Sedgeland

WM1 Wetland Mosaic 1, deeper wetland with a mosaic of communities including:
- *Melaleuca rhaphiophylla* Closed Tall Scrub over patches of *Melaleuca teretifolia* or *Calothamnus latifolia* Close Heath and *Meeboldina ?coangustata* Closed Sedgeland
- Patches of *Pericalymma ellipticum, Kunzea ericifolia & Regelia ciliata* Closed Tall Scrub and patches of *Astartea* aff. *fascicularis, Acacia pulchella & Calothamnus latifolia* Open Shrubland interspersed with *?Leptocarpus tenax* Closed Sedgeland
- *Melaleuca preissiana* Open Woodland over *Astartea* aff. *fascicularis & Acacia pulchella* Open Heath over *Lepidosperma longitudinale & Meeboldina ?coangustata* Closed Sedgeland)
- *Regelia ciliata* Tall Closed Scrub alternating with *Regelia ciliata* and *Pericalymma elliptica* Closed Heath, both with emergent scattered *Melaleuca preissiana,* over *Schoenus rigens* or *Meeboldina ?coangustata* Very Open Sedgeland)

WM2 Wetland Mosaic 2, deeper wetland with a mosaic of communities including:
- *Melaleuca viminea* Tall Open Scrub over *Triglochin lineare* Very Open Herbland
- *Melaleuca incana & Melaleuca leptoclada* Open Heath over *Chaetanthus aristatus* Open Sedgeland
- *Hakea varia* Tall Open Shrubland over *Melaleuca incana & Melaleuca leptoclada* Open Heath
- *Melaleuca rhaphiophylla & Melaleuca preissiana* Tall Shrubland over *Meeboldina ?coangustata* Sedgeland
- *Melaleuca preissiana* Open Woodland over *Astartea* aff. *fascicularis & Acacia pulchella* Closed Heath)

SlS Slashed Sedgeland, wetland modified by frequent slashing, contains a mosaic of communities including:
- *Schoenus rigens* Closed Sedgeland
- *Phlebocarya ciliata* Very Open Herbland and *Lyginia barbata* and *Lepidosperma longitudinale* Closed Sedgeland
- *Baumea vaginalis, Lepidosperma longitudinale & Meeboldina ?coangustata* Sedgeland)

(Note: The north-eastern section of Site 125 may also require a lot based assessment. This area needs to be considered in any discussions and decisions made with regard to the north-western section of Bush Forever Site 125 contained within the Holmes St precinct. Therefore, preliminary mapping of the plant communities present in this eastern section of Site 125 north of Garden St are also shown on Map 6 for comparison.)

The regional floristic community types present in the northern-western section are likely to be from e two supergroups, the Super group 2 (Seasonal Wetlands) and Supergroup 3 (Uplands centred on Bassendean Dunes and Dandaragan Plateau). The specific regional floristic community types expected are:

Super group 2: Seasonal Wetlands
4 *Melaleuca preissiana* damplands
S3 Wet sedgelands on sandy clays (most southerly occurrence)
Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
23a Central *Banksia attenuata — B. menziesii* woodlands

It is also possible that there are additional wetland groups represented in the two large wetlands which are more typical of the eastern side of the Plain wetlands.

Vegetation Condition
The majority of the vegetation is in Excellent to Very Good condition (see Map 6) with small areas of severe localised disturbance primarily associated with tracks. The *Allocasuarina fraseriana-Eucalyptus marginata* Open Woodland on Lot 1585 (AfEmOW, Map 6) has been impacted by past clearing and grazing activities which have altered the structure of the original plant community to create a woodland with reduced density of *Banksia* spp. However, this area of bushland remains in Very Good condition.

Unexplained tree deaths are occurring in several areas but primarily in the wetland on Lot 1585 in the *Xanthorrhoea preissii* Open Shrubland (XpOSh, Map 6). There are a number of potential causes of these deaths, including drought, groundwater draw-down or the presence of *Phytophthora.*

The bushland on Lots 2, 3, 4, 5, and 1587 adjacent to Holmes Rd (Map 6) have received the most impact from human disturbance in recent years due to clearing, slashing and grazing activities. At present the remnant vegetation ranges in condition from Very Good to Degraded as shown on Map 6. The impact of such activities is greatest in Lot 1587. This can be illustrated by comparing the various maps of bushland in the area (see Maps 1, 4, 5 and 6). The bushland on Lot 2 and the western side of Lot 3 is in generally Very Good condition with most in Excellent condition. This bushland on Lots 2 & 3 forms an integral part of the large consolidated area in the north-eastern section of Bush Forever Site 125.

The other bushland area that has been significantly altered in recent years is Lots 10 & 1588 (see Maps 1, 4, 5 and 6). Approval was granted for a subdivision to proceed on these lots in 1999 and clearing took place in 2000. The Public Open Space (POS) design approved is shown on Maps 1, 2 & 3 and was to consistent entirely of remnant bushland. An alternate, revised design was submitted to the WAPC prior to clearing that aimed to maintain linkage through the POS bushland east to west across the Bush Forever Site to satisfy concerns of the City of Gosnells and Bush Forever Agencies. This second design, although never formally approved, has been used on site by the developer. However, two areas within this POS have been cleared and excavated (see Map 6), presumably for drainage purposes, and another part of the POS has been cleared on the western side of Lot 1588.

Flora
From the work completed so far it is estimated that greater than 200 taxa occur on Bush Forever Site 125. Among these are a number of significant flora including two species of Declared Rare Flora (see Appendix 1).

The significant flora that have been recorded to date in the current study area are: *Acacia lasiocarpa* var. *bracteolata* (Priority 1), *Schoenus benthamii* (Priority 3), *Jacksonia gracilis, Blancoa canescens, Hensmania turbinata* and *Astroloma xerophyllum.*

Wetlands

All the wetlands shown in Map 6, in the northern section of Bush Forever Site 125, are fully vegetated wetlands with no open water. Map 7 shows the wetlands that have previously been mapped for this northern section and the Management Categories currently assigned to them by the Water and Rivers Commission (WRC 2001). The wetland boundaries currently recorded by the Water and Rivers Commission (WRC 2001) need some minor adjustments to follow the wetland boundaries shown in Map 6. In particular, a previously unmapped wetland on Lot 1586 needs to be documented.

The Wetland Management Categories also need to be reviewed. All of the wetland areas shown on Map 6, with one exception, contain vegetation of a type and condition that warrants classification as Conservation Category. The exception is the wetland on Lot 1587 that has been excavated and grazed by horses and does not require reclassification, on vegetation grounds, from the Resource Enhancement category.

VERTEBRATE FAUNA

Background

The habitat and avifaunal conservation values of the lots were surveyed in the field on 11 September 2001. While limited in duration the survey established that the vegetation condition and plant species diversity on the lots has high habitat value for birds, the Southern Brown Bandicoot, some amphibians and possibly also for reptiles. These vegetation and flora values are strongly reflected in the diversity of birds present, a list of which is presented in Appendix 2.

In 1999 the West Australian Planning Commission (WAPC) commissioned Muir Environmental to review the conservation values of Bushplan (now Bush Forever) Sites within the study area of the Southern River-Forrestdale-Brookdale-Wungong Draft Structure Plan (Muir Environmental 1999). Muir Environmental (1999) was based on the Muir Rapid Habitat Assessment System (MRHAS) which is a seldom used system and tends to score woodlands of highest value due to the emphasis it places on the provision of a range of habitats for fauna. It does not take into consideration the fact that many of the declining bird species on the Coastal plain are those that are sedentary, insectivorous species that are dependent on the shrub vegetation rather than woodlands. Accordingly, the MRHAS has limited value for assessing fauna conservation values on the Swan Coastal Plain as it provides only a small amount of the information required to address the selection criteria for regional conservation value in Bush Forever. These selection criteria are based on a range of parameters assessed across the whole Swan Coastal Plain portion of the Perth Metropolitan Region.

The bias of the MRHAS is particularly evident in relation to the clay-based wetlands (sumplands) in Bush Forever Site 342, which are a Threatened Ecological Community. They receive low scores under the MRHAS assessment method because they are shrub-dominated wetlands and their diversity of habitat is erroneously presumed to be low particularly as habitat for some faunal groups including amphibians, some reptiles and invertebrates are not considered. Thus, Muir Environmental (1999) does not use a methodology that provides the data required to assess regional significance for the selection of protected areas to achieve a comprehensive representation of the original biological diversity of a region. As a result, the Water and Rivers Commission (WRC) and

the Department of Environmental Protection (DEP) have advised "that they do not fully concur with the conclusions" of Muir's study (EPA 2000).

Birds (Avifauna)
The birds recorded from the study area include 8 non-passerine and 22 passerine species giving a total of 30 species (see Appendix 2). The habitats of the area are likely to support considerably more species and this would be documented if surveys were extended to cover other seasons. Accordingly, the study area (and the Site) has a regionally rich and significant avifauna.

This high species diversity reflects the large size of the area as well as the floral and vegetation diversity of the area. It is noteworthy that a number of those species highlighted by Dell and How (1995) as having declined severely on the Swan Coastal Plain are present in the study area.

Significantly the study area contains at least ten species of those birds listed by Government of Western Australia (2000) as having special conservation significance on the Swan Coastal Plain as they are either habitat specialists with a reduced distribution on the Swan Coastal Plain or they are wide-ranging species with reduced populations on the Swan Coastal Plain. Based on known distributions (Storr and Johnstone 1988) it is likely that several other of these significant bird species are also likely to occur.

Another significant value of the study area is in facilitating the seasonal migration of small passerine birds. A number of species move northwards at the beginning of winter and move southwards in spring. These require native vegetation for food, shelter and roosting sites while in transit.

The study area would also have long-term value in maintaining genetic movement between different areas and thus they have a significant role in the conservation of Australia's biological diversity.

Reptiles and Amphibians
The conservation significance of the herpetofaunal and amphibian assemblages at the sites has not been assessed. One species of skink lizard (*Bassiana trilineatum)* was recorded in Lot 2. Two frog species were recorded in the wetland in Lot 1578. These were the Quacking Frog (*Crinia georgiana*) and the Sandplain Froglet (*Crinia insignifera).* The presence of *Crinia georgiana* in Lot 1578 is significant. It was only recorded on six of the 34 sites surveyed by How and Dell (2000) in the Perth Metropolitan Region of the Swan Coastal Plain and all of these sites were on the Ridge Hill Shelf Formation (eg BR, CR, HF, NO, RR, TR in How and Dell 2000).

Mammals
The local and regional significance of the mammal assemblage in the study area has not been assessed. The study area supports a population of the Quenda or Southern Brown Bandicoot (*Isoodon obesulus*) as many characteristic feeding diggings were located in Locations 1585, 1578, Lot 2 and Lot 3.

Linkage
Bush Forever Site 125 is part of Greenway 91 (Tingay, Alan & Associates 1998a) and part of a regionally significant fragmented bushland/wetland linkage (Government of Western Australia 2000b).

It is particularly important to maintain east-west linkage between the two large consolidated areas in the north-western and north-eastern sections of Bush Forever Site 125 for the long term survival of fauna, flora and vegetation.

