

SHIRE VIEW HILL AND ADJACENT BUSHLAND, NOWERGUP/NEERABUP

Boundary Definition: protected area/management/bushland boundary (Areas of bushland within the boundaries of the Site are not