Summary of Vertebrate Fauna Values Assessed

Vertebrate fauna on the Coastal Plain has undergone major declines as a consequence of habitat reduction, disturbance and other factors (How and Dell 1993, 1994, 2000). Much of the fauna now has fragmented distributions and only survives on remnant areas of bushland. The study area has significant regional conservation value for bird fauna. Specifically the major values for birds are:

- There is a rich and distinctive bird fauna. This distinctiveness is further emphasised by the number of species present which have declined elsewhere on the Swan Coastal Plain between Perth and Bunbury, and the number of species that are of regional conservation significance.
- The study area facilitates bird movement in this part of the Swan Coastal Plain.

Wetland Mosaic 1 and associated habitats has the highest diversity of birds especially those included as conservation significant species in Bush Forever (7 significant species). Consolidation of this area would have the highest priority from a bird conservation viewpoint and would include the best habitat for the Southern Brown Bandicoot and breeding habitats for some amphibians. Maintaining the ecological linkage of this area to other bushland would protect the fauna values outlined previously. Wetland Mosaic 2 and associated habitats on Lot 1578 also has high fauna conservation value for birds, the Southern Brown Bandicoot and frogs. Conservation of this area, retention of Lots 1585 and 1586 and linkage to Wetland Mosaic 1 would have obvious long term fauna conservation value.

SUMMARY OF VEGETATION, FLORA AND VERTEBRATE FAUNA VALUES

The area of remnant bushland in the north-western section of Bush Forever Site 125 (within the Holmes St Precinct), as shown on Map 6, is:

- typical and representative of vegetation of the Southern River Vegetation Complex;
- contains mosaic of wetland vegetation units not represented elsewhere in Bush Forever Site 125;
- contains significant areas of *Banksia* Woodlands on low to medium dunes and sand sheets;
- supports a diversity of plant species;
- supports populations of seven significant flora species (*Acacia lasiocarpa* var. *bracteolata* (Priority 1), *Schoenus benthamii* (Priority 3), *Jacksonia gracilis, Blancoa canescens, Hensmania turbinata* and *Astroloma xerophyllum*);
- supports a rich and distinctive bird fauna including a number of species which have declined elsewhere on the Swan Coastal Plain between Perth and Bunbury and a number that are of regional conservation significance;
- important in forming an important linkage for movement of birds in this part of the Swan Coastal Plain; and
- supports significant populations and habitat for the Quacking Frog,(*Crinia georgiana*) and the Quenda (*Isoodon obesulus*)

As a consequence it is confirmed that the study area contains bushland of regional conservation value and represents plant communities and habitat that are poorly protected. In light of the past reduction of values of the bushland in the area of the Bush Forever Site (see Maps 1 and 4 – 6) the

further clearing and destruction of habitat in this north-western section would have unacceptable environmental impacts.

PROTECTION OF VEGETATION, FLORA AND VERTEBRATE FAUNA VALUES IN THE STUDY AREA

The conservation values of the remnant vegetation in the vicinity of Bush Forever Site 125 have been documented on a number of occasions since 1995 (Trudgen and Keighery 1995, Government of Western Australia 1998, Government of Western Australia 2000) and recommendations made for full protection of the bushland present.

The study area is part of a much larger area of bushland (much of which is contained in Bush Forever Site 125) that contains both vegetated wetlands and uplands in excellent condition. The bushland in the study area is generally typical of the larger area, contains some elements not represented or well represented in the larger area and is a core part of the whole. The diversity of flora, fauna, vegetation and wetlands in Bush Forever Site 125 is related to the location of the area on the interface between the Bassendean Dune System and the Pinjarra Plain. This Bush Forever Site contains sandy clay and some small areas of clay based wetlands typical of the eastern side of the Swan Coastal Plain interspersed with shallow and deep sand dune ridges supporting a variety of *Banksia* Woodlands.

It is essential for the long term maintenance of the values described and to minimise management costs that the bushland in the study area is protected by conserving the bushland areas in a consolidated block as identified in the Bush Forever Site. However there are some problems with this as Garden Street, as currently proposed, crosses the area Site north of Holmes Street bisecting the bushland areas, a wetland and an upland (see Map 3 and 6). The best option for the protection of the Site north of Holmes Street would be to not build Garden Street. However this is considered unlikely as some of this road has already been constructed. The next best option would be to relocate Garden Street in the study area to the least intact sections of the Bush Forever Site in the study area, that is through Lots 1588 and 1587. While this alignment would bisect the area of Bush Forever Site 125 north of Holmes Street it would allow for the formation of two consolidated bushland blocks and the maintenance of two significant vegetation/landscape units.

It is also important to note in respect to the protection of Bush Forever Site 125 that the Environmental Protection Authority released Section 16 advice on the Draft Southern River/Forrestdale/Brookdale/Wungong District Structure Plan in August 2000 to "ensure environmental issues are adequately recognised and integrated into future planning in a sustainable way" (EPA 2000). **This report made a number of recommendations which were expected to be "fulfilled prior to the Structure Plan being finalised and rezoning, subdivision or development proceeding" (EPA 2000). The key environmental issues identified were:**

- **"Drainage, nutrient and flood management;**
- **Protection of wetlands, including Forrestdale Lake;**
- **Perth's Bushplan;**
- **Buffers between incompatible landuses; and**
- **Public health and safety."** (EPA 2000)

The final Structure Plan did not fully address these issues, many being left to later planning phases. **One of the key recommendations of the EPA was that "satisfactory completion of an overall**

drainage, nutrient and hydrological strategy for the area and establishment of acceptable implementation mechanisms" be resolved before the Structure Plan was finalised. An Urban Storm Water Management Study has been initiated through the Water and Rivers Commission but is not yet completed. It was also recommended that there be finalisation and agreement on Perth's Bushplan site boundaries within the study area (EPA 2000). This has yet to occur for many Bush Forever Sites.

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APPENDIX 1: SITE DESCRIPTION FOR BUSH FOREVER SITE 125
HOLMES STREET BUSHLAND, SOUTHERN RIVER/HUNTINGDALE

Boundary Definition: bushland (part taken to cadastre) boundary (Areas of bushland within the boundaries of the Site have been recently cleared. The boundary has been drawn to include cleared bushland; Boundary adjusted after vegetation survey and/or negotiations with the land owner(s) in response to a submission to draft *Perth's Bushplan*.)

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 125 **Area (ha):** bushland 121.3
Map no. 54, 55, 60, 61 **Map sheet series ref. no.** 2033–I NE
Other Names: Submission Area 215, part Gosnells remnant bushland area 6 (Trudgen and Keighery 1995)
Local Authorities (Suburb): City of Gosnells (Southern River, Huntingdale)

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS
Bassendean Dunes
Bassendean Sands (Qpb: S8)
Bassendean Dunes/Pinjarra Plain
Bassendean Sands over Guildford Formation (Qpb/Qpa: S10)
Wetlands (within the Bassendean Dunes/Pinjarra Plain)
Holocene Swamp Deposits (Qrw: Sp1, Sp2)
VEGETATION AND FLORA
Vegetation Complexes
Combinations of Bassendean Dunes/Pinjarra Plain
Southern River Complex
Floristic Community Types
Supergroup 2: Seasonal Wetlands
4 *Melaleuca preissiana* damplands
S3 Wet sedgelands on sandy clays (most southerly occurrence)
Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
23a Central *Banksia attenuata* — *B. menziesii* woodlands
WETLANDS
Wetland Types: sumpland, dampland
Natural Wetland Groups
Bassendean—Pinjarra transition OR Bassendean with fluvial features
Bennett Brook (B/P.4)
Wetland Management Objectives: Conservation (91.6ha), Resource Enhancement
Swan Coastal Plain Lakes EPP: none identified
THREATENED ECOLOGICAL COMMUNITIES
Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, vegetated uplands
Vegetation and Flora: limited survey (Clarke and Keighery 2000b, Trudgen and Keighery 1995 (Gosn 2–5, 12–13), part Site — DEP 1998)
Structural Units: mapping (Clarke and Keighery 2000b, Trudgen and Keighery 1995 (Gosn 2–5, 12–13))
Uplands: Low Open Woodlands to Low Closed Forests dominated by combinations of *Banksia attenuata*, *B. menziesii, B. ilicifolia* and *Allocasuarina fraseriana*; *Eucalyptus calophylla, E. marginata* and *Allocasuarina fraseriana* Woodland to Open Forest; *Banksia attenuata, B. menziesii, B. ilicifolia, Eucalyptus marginata* and *Allocasuarina fraseriana* Low Woodland to Low Open Forest; *Banksia attenuata, B. menziesii* and *Eucalyptus todtiana* Low Woodland to Low Open Forest
Wetlands: Low Open Woodlands to Low Woodlands dominated by combinations of *Melaleuca preissiana, Eucalyptus todtiana, Allocasuarina fraseriana, Banksia attenuata* and *Nuytsia floribunda*; *Melaleuca preissiana* Low Open Woodland to Low Open Forest; *Melaleuca rhaphiophylla* Low Open Woodland to Low Open Forest; *Melaleuca incana, M. viminea* and *M. rhaphiophylla* Low Open Forest; *Melaleuca rhaphiophylla* and *M. viminea* Low Open Woodland to Open Woodland; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Astartea* sp. Brixton Street and *Regelia ciliata* Shrubland to Open Heath; *Hypocalymma angustifolium* and *Melaleuca seriata* Low Open Heath; *Evandra pauciflora* Closed Sedgeland

Scattered Native Plants: not assessed
Vegetation Condition: >80% Excellent (some areas considered Pristine, Trudgen and Keighery 1995), <20% Very Good to Good, with areas of severe localised disturbance
Total Flora: not known (estimated >200 taxa, DEP 1998)
Significant Flora: *Diuris purdiei* (R), *Caladenia huegelii* (R); *Acacia lasiocarpa* var. *bracteolata* (1), *Byblis lindleyana* (2), *Schoenus benthamii* (3); *Villarsia violifolia, Jacksonia gracilis, Blancoa canescens, Hensmania turbinata* (Trudgen and Keighery 1995); *Astroloma xerophyllum, Levenhookia preissii* (Clarke and Keighery 2000b)
Fauna: multiple survey for birds (61 species) (Submission no. 169). Significant bird species: category 1 (1), category 3 (11) and category 4 (2). Good assemblage of ducks and waterbirds, including 15 breeding species. Breeding site for Freckled Duck (Payne 1993b). Significant mammal species: Quenda (Friend 1996 D)
Linkage: adjacent bushland to the north and west; part of Greenway 91 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 5)
Other Special Attributes: recommended to be protected with the purpose of conservation of nature and recreation compatible with the conservation of nature in study of bushland in the City of Gosnells (Trudgen and Keighery 1995), majority 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, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing vegetation and coastal vegetation
Recommendation: Part A: Urban Negotiated Planning Solution. Part B: Strategic Negotiated Planning Solution. Part C: Proposed Parks and Recreation Reservation. Part D: Local Reserve Mechanism. Part E: Other Government Land Mechanism (see Table 3, Volume 1).

APPENDIX 2: BIRD SPECIES RECORDED IN THE NORTH-WESTERN SECTION OF BUSH FOREVER SITE 125

Conservation category 1 and 2 are after Government of Western Australia (2000):

- Cat 1: habitat specialists with a reduced distribution on the Swan Coastal Plain
- Cat 2: wide-ranging species with reduced populations on the Swan Coastal Plain
- B = recorded breeding on 11 September

BIRD SPECIES	Significance	Location (Lot No.)					
		1586	1585	1578	2	3	Other
Painted Button-quail, *Turnix varia*	Cat. 2				X	X	
Common Bronzewing, *Phaps chalcoptera*	Cat. 1				X		X
Crested Pigeon, *Ocyphaps lophotes*				X			X
Laughing Dove, *Streptopelia senegalensis*					X		X
Galah, *Cacatua roseicapilla*				X			X
Australian Ringneck, *Platycercus zonarius*		X	X	X			X
Red-capped Parrot, *Platycercus spurius*		X	X	X B			
Shining Bronze Cuckoo, *Chrysococcyx lucidus*		X		X			
Western Gerygone, *Gerygone fusca*		X	X	X	X	X	
White-browed Scrubwren, *Sericornis frontalis*	Cat. 1			XB		X	
Yellow-rumped Thornbill, *Acanthiza chrysorrhoa*	Cat. 1			X			
Western Thornbill, *Acanthiza inornata*	Cat. 1				X		
Brown Honeyeater, *Lichmera indistincta*		X	X	X	X	X	
Singing Honeyeater, *Lichenostomus virescens*		X		X	X	X	
New Holland Honeyeater, *Phylidonyris novaehollandiae*	Cat. 2		X	X	X	X	
White-cheeked Honeyeater, *Phylidonyris nigra*	Cat. 2	X		X			
Red Wattlebird, *Anthochaera carunculata*		X	X	X	X		
Rufous Whistler, *Pachycephala rufiventris*		X			X		
Grey Shrike-thrush, *Colluricincla harmonica*	Cat. 1				X	X	

BIRD SPECIES	Significance	Location (Lot No.)					
		1586	1585	1578	2	3	Other
Willie Wagtail, *Rhipidura leucophrys*						X	X
Grey Fantail, *Rhipidura fuliginosa*					X	X	
Magpie-lark, *Grallina cyanoleuca*			X	X			X
Black-faced Cuckoo-shrike, *Coracina novaehollandiae*		X	X		X		X
Splendid Fairy-wren, *Malurus splendens*	Cat. 1				X	X	
Black-faced Woodswallow, *Artamus cinereus*	Cat. 2				X		
Australian Magpie, *Cracticus tibicen*				X			
Grey Butcherbird, *Cracticus torquatus*		X	X	X			
Australian Raven, *Corvus coronoides*			X	X	X		
Welcome Swallow, *Hirundo neoxena*							X
Grey-breasted White-eye, *Zosterops lateralis*		X			X	X	

MAPS

Map 1: Bush Forever Site 125 – Holmes Street Bushland, Southern River/Huntingdale (Government of Western Australia 2000a)

Map 2: Year 2001 Aerial Photograph of the Northern Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale

Map 3: Year 2001 Aerial Photograph of the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale

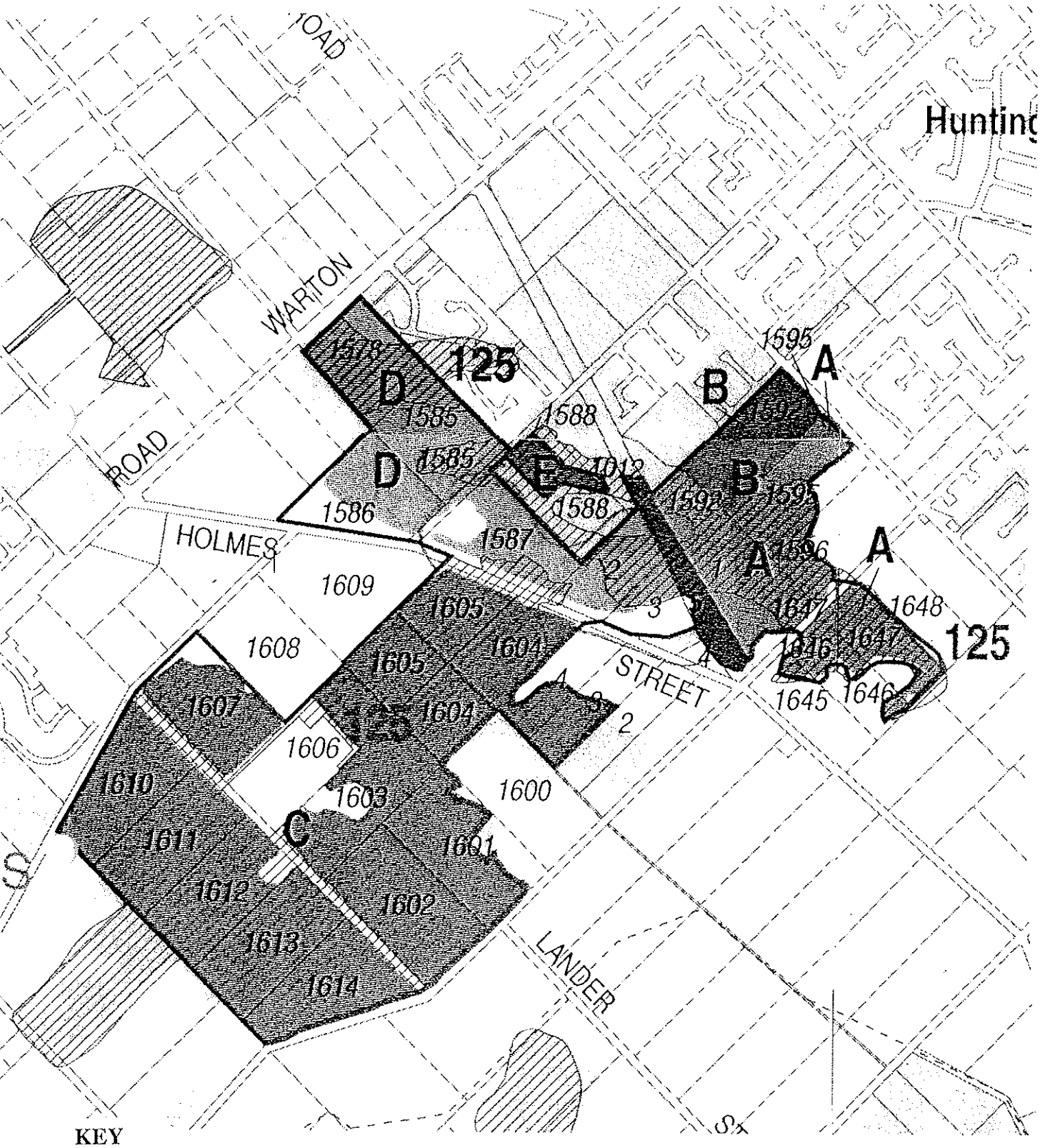
Map 4: Gosnells Remnant Bushland Area 6 (Trudgen and Keighery 1995)

Map 5: Perth's Bushplan Site 125 – Holmes Street Bushland, Southern River/Huntingdale (Government of Western Australia 1998)

Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

Map 7: Wetland Management Categories (WRC 2001)

Map 1: Bush Forever Site 125 – Holmes Street Bushland, Southern River/Huntingdale (Government of Western Australia 2000a)



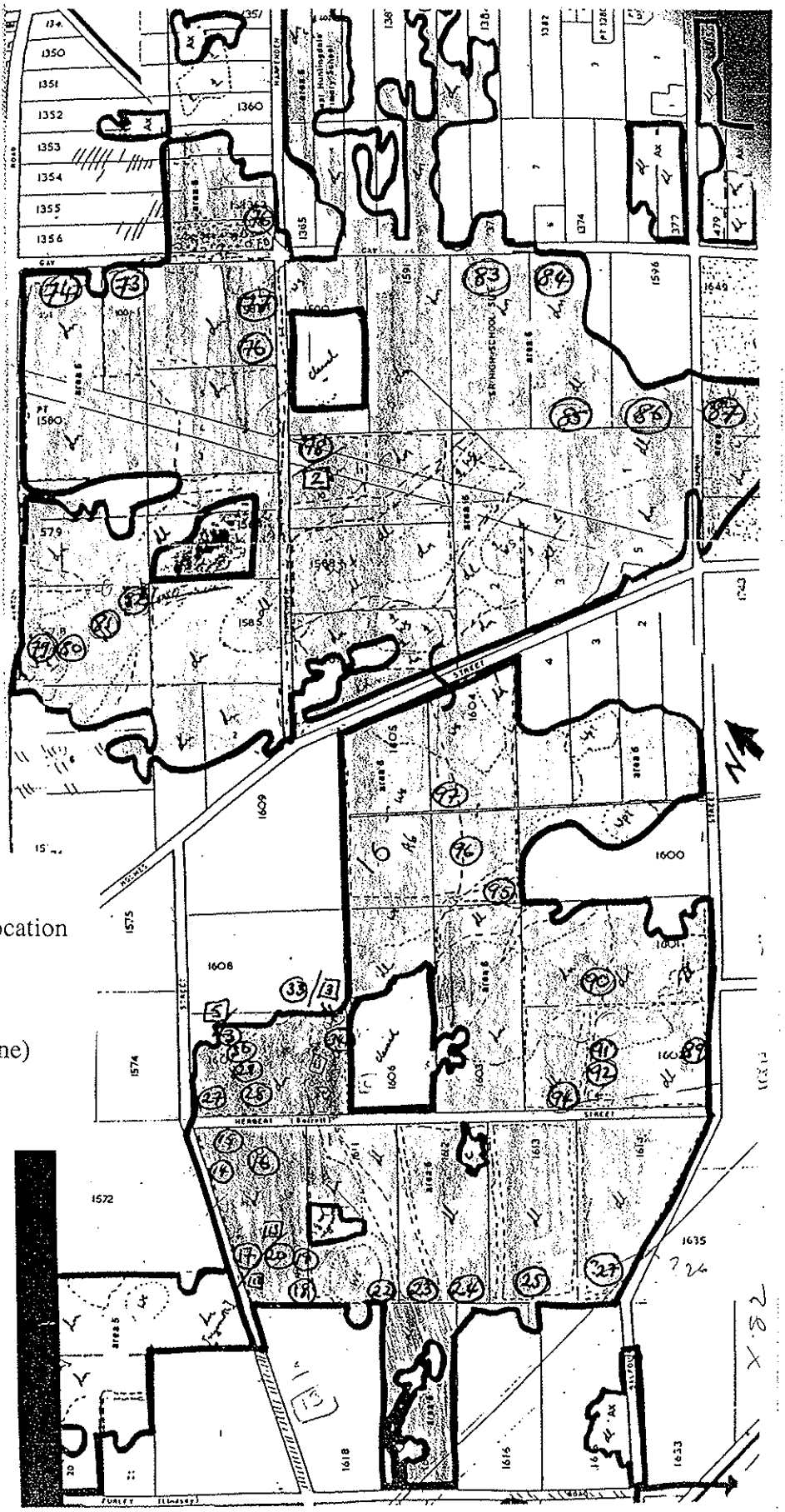
KEY

—	Bush Forever Site boundary
	Regionally Significant Bushland
	Conservation Category Wetlands
	Other Native Vegetation

Bush Forever Implementation Mechanisms:

A	Site with Some Existing Protection; Existing Parks and Recreation Reserve
B	Proposed Parks and Recreation Reservation
C	Other Government Land Mechanism (land owned in freehold by government agencies, Crown Reserves vested in government agencies, unallocated Crown land)

Map 4: Gosnells Remnant Bushland Area 6 (Trudgen and Keighery 1995)



KEY

— Bushland Area boundary

85 Vegetation unit description location

3 floristic plot location

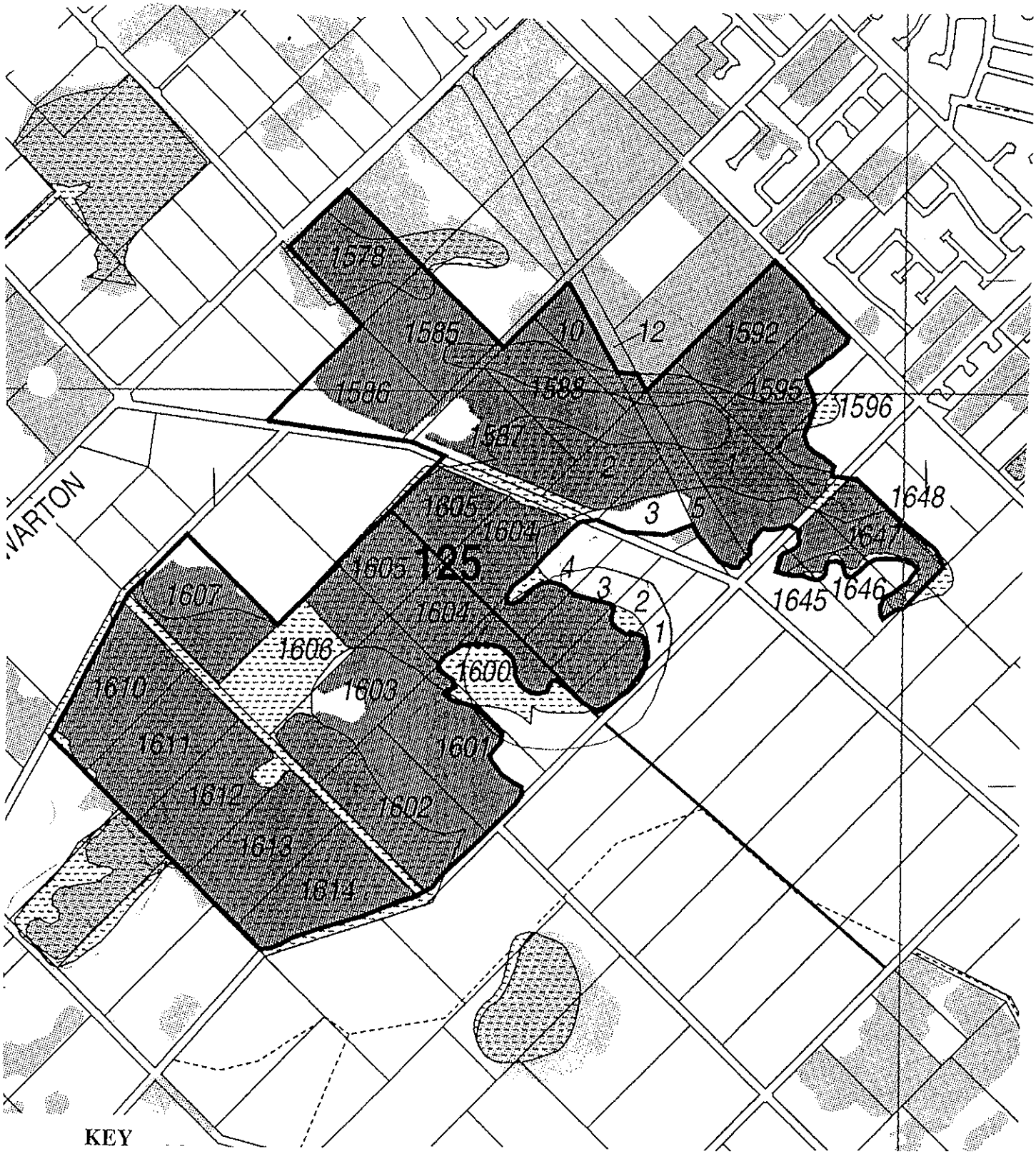
Mapped vegetation units

dn upland vegetation (dune)

ws sumpland vegetation

dl dampland vegetation

Map 5: Perth's Bushplan Site 125 – Holmes Street Bushland, Southern River/Huntingdale (Government of Western Australia 1998)



Bushplan Site boundary
Regionally Significant Bushland
Conservation Category Wetlands
Other Native Vegetation
Bushplan Sites with some existing protection

Department of Environmental Protection
Bush Forever Site 125

Key to Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

General Features

- Bush Forever Site Boundary
- Lot Boundary
- 1585 Lot No.
- Track
- Fence
- Existing made roads
- Building
- x1 Plant Community Description Location (DEP 2001)
- •TK80 Plant Community Description Location (Trudgen & Keighery 1995)
- Cl Cleared

Remnant Vegetation
(Note that the boundaries between upland & wetland communities & individual plant communities are not definitive but represent transitional zones between these communities)

- Upland Vegetation
- Wetland Vegetation
- Upland plant community boundary (dotted lines indicate approximate boundaries)
- Wetland plant community boundary

Condition Rating Scale (Keighery 1994)

- Ex Excellent
- VG Very Good
- G Good
- D Degraded

Key to Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

Plant Communities

Uplands

EmAfOW — *Eucalyptus marginata-Allocasuarina fraseriana* Open Woodland
(over *Patersonia occidentalis, Phlebocarya ciliata & Dasypogon bromeliifolius* Very Open Herbland and *Lepidosperma squamatum & Schoenus rodwayanus* Open Sedgeland)

AfEmOW — *Allocasuarina fraseriana-Eucalyptus marginata* Open Woodland
(over *Acacia pulchella & Adenanthos cygnorum* Open Shrubland over *Amphipogon turbinatus* Very Open Grassland, *Patersonia occidentalis & Blancoa canescens* Very Open Herbland and *Lyginia barbata* Very Open Sedgeland)

BaLOF — *Banksia attenuata* Low Open Forest
(over *Acacia pulchella & Melaleuca thymoides* Open Heath over *Phlebocarya ciliata & Dasypogon bromeliifolius* Herbland)

BaLW — *Banksia attenuata* Low Woodland
(over Mixed Open Low Heath)

BmLW — *Banksia menziesii* Low Woodland
(over *Acacia pulchella & Stirlingia latifolia* Open Shrubland with patches of *eremaea pauciflora* over *Amphipogon turbinatus* Open Grassland, *Patersonia occidentalis* Very Open Herbland and *Lyginia barbata* Very Open Sedgeland)

BLW — *Banksia* Low Woodland
(mixed over storey of *Banksia* spp. over heavily grazed understorey)

MiLW — Mixed Low Woodland
(mixed over storey of *Banksia* spp. and *Allocasuarina fraseriana* over *Melaleuca thymoides & Acacia pulchella* Tall Shrubland mixed Open Low Heath over *Phlebocarya ciliata* Open Herbland)

MiLOW — Mixed Low Open Woodland
(mixed over storey of *Banksia* spp. over *Melaleuca thymoides* Open Shrubland over *Phlebocarya ciliata* and *Dasypogon bromeliifolius* Herbland and *Lyginia imberbis* Very Open Sedgeland)

AcTOSc — *Adenanthos cygnorum* Tall Open Scrub

Wetlands

MpW — *Melaleuca preissiana* Woodland
(over *Regelia ciliata* or *Astartea* aff. *fascicularis* Open Heath)

MpOW — *Melaleuca preissiana* Open Woodland
(over *Astartea* aff. *fascicularis & Acacia pulchella* Closed Heath)

PeRcCH — *Pericalymma ellipticum-Regelia ciliatum* Closed Heath

XpOSh — *Xanthorrhoea preissii* Open Shrubland
(over *Eremaea pauciflora* Low Open Shrubland over *Amphipogon turbinatus* Very Open Grassland, *Patersonia occidentalis* Very Open Herbland and *Lyginia barbata & Schoenus sp.* Open Sedgeland)

XpLOSh — *Xanthorrhoea preissii* Low Open Shrubland
(with scattered emergent *Eucalyptus todtiana, Banksia ilicifolia* and *B. attenuata* over *Phlebocarya ciliata* and *Dasypogon bromeliifolius* Herbland and *Lyginia barbata* Very Open Sedgeland)

WM1 — Wetland Mosaic 1
(deeper wetland with a mosaic of communities including:
- *Melaleuca rhaphiophylla* Closed Tall Scrub over patches of *Melaleuca teretifolia* or *Calothamnus latifolia* Close Heath and *Meeboldina ?coangustata* Closed Sedgeland
- Patches of *Pericalymma ellipticum, Kunzea ericifolia & Regelia ciliata* Closed Tall Scrub and patches of *Astartea* aff. *fascicularis, Acacia pulchella & Calothamnus latifolia* Open Shrubland interspersed with *?Leptocarpus tenax* Closed Sedgeland
- *Melaleuca preissiana* Open Woodland over *Astartea* aff. *fascicularis & Acacia pulchella* Open Heath over *Lepidosperma longitudinale & Meeboldina ?coangustata* Closed Sedgeland)
- *Regelia ciliata* Tall Closed Scrub alternating with *Regelia ciliata* and *Pericalymma elliptica* Closed Heath, both with emergent scattered *Melaleuca preissiana,* over *Schoenus rodwayanus* or *Meeboldina ?coangustata* Very Open Sedgeland)

WM2 — Wetland Mosaic 2
(deeper wetland with a mosaic of communities including:
- *Melaleuca viminea* Tall Open Scrub over *Triglochin lineare* Very Open Herbland
- *Melaleuca incana & Melaleuca leptoclada* Open Heath over *Chaetanthus aristatus* Open Sedgeland
- *Hakea varia* Tall Open Shrubland over *Melaleuca incana & Melaleuca leptoclada* Open Heath
- *Melaleuca rhaphiophylla & Melaleuca preissiana* Tall Shrubland over *Meeboldina ?coangustata* Sedgeland
- *Melaleuca preissiana* Open Woodland over *Astartea* aff. *fascicularis & Acacia pulchella* Closed Heath)

SlS — Slashed Sedgeland
(wetland modified by frequent slashing, contain a mosaic of communities including:
- *Schoenus rodwayanus* Closed Sedgeland
- *Phlebocarya ciliata* Very Open Herbland and *Lyginia barbata* and *Lepidosperma longitudinale* Closed Sedgeland
- *Baumea vaginalis, Lepidosperma longitudinale & Meeboldina ?coangustata* Sedgeland)

Mapping for the North-East Section)

Department of Environmental Protection
Bush Forever Site 125 K. Clarke & B. J. Keighery. October, 2001

Notes 14/07/03 BJK&JGB

New wetland identified Clarke et al 2001 = Cons. Cat

Conservation category after Clarke et al (2001)

Resource Enhancement after Clarke et al 2001

additional clearing denoted for fire work (see for details)

Public Open Space

Plantings

8/07/03 Additional clearing into Bush Forever Site by WCC for works.

Garden St

Harpenden

Gay St

(Balfour St)

Holmes St

TK83

TK84

TK85

TK86

TK87

1592

1595

1596

1588

1587

1647

1646

1645

10

1

2

3

4

5

C1

x20

x21

x3

x17

x18

x24

x2

5x

46x

49

16

x1

Ba LW Ex-VG 12

PeRcCH Ex-VG

XpOSh Ex-VG

BLW G-D

BLW G-VG

MpW G-D

MiLOW Ex-VG

WMI Ex-VG

SlS VG-Ex

XpLOSh VG-Ex

MiLOW VG

MiLOW VG-G

VG-G MiLOW

Excavated Wetland Areas

Recent Clearing

8/07/03 Edge Inspection Clearing ongoing in these remnants, understorey being removed by ?grazing, ?active clearing Lot 1587.

8/07/03 Clearing evident in 1588 (lot) rose in this Section Lot 2

Observed 8/07/03 Some edge possible some grazing clearing at Lot 2. areas

Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125. Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

n Forever Site 125 – cludes Preliminary

nvironmental Protection
e 125 K. Clarke & B. J. Keighery. October, 2001

Holmes Stre
Mapping for the N

Notes 14/07/03 BJK & JW

New wetland identified Clarke et al 2001 = Cons. Cat

Conservation Category after Clarke et al (2001)

Resource Enhancement after Clarke et al 2001

8/07/03 Track widened for sewerage (WCC/Bio, details) additional clearing

8/07/03 Additional clearing into Bush Forever Site by WCC for works.

Warton Rd

Garden St

Harpenden

Gay St

Holmes Stre

Public Open Space

Plantings

Public Open Space

Excavated Wetland Areas

Recent clearing

TK80 1578 MpOW Ex-VG

TK81

TK82

TK83

TK84

TK85

TK86

TK87

WM2 Ex-VG

EmAfOW

AfEmOW VG 1585

XpOSh Ex-VG

PeRcCH Ex-VG

BaLW Ex-VG 12

1592

1595

1588

1587

1586

MpW Ex-VG

MpW +11 Ex-VG +12 MiLW

Ex-VG BaLOF +19

AcTOSc G-D +22

BLW G-D

BLW G-VG

MpW G-D

MiLOW VG

MiLOW Ex-VG

WM1 Ex-VG

SrS VG-Ex 2 +24

XpLOSh VG-Ex +2

MiLOW VG-G

Holmes St

8/07/03 Edge Inspection Clearing ongoing in Rose removals, understorey being removed by ?grazing, ?active clearing Lot 1587.

8/07/03 Clearing evident in 1588 (Lot) edge in this section Lot 2

Observed 8/07/03 from edge possible horse grazing clearing at Lot 2.

Map 6: Vegetation Map for the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale (includes Preliminary Mapping for the North-East Section)

N 0 50 100m

Scale 1:3,000

Department of Environmental Protection
Bush Forever Site 125 K. Clarke & B. J. Keighery. October, 2001

BUSH FOREVER 125
2001 AERIAL PHOTOGRAPHY
CONTOURS & CADASTRE

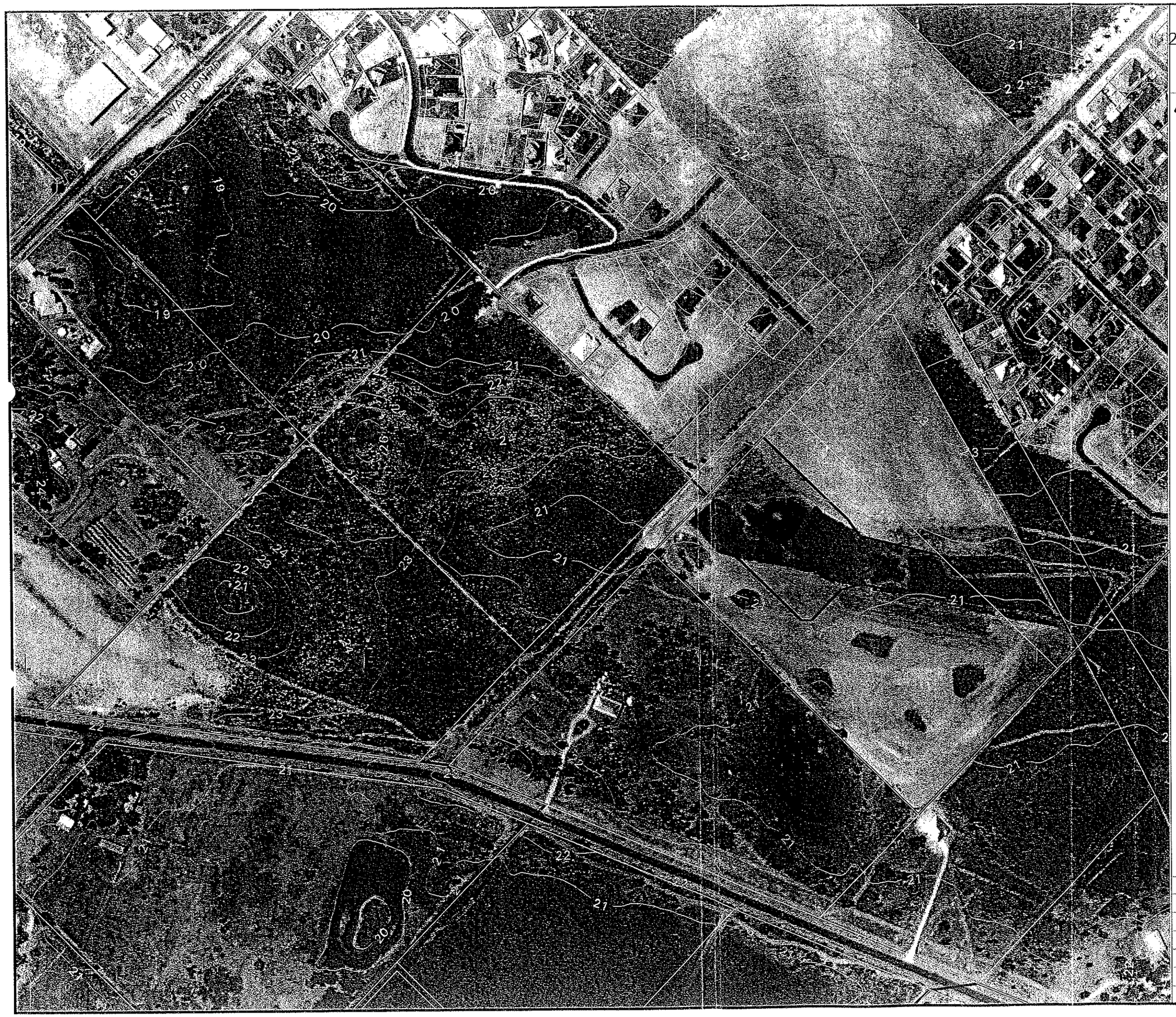
Bush Forever 2000 - Site Boundaries

Cadastre

Contours - 1m (DOLA)

Map 2: Year 2001 Aerial Photograph of the Northern Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale

Map Ident: plot010913_1
Prepared By: Andrea Zappacosta
Prepared For: KAREN CLARKE
Date: 13 Sep 2001
Scale 1:5000
0 125 m
DPI INTERNAL USE ONLY



BUSH FOREVER 125
2001 AERIAL PHOTOGRAPHY
CONTOURS & CADASTRE

Bush Forever 2000 - Site Boundaries

Cadastre

Contours - 1m (DOLA)

Map 3: Year 2001 Aerial Photograph of the North-West Section of Bush Forever Site 125 – Holmes Street Bushland, Southern River/ Huntingdale

Map Ident: plot010913_2
Prepared By: Andrea Zappacosta
Prepared For: KAREN CLARKE
Date: 13 Sep 2001
Scale 1:3000
0 50 m
DPI INTERNAL USE ONLY

DRAFT PERTH'S BUSHPLAN -

DETAILED ASSESSMENT OF VALUES FOR A NEGOTIATED PLANNING SOLUTION

BUSHPLAN SITE 125 -
Holmes Street Bushland,
Southern River/Huntingdale

Department of Environmental Protection
K. Clarke and B. Keighery
April 2000

20/4/00

SUMMARY

The regionally significant bushland in Bushplan Site 125 is identified that is worthy of inclusion in Perth's Bushplan (Map 2) as a representative of the Southern River Vegetation Complex. The bushland consists of a variety of Banksia woodlands and wetland communities. The vegetated wetlands are typical of the eastern Southern River vegetation complex.

The site is at the interface between the Bassendean Dunes and Pinjarra Plain landforms and supports vegetation elements of both. This Bushplan Site is subject to the Swan and Canning Rivers Environmental Protection Policy, mapped conservation category wetlands that incorporate both the sumplands and damplands occur across much of the site (Map 1). The majority of the Bushplan Site is also a Category One Area under the Middle Canning Catchment Study (Evangelisti & Associates, 1995).

The area to the north of Holmes Street is constrained by its urban zoning under the Metropolitan Region Scheme (MRS) and is subject to a negotiated planning solution, much of this land is privately owned (Map 1). Subdivision approval subject to environmental conditions has been granted for Lots 10 and 1588 Harpenden St. Harpenden St is planned to extend south through to Holmes St. Lots 5 and 12 are zoned Other Regional Roads for Garden St. The Main Roads Department plan to construct Garden St north-west to south-east across the site. Lot 1592 is zoned Public Purposes for the future development of a high school and Lots 1645 - 1647 are zoned for Private Recreation.

The remainder of the site, south of Holmes St, is zoned Rural and hence is not subject to a negotiated planning solution (Map 1). Complimentary mechanisms are proposed under Bushplan for protection of Rural zoned areas. The large sumpland area covering the northern part of the Rural zoned area is known as the Holmes-Balfour Wetland.

BACKGROUND

The area within which BS 125 is located has been the subject of several studies to date.
A botanical survey of the whole site was undertaken in 1995 by Trudgen & Keighery (1995, Gosnells Remnant Bushland Area Six) and floristic plots were placed in Lots 10, 1607 and 1610 during this survey (Plots Gosn 2–5, 12–13). The Middle Canning Catchment Study (Evangelisti & Associates, 1995) identified the majority of the site as a Category One Area where no development should be permitted.

An assessment of the whole site was also undertaken in 1999 using the Muir Rapid Habitat Assessment System (MRHAS) (Muir Environmental 1999). This study was commissioned by the Ministry for Planning to provide additional information on the Bushplan Sites in the area of the Southern River-Forrestdale-Brookdale-Wungong Draft Structure Plan. However, this review was based on the Muir Rapid Habitat Assessment System (MRHAS). This seldom used system is biased towards scoring woodlands of highest value due to the emphasis it places on the provision of a range of habitats for fauna. While this in itself may be valid for assessing fauna conservation values it provides only a small amount of the information required to address the selection criteria of Perth's Bushplan. The criteria of Bushplan are based on a range of parameters assessed across the whole Swan Coastal Plain portion of the Perth Metropolitan Region. This is particularly evident in relation to the clay-based sumplands in BS 342, which are a Threatened Ecological Community. They receive low scores under the MRHAS assessment method because they are shrub-dominated wetlands and their diversity of habitat is low. Thus, this report does not use a methodology that provides the data required to assess regional significance for the selection of protected

areas to achieve a comprehensive representation of the original biological diversity of a region.

Visits by DEP during 1998 and 1999 confirmed that the bushland in the Lots to the south of Holmes St and in Lots 10 & 1588 to the north had generally retained its condition since the Trudgen and Keighery (1995) study. Some Lots were not visited but the assumption was made that these have also retained the same condition ratings. Some areas have been subject to clearing but generally the diversity of species evident in the regrowth and the absence of weeds indicates that the condition observed by Trudgen and Keighery (1995) will be achieved once regeneration occurs. Similarly areas burnt since 1994/95 are regenerating well and will also return to the condition observed in 1994/95 during the Trudgen and Keighery (1995) assessment. Several small areas that have been both burnt and cleared cannot be expected to return to Good or better condition without active and expensive management. These small areas do not support regionally significant vegetation at present. However, they still retain some values as part of a wetland system.

Significance of Bushplan Site 125

The diversity of flora, vegetation and wetlands in Bushplan Site 125 is related to the location of the area on the interface between the Bassendean Dune System and the Pinjarra Plain. This Bushplan Site contains sandy clay and some small areas of clay based wetlands typical of the eastern side of the Swan Coastal Plain interspersed with shallow and deep sand dune ridges supporting a variety of *Banksia* Woodlands. Fauna studies have not been done in the Site but considering the diversity of habitats, the frequency of the interface between wetlands and uplands and the size of the area the Site would be expected to support a highly diverse fauna.

Purpose of this study

Bushplan Site 125 is a very significant site; it is one of the largest remaining areas of the Southern River Vegetation Complex. In conservation terms any reduction in the size of the Site cannot be justified. However the Lots to the north of Holmes St have primarily been zoned Urban and Perth's Bushplan recommends that such areas undergo a Negotiated Planning Solution. As a consequence this study considers the flora, vegetation and wetlands of these Lots with the aim of identifying the relative value of specific vegetation and wetland units. This 'ranking' can then be used to negotiate boundaries.

The areas to the south of Holmes St are also considered on a Lot by Lot basis with particular regard to illegal clearing that has been occurred recently and to determine whether boundary adjustments are required in relation to the current condition of the lots.

To supplement the existing information on BS 125 a field inspection was made on 2/12/99 by Bronwen Keighery and Bridget Hyder-Griffiths (DEP), Catherine Thomson (MfP) and Melissa Patt and Natasha Hyde (WRC). Approximately three hours were spent traversing the bushland by foot and vehicle. As a detailed assessment had already been undertaken by Trudgen & Keighery (1995) the field inspection aimed to determine whether condition ratings needed to be revised, especially due to recent burning and clearing activities. Being December there were relatively few plants flowering and annually renewed plants were dormant. Therefore, vegetation condition assessments may be subject to revision on a mid/late spring inspection.

FLORA, VEGETATION AND WETLANDS

Vegetation

The vegetation of the study area is described below and is a complex of uplands (*Banksia* Woodlands), sumplands and damplands. The majority of the area within the Bushplan Site is naturally vegetated. Map 2 shows the distribution of these uplands, sumplands and damplands.

Uplands

- Low Open Woodlands to Low Closed Forests dominated by combinations of *Banksia attenuata, B. menziesii, B. ilicifolia* and *Allocasuarina fraseriana*
- *Eucalyptus calophylla, E. marginata* and *Allocasuarina fraseriana* Woodland to Open Forest
- *Banksia attenuata, B. menziesii, B. ilicifolia, Eucalyptus marginata* and *Allocasuarina fraseriana* Low Woodland to Low Open Forest
- *Banksia attenuata, B. menziesii* and *Eucalyptus todtiana* Low Woodland to Low Open Forest

Wetlands: Damplands and Sumplands

- Low Open Woodlands to Low Woodlands dominated by combinations of *Melaleuca preissiana, Eucalyptus todtiana, Allocasuarina fraseriana, Banksia attenuata* and *Nuytsia floribunda*; *Melaleuca preissiana*
- *Melaleuca preissiana* Low Open Woodland to Low Open Forest
- *Melaleuca rhaphiophylla* Low Open Woodland to Low Open Forest
- *Melaleuca incana, M. viminea* and *M. rhaphiophylla* Low Open Forest
- *Melaleuca rhaphiophylla* and *M. viminea* Low Open Woodland to Open Woodland
- *Regelia ciliata* Closed Heath to Closed Tall Scrub
- *Pericalymma ellipticum* Closed Heath
- *Astartea* sp. Brixton Street and *Regelia ciliata* Shrubland to Open Heath
- *Hypocalymma angustifolium* and *Melaleuca* sp. B Low Open Heath
- *Evandra pauciflora* Closed Sedgeland

The majority of the vegetation is in Very Good to Excellent condition. Table 1 summarises on a Lot by Lot basis the condition of the vegetation in the areas that have been visited with information on any past clearing or other disturbance factors that have occurred.

Flora

From the work completed to date it is estimated that greater then 200 taxa occur on BS 125. Among these are a number of significant flora including two species of Declared Rare Flora.

The significant flora that have been found on BS 125 to date are: *Diuris purdiei* (R),*Caladenia huegelii* (R), *Acacia lasiocarpa* var. *bracteolata* (1), *Schoenus benthamii* (3), *Villarsia violifolia, Jacksonia gracilis, Blancoa canescens, Hensmania turbinata* and *Byblis gigantea*

DETAIL OF THE SELECTION CRITERIA

Representation of ecological communities

Vegetation Complexes

Combinations of Bassendean Dunes/Pinjarra Plain
Southern River Complex

Floristic Community Types:

Supergroup 2: Seasonal Wetlands

4	*Melaleuca preissiana* damplands
S3	Wet sedgelands on sandy clays (most southerly occurrence)

Supergroup 3: Uplands centred on Bassendean Dunes

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

Diversity
Vegetation Associations: 3 units (floristic community types) identified to date and 14 structural units described (Trudgen and Keighery 1995)
Species: >200 native taxa (estimated, DEP 1998)

Rarity
Flora: *Diuris purdiei* (R),*Caladenia huegelii* (R), *Acacia lasiocarpa* var. *bracteolata* (1), *Schoenus benthamii* (3), *Villarsia violifolia*, *Jacksonia gracilis*, *Blancoa canescens*, *Hensmania turbinata* and *Byblis gigantea* (Trudgen and Keighery 1995)
Fauna: multiple surveys (Submission no. 169) for birds (61). Significant bird species: category 1 (1), category 3 (11) and category 4 (2). Good assemblage of ducks and waterbirds, including 15 breeding species. Breeding site for Freckled Duck (Payne, 1993). Significant mammal species: Quenda (Friend, 1996)

Scientific or evolutionary importance
Location of floristic plots. Eastern side of the Plain communities complex and relatively poorly known.

General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation
Diversity of wetland types (sumpland, dampland), floristic units, vegetation structural units and as a consequence habitat types related to the variety of bases - clay/sands and humus rich sands

LINKAGE
Adjacent bushland to the north and west; part of proposed Greenway (Tingay Alan & Associates, 1997); part of a regionally significant fragmented bushland/wetland linkage (Volume 2A, Map 8)

OTHER SPECIAL ATTRIBUTES
Recommended to be protected with the purpose of conservation of nature and recreation compatible with the conservation of nature in study of bushland in the City of Gosnells (Trudgen & Keighery, 1995), majority of Bushplan Site Category One Area Middle Canning Catchment Study (Evangelisti & Associates, 1995)

COMMENTS ON POSSIBLE BOUNDARIES

Map 3 shows the new boundary proposed for the rural zoned areas south of Holmes St along with several options for the proposed boundary for the urban zoned areas north of Holmes St. Several sections of Lots 1, 2, 1600 and 1601 (in the rural zoned section) have been determined to not support regionally significant vegetation (see Map 2& 3 and Table 1). That is while part of the adjacent wetland continues to support regionally significant

vegetation the areas marked (see Map 2& 3) have been severely degraded by past clearing activities and are unlikely to regenerate.

Option A - Protection of the majority of the Bushplan Site
Rationale: As previously outlined this Bushplan Site is of outstanding conservation value. Thus, the first option is to protect the entire Bushplan Site. The vegetation bordering Holmes St on Lot 1587 is of a lower quality than that on adjacent Lots, however, it retains important functions within the Site and has been included to link the western and eastern areas north of Holmes St. The wetlands are mostly Conservation Category and/or Category One Area Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995).

This Option is clearly the preferred one from a conservation perspective as it fully protects the regionally significant vegetation remaining in the area. It aims to protect one of the few remaining large areas of Southern River Vegetation Complex in a single consolidated block, within boundaries that will minimise future (ongoing) management costs and impacts. This is the option supported by the Water and Rivers Commission (Appendix 1).

It must be noted that any development of Bushplan Site 125 will involve filling wetlands and/or the clearance of regionally significant vegetation. Lots 10 and 1588 Harpenden St have already been given subdivision approval though they have conservation values that are of regional significance given their condition and location in the core area of BS 125. The upland vegetation on Lot 10 is in excellent-'pristine' condition and is amongst the best quality vegetation on the whole site (Trudgen & Keighery 1995). The proposed Public Open Space for the subdivision is shown on Map 3. The larger area incorporates the wetland and parts of the seasonal dampland present on the two Lots, in addition there is a small area of dampland proposed for Public Open Space in the south-east corner of Lot 1588. The City of Gosnells has made a submission to the WA Planning Commission (City of Gosnells 1999) proposing modification of this subdivision design with POS boundaries that retain the wetland plus a corridor of vegetated dampland from Lot 1585 across Lots 10 and 1588 to Lots 12, 14 and Lot 1 Balfour Street. This would be preferable from a conservation perspective over the design currently approved. If, for any reason, Lots 10 and 1588 are not developed it is imperative that they be included in BS 125 as they are a key element of the conservation value of the site.

At present it is proposed to extend Garden St through the dunes, dampland and wetland of the eastern block. This will severely compromise the conservation value of BS 125 as the eastern block is a core area of the site in very good condition, incorporating a range of vegetation types and habitats for fauna. None the less, Option A retains the highest level of representation of the high value bushland in the urban zoned area and maintains significant linkage between eastern and western blocks. This is the preferred option

If it is not possible to protect the entirety of the regionally significant vegetation in the urban zoned areas of BS 125 there are several other options that take into consideration

- protection of consolidated areas of regionally significant vegetation,
- existing development approvals and road alignments,
- linkage and
- wetland configuration.

Option B
Rationale: This option protects the consolidated block of regionally significant vegetation to the west of the proposed extension of Harpenden St through to Holmes St and the maximum area of vegetation to the east of Lots 10, 1588 and 1587. Both Perth's Bushplan and Muir (1999) identify the western block as of high conservation value and good

sustainability. If the western block is consolidated as shown in Map 3 it will be large enough to remain viable in the long term, lowering management costs.

Given the very high conservation value of this remaining area of Southern River Vegetation Complex the development of Garden St should be seriously reconsidered if possible.

Option C
Rationale: This option accommodates the development of Garden St along its currently proposed alignment. It consolidates the area to the east of Garden St. This is not the preferred option on conservation grounds.

REFERENCES
(Unlisted references can be found in Draft Perth's Bushplan Volume 2B)

Atkins K.J. 1999 Declared Rare and Priority Flora List for Western Australia. Department of Conservation and Land Management. 20 December 1999.

City of Gosnells 1999 Letter from David Ritchings, Manager Planning Services, City of Gosnells to Western Australian Planning Commission, dated 30 August 1999.

DEP 1999 Perth's Bushplan Survey 1999. Unpublished bushland plot and area records. Department of Environmental Protection, Perth Western Australia.

Muir Environmental 1999 Independent Review of Conservation Values - Eight Bushplan Sites in the Gosnells Forrestdale Area.

APPENDIX 1: WRC ADVICE REGARDING WETLANDS IN BS 125

WATER AND RIVERS COMMISSION

YOUR REF
OUR REF 12123
ENQUIRIES Melissa Patt
DIRECT TEL (08) 9278 0451

DEPARTMENT OF ENVIRONMENTAL PROTECTION
RECORDS SECTION
19 APR 2000
FILE No PC046
NAME K CLARKE
FILE No
NAME

Karen Clarke
Department of Environmental Protection
Westralia Square
141 St Georges Terrace
PERTH WA 6000

Dear Karen

Re: DETAILED ASSESSMENT OF BUSHPLAN SITE NO. 125 – HOLMES STREET BUSHLAND, SOUTHERN RIVER/HUNTINGDALE.

Thankyou for allowing the Water and Rivers Commission the opportunity to comment on the outstanding values of Holmes Street bushland, Southern River/Huntingdale.

Officers of the Commission undertook a site visit on the 2nd December 1999 with officers from the Department of Environmental Protection and officers from the Ministry for Planning. The visit was to assess the site for suitability for inclusion into Bushplan. Having completed the site assessment, the Commission feels that the extent, type and condition of the vegetation would warrant the site having Conservation Category status and would support Option A.

This is further warranted by the recognition of the significance of the site, it being one of the largest remnants remaining that represents the Southern River Vegetation Complex and expected to support a highly diverse fauna. The wetlands are mostly Conservation Category and were shown as Category One in the Middle Canning Catchment Study.

The Commission would not support any development on Bushplan 125 involving any filling or clearing of the wetlands. In terms of conservation of biodiversity and representation, any reduction in area of the wetland will be deleterious.

The Commission would support a recommendation for the inclusion of the Holmes Street bushland, Southern River/Huntingdale into Bushplan.

Yours sincerely

Sharon Stratico
WETLANDS PROGRAM COORDINATOR
CATCHMENT AND WATERWAYS MANAGEMENT BRANCH
17th April 2000

HYATT CENTRE 3 PLAIN STREET EAST PERTH WA 6004
PO BOX 6740 HAY STREET EAST PERTH WA 6892 TEL (08) 9278 0300 FAX (08) 9278 0301
EMAIL ADDRESS correspondence@wrc.wa.gov.au
NATIONAL RELAY SERVICE (AUSTRALIAN COMMUNICATION EXCHANGE) 132 544
MANAGING AND PROTECTING WESTERN AUSTRALIA'S MOST VITAL RESOURCE

153429

APPENDIX 2: SITE DESCRIPTION

HOLMES STREET BUSHLAND, SOUTHERN RIVER/HUNTINGDALE

Boundary Definition: bushland (part taken to cadastre) boundary

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 125 **Map no.** 69

Other Names
Submission Area 215; part Gosnells remnant bushland area 6 [Trudgen & Keighery, 1995 #393]

Local Authorities (Suburb)
City of Gosnells (Southern River, Huntingdale)

Ownership Categories
Private (including commercial organisation), Local Government, State Government, Not identified

Map sheet series ref. no. 2033–I NE

Area (ha): total 149.8; bushland 132.5

Zoning
MRS: Urban, Rural, Urban Deferred, Important Regional Roads, Private Recreation, Public Purposes-High School
TPS: Rural, Landscape, Parks and Recreation, Residential A

Lot/Location/Reserve numbers (Purpose), Street name
1, 2, 3, 4, 5, 1586, 1587, 1604, 1605, 1645 Holmes St; 1578 Warton Rd; 0, 1, 1596, 1600, 1601, 1602, 1614, 1646, 1647, 1648 Balfour St; 10, 12, 1585, 1588 Harpenden St; 1592, 1595 Gay St; 1607, 1610 Lakey St; 1603, 1606, 1611, 1612, 1613 Barrett St; Road

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS
Bassendean Dunes
Bassendean Sands (Qpb: S8)
Bassendean Dunes/Pinjarra Plain
Bassendean Sands over Guildford Formation (Qpb/Qpa:S10)
Wetlands (within the Bassendean Dunes/Pinjarra Plain)
Holocene Swamp Deposits (Qrw: Sp1, Sp2)

VEGETATION AND FLORA
Vegetation Complexes
Combinations of Bassendean Dunes/Pinjarra Plain
Southern River Complex
Floristic Community Types
Supergroup 2: Seasonal Wetlands
4 *Melaleuca preissiana* damplands
S3 Wet sedgelands on sandy clays (most southerly occurrence)
Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau
23a Central *Banksia attenuata — B. menziesii* woodlands

WETLANDS
Wetland Types: sumpland, dampland
Natural Wetland Groups
Bassendean—Pinjarra transition OR Bassendean with fluvial features
Bennett Brook (B/P.4)
Wetland Management Objectives: Conservation (95.8ha), Resource Enhancement
Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES
Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated wetland, vegetated uplands

Vegetation and Flora: limited survey (Trudgen & Keighery, 1995) (Gosn 2–5, 12–13); part Bushplan Site (DEP, 1998); part Bushplan Site (DEP, 1999)

Structural Units: mapping ([Trudgen & Keighery, 1995 #393] (Gosn 2–5, 12–13))

Uplands: Low Open Woodlands to Low Closed Forests dominated by combinations of *Banksia attenuata, B. menziesii, B. ilicifolia* and *Allocasuarina fraseriana*; *Eucalyptus calophylla, E. marginata* and *Allocasuarina fraseriana* Woodland to Open Forest; *Banksia attenuata, B. menziesii, B. ilicifolia, Eucalyptus marginata* and *Allocasuarina fraseriana* Low Woodland to Low Open Forest; *Banksia attenuata, B. menziesii* and *Eucalyptus todtiana* Low Woodland to Low Open Forest

Wetlands: Low Open Woodlands to Low Woodlands dominated by combinations of *Melaleuca preissiana, Eucalyptus todtiana, Allocasuarina fraseriana, Banksia attenuata* and *Nuytsia floribunda*; *Melaleuca preissiana* Low Open Woodland to Low Open Forest; *Melaleuca rhaphiophylla* Low Open Woodland to Low Open Forest; *Melaleuca incana, M. viminea* and *M. rhaphiophylla* Low Open Forest; *Melaleuca rhaphiophylla* and *M. viminea* Low Open Woodland to Open Woodland; *Regelia ciliata* Closed Heath to Closed Tall Scrub; *Pericalymma ellipticum* Closed Heath; *Astartea* sp. Brixton Street and *Regelia ciliata* Shrubland to Open Heath; *Hypocalymma angustifolium* and *Melaleuca* sp. B; Low Open Heath; *Evandra pauciflora* Closed Sedgeland

Scattered Native Plants: not assessed

Vegetation Condition: >80% Excellent (some areas considered Pristine, [Trudgen & Keighery, 1993 #386]), <20% Very Good to Good, with areas of severe localised disturbance

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

Significant Flora: *Diuris purdiei* (R), *Caladenia huegelii* (R), *Acacia lasiocarpa* var. *bracteolata* (1), *Schoenus benthamii* (3); *Villarsia violifolia, Jacksonia gracilis, Blancoa canescens, Hensmania turbinata* [Trudgen & Keighery, 1995 #393]

Fauna: multiple surveys (Submission no. 169) for birds (61). Significant bird species: category 1 (1), category 3 (11) and category 4 (2). Good assemblage of ducks and waterbirds, including 15 breeding species. Breeding site for Freckled Duck [Payne, 1993 #314]. Significant mammal species: Quenda [Friend, 1996 D #443]

Linkage: adjacent bushland to the north and west; part of proposed Greenway [Tingay Alan & Associates, 1997 #378]; part of a regionally significant fragmented bushland/wetland linkage (Volume 2A, Map 8)

Other Special Attributes: recommended to be protected with the purpose of conservation of nature and recreation compatible with the conservation of nature in study of bushland in the City of [Trudgen & Keighery, 1995 #393], majority Bushplan Site Category One Area Middle Canning Catchment Study [Evangelisti & Associates, 1995 #132]

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

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

Opportunities and/or Constraints

Opportunities: Bushplan Site/part Bushplan Site subject to Swan and Canning Rivers EPP; location of Declared Rare Flora and Scheduled Fauna, conservation category wetlands; under TPS Parks and Recreation Zoning and Landscape Zoning

Constraints: private land; under MRS Urban Zoning and Urban Deferred Zoning, MRD regional road requirements

Recommendation: The most appropriate mechanism for the protection of this Bushplan Site be considered through the public comment period in consultation with the land owner(s). Note that environmental conditions apply to part of Bushplan Site (Lots 1588 and 10 Harpenden St)

APPENDIX 2: SITE DESCRIPTION

HOLMES STREET BUSHLAND, SOUTHERN RIVER/HUNTINGDALE

Boundary Definition: bushland (part taken to cadastre) boundary

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 125 **Map no.** 69

Map sheet series ref. no. 2033–I NE

Other Names
Submission Area 215; part Gosnells remnant bushland area 6 [Trudgen & Keighery, 1995 #393]

Area (ha): total 149.8; bushland 132.5

Local Authorities (Suburb)
City of Gosnells (Southern River, Huntingdale)

Zoning
MRS: Urban, Rural, Urban Deferred, Important Regional Roads, Private Recreation, Public Purposes-High School
TPS: Rural, Landscape, Parks and Recreation, Residential A

Ownership Categories
Private (including commercial organisation), Local Government, State Government, Not identified

Lot/Location/Reserve numbers (Purpose), Street name
1, 2, 3, 4, 5, 1586, 1587, 1604, 1605, 1645 Holmes St; 1578 Warton Rd; 0, 1, 1596, 1600, 1601, 1602, 1614, 1646, 1647, 1648 Balfour St; 10, 12, 1585, 1588 Harpenden St; 1592, 1595 Gay St; 1607, 1610 Lakey St; 1603, 1606, 1611, 1612, 1613 Barrett St; Road

SECTION 2: REGIONAL INFORMATION

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Bassendean Dunes
Bassendean Sands (Qpb: S8)

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

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

VEGETATION AND FLORA

Vegetation Complexes

Combinations of Bassendean Dunes/Pinjarra Plain
Southern River Complex

Floristic Community Types

Supergroup 2: Seasonal Wetlands
4 *Melaleuca preissiana* damplands
S3 Wet sedgelands on sandy clays (most southerly occurrence)

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

WETLANDS

Wetland Types: sumpland, dampland

Natural Wetland Groups

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

Wetland Management Objectives: Conservation (95.8ha), Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

Table 1:- Summary of information available on an individual Lot basis for Bushplan Site 125 (after Trudgen and Keighery 1995, DEP 1998 & 1999)

Lot	MRS Zoning	Condition Ratings/Observations/History (Site numbers refer to those in Trudgen & Keighery 1995)
		North of Holmes St
1 N	Urban	
2 N	Urban	
3 N	Urban Deferred	
5 N	Other Regional Road	
10	Urban	Upland-excellent to pristine (Site 78), floristic plot established. NW corner cleared 1998/99.
12	Other Regional Road	
1578	Urban	Sumpland-very good (Site 79), Dampland-very good to excellent except for burnt eastern section which is good to very good and will return to very good to excellent if not burnt again too soon. (Sites 80, 81 & 82).
1585	Urban	
1586	Urban	
1587	Urban	Most of site cleared, patches of remnant vegetation remain
1588	Urban	
1592	Public Purposes - High School	
1595	Urban	Dampland-very good (Site 85)
1596	Urban	Dampland-very good (Site 86)
1645	Private Recreation	
1646	Private Recreation	
1647	Private Recreation	Dampland-very good (Site 87)
		South of Holmes St
1 S	Rural	Completely degraded-degraded
2 S	Rural	Degraded-completely degraded
3 S	Rural	Being grazed but few weeds present
4 S	Rural	Vegetated wetland area excluded from Bushplan a *Melaleuca* thicket with >70% weed understorey
1600	Rural	Burnt and cleared, degraded-completely degraded
1601	Rural	Dampland-very good to excellent (Site 88). Upland-very good (Site 90), partially cleared & burnt in 1999, occasional weeds but will regenerate to previous condition (except for area immediately behind house (see Map 2) which is degraded to completely degraded).
1602	Rural	Dampland-very good to excellent (Site 89), very good (sites 91, 92, 93 & 94). Burnt recently (1999?), patch of veldt grass at back of Lot, 10-30% cover. Upland vegetation condition variable.
1603	Rural	Dampland-very good (Site 95). Patches of veldt grass directly behind house, wetland in NE corner of Lot partially cleared and dug out.
1604	Rural	Sumpland-northern half: very good to excellent (Site 97), southern half - excellent (Site 98). Burnt recently (1999?) but still in very good condition and will recover, band of veldt grass about 20m wide where Lot fronts onto Holmes St
1605	Rural	Burnt recently but in very good condition.
1606	Rural	
1607	Rural	Dampland-varies from excellent to very good (Sites 27, 28, 29, 30,

Trudgen & Keighery, 1995

Site 78. Gentle dune slope. Grey sand. The site had not been burnt for more than fifteen years. Weed invasion was very low with *Briza maxima, *Gladiolus caryophyllaceus and *Ursinia anthemoides recorded in the vegetation and *Ehrharta calycina along the firebreak. There were numerous scratchings, but no rabbit droppings. The site was assessed as in excellent to pristine condition. Associated species included Bossiaea eriocarpa, Petrophile linearis, Schoenus sub-bulbosus, Burchardia umbellata, Hypolaena exsulca, Macrozamia reidlei, Calytrix fraseri, Acacia pulchella, Amphipogon turbinatus, Loxocarya flexuosa, Hensmannia turbinata, Gompholobium tomentosum, Petrophile linearis, Dasypogon bromeliaefolius, Phlebocarya filifolia, Hibbertia subvaginata, Patersonia occidentalis, Eriostemon spicatus, Thysanotus multiflorus and Leucopogon conostephioides.

Lot 10 (now cleared)

Desc Banksia attenuata, Banksia menziesii, Banksia ilicifolia, Eucalyptus marginata, Allocasuarina fraseriana low woodland to low open forest over Xanthorrhoea preissii open shrubland to shrubland over Gompholobium tomentosum, Bossiaea eriocarpa, Conostephium pendulum low shrubland to low open heath over Phlebocarya ciliata, Dasypogon bromeliaefolius, Lyginia barbata, Loxocarya flexuosa herbland/sedgeland.

Loc. 15 = Site 79. Very slight slope at the edge of a seasonal wetland (below a Melaleuca preissiana unit). Grey sand with clayey, humus rich surface. Has been inundated and the soil was still wet when surveyed (13/12/94). Burnt about five years ago (adjoining areas burnt ca. one year ago). Weed invasion was very low except next to Warton Road, species recorded were *Hypochaeris glabra, *Juncus bufonus and *Polypogon monspielensis. Although the stand is still less than full height (especially the Melaleuca rhaphiophylla which would form an overstorey although, because of the heavy soils this would be a tall shrub layer rather than a tree layer - as in site 80). The stand was assessed as in very good condition (if not burnt this stand would return to excellent condition). Associated species included Stylidium dichotomum, Stylidium longitubum (a priority species), Cotula coronopifolia, Goodenia pulchella, Lepidosperma longitudinale, Isolepis cernua, Melaleuca teretifolia, *Agrostis avenacea, Isolepis marginata, Siloxerus humifusus, Cassytha glabella and aquatic species (dried out). The area assigned to this "unit" has quite varied vegetation and if it had not been burnt would have been divided into several units in a more detailed study. Variation included areas with a Cyathochaete avenacea sedge layer and a different Melaleuca species co-dominant.

PB Lot 1578

Desc. Melaleuca rhaphiophylla, Melaleuca viminea high mallee shrubland to open scrub.

Site 80. Floor of a seasonal wetland. Humus rich surface (over sand?). Not burnt for more than fifteen years. Weed invasion was very low with one grass species recorded in the stand although, there were more weeds next to Warton Road on fill material. There is an old track throught the stand but it is not very intrusive visually (you have to look to see it although it has not grown over). There were rabbit dropings but no diggings. The site was assessed as in very good to excellent condition. Asociated species recorded were Cotula coronopifolia, Melaleuca leptoclada and annual sedges. There were also the dried out remnants of aquatic species.

PB Lot 1602 1578

Astartea sp. Brixton Street, Regelia ciliata shrubland to open heath over Leptocarpus diffusus sedgeland.

Site 81. Dampland on gentle lower slope of dune next to seasonal wetland (also extends between two dune sto the south-east of the wetland). Grey sand. Burnt about two years ago. Weed invasion was very low, with only *Hypochaeris glabra recorded. There were rabbit droppings but no diggings. The site was assessed as in good to very good condition (would go to very good to excellent or excellent if not burnt for some time). This must be one of the largest Melaleuca preissiana stands remaining in the survey area and must be quite stunning when not burnt. It has high consevation value in its own right. There was regrowth of Marri (Eucalyptus calophylla) and some stumps indicating that there had been selective cutting of this species. Associated species included Levenhookia preissii (recommended for placing on the CALM priority list), Stipa compressa, Haemodorum spicatum, Kennedia prostrata, Astartea aff. fascicularis, Boronia sp., Xanthorrhoea brunonis?, Jacksonia aff. sericea (swamp form), Thysanotus multiflorus, Eriostemon spicatus, Lechenaultia exspansa, Patersonia occidentalis, Dasypogon bromeliaefolius, Caesia occidentalis?, Acacia pulchella, *Agrostis avenacea, Adenanthos obovatus and Dampiera linearis. In places, the herb/sedge layer included Lepidosperma longitudinale.

PB Lot 1578

Melaleuca preissiana low woodland to woodland over Viminaria juncea high shrubland to open scrub over Xanthorrhoea preissii shrubland to high shrubland over Lepidosperma longitudinale, Cyathochaete avenacea, Lepidosperma sp. tall, mid-dense sedgeland.

Site 82: Dampland on gentle slope at base of low dune. Grey sand. The Viminaria (Swishbush) was largely killed by the last fire but is regenerating well. The area was burnt about one to two years ago. The only weed species recorded was *Lythrum hysopifolium. There were rabbit droppings and a few burrows. There was some fire damage to trees but most survived well. Some Xanthorrhoea preissii were killed and burnt by the fire. The site was assessed as being in good to very good condition, if not burnt for some time it would go to very good to excellent or excellent condition. Associated species included Dampiera linearis, Thysanotus multiflorus, Lepidosperma angustatum, Leucopogon australis, Isolepis marginata, Haemodorum sparsiflorum, Villarsia parnassifolia?, Acacia pulchella (which will become dense in 2-3 years) and Schoenus rodwayanus. There were some small patches with Astartea aff. fascicularis shrubland. There were also some small depressions with Hypolaena exsulca, Agrostis avenacea, Astartea aff. fascicularis, Centella asiatica, Goodenia pulchella, and with shrubs of Astartea sp. Brixton Street at the edges.

Lot 1578

Melaleuca preissiana low open woodland to low woodland over Regelia ciliata, Pericalymma ellipticum, Xanthorrhoea preissii closed heath over Schoenus rodwayanus sedgeland.

10 Lot 1592

Site 83. Very gentle dune slope. Pale grey sand. Probably not burnt for more than ten years. Weed invasion was very low. There were no rabbit burrows but there were scratchings that appeared to be different (Bandicoots?). There were three old car bodies dumped in the area. The condition of the stand was assessed as very good to excellent. Associated species included Kunzea ericifolia, Lepidosperma angustatum, Patersonia occidentalis, Tricoryne tenella, Petrophile linearis, Hensmannia turbinata, Eremaea pauciflora, Melaleuca thymoides, Acacia pulchella, Lomandra sericea, Jacksonia aff. sericea (swamp form), Loxocarya fasciculata, Conostephium pendulum, Persoonia saccata, Hibbertia huegelii and Burchardia umbellata. Next to Gay Street there was an area with some Melaleuca preissiana and Adenanthos obovatus.

PB Lot 1592

Banksia attenuata, Banksia menziesii, Allocasuarina fraseriana, Banksia ilicifolia low woodland to low open forest over Xanthorrhoea preissii, Melaleuca thymoides open shrubland over Melaleuca seriata, Leucopogon cnostephioides, Scholtzia involucrata, low open heath over Phlebocarya cilata, Lyginia barbata, Patersonia occidentalis, Blancoa c anescens herbland/ sedgeland.

Site 84. Gentle dune slope. Pale grey sand. Not burnt for more than ten years. Weed invasion was very low with *Ursinia anthemoides and *Ehrharta calycina in a small disturbed area where garden rubbish had been dumped and along the firebreaks. There was some rubbish (an old sofa and a gate). There were some animal scratchings (Bandicoot?). The condition of the stand was assessed as being very good to excellent. Associated species includd Burchardia umbellata, Phlebocarya filifolia, Dasypogon bromeliaefolius, Petrophile linearis, Hypolaena exsulca, Amphipogon turbinatus and Siloxerus humifusus. Upslope there was Banksia attenuata, Banksia menziesii woodland over Eremaea pauciflora shrubland.

Lot 1595

Eucalyptus marginata, Allocasuarina fraseriana open woodland (scattered trees) over Regelia ciliata, Xanthorrhoea preissii closed heath over Dasypogon bromeliaefolius, Hypolaena exsulca, Lyginia barbata, Phlebocarya ciliata herbland/sedgeland.

Site 85. Very gentle slope. Grey sand. Weed invasion was very low with *Gladiolus caryophyllaceus recorded. The area had not been burnt for five to eight years. There were some rabbit droppings and diggings. The condition of the site was assessed as very good. Associated species included Hemiandra pungens, Stylidium piliferum, Adenanthos cygnorum, Schoenus rodwayanus, Gompholobium tomentosum, Phlebocarya filifolia and Adenanthos obovatus.

Lot 1595 ~~607~~

Banksia attenuata, Banksia menziesii, Eucalyptus todtiana low woodland to low open forest over Kunzea ericifolia, Jacksonia furcellata high shrubland to open shrubland over Leucopogon conostephioides, Conostephium pendulum, Gompholobium tomentosum, Scholtzia involucrata, Bossiaea eriocarpa, low open shrubland to low shrubland over Loxocarya flexuosa, Lyginia barbata, Patersonia occidentalis, Conostylis setosa, Dasypogon bromeliaefolius mid-dense sedgeland/herbland.

Site 86. Almost flat area of seasonal dampland. Grey sand. Burnt about five or six years ago. Weed invasion was very low with *Ehrharta calycina recorded on the tracks. The condition of the stand was assessed as very good.

Lot 1

Site 87. Extension of the area site 86 was recorded in, the vegetation was very similar to site 86, except for the presence of stands of Eucalyptus calophylla (Marri) which is not common locally (although it is further east in the City of Gosnells).

PD Lot ~~607~~ 1647

Evandra pauciflora tall dense sedgeland with Pericalymma ellipticum open heath over Schoenus rodwayanus, Hypolaena exsulca sedgeland.

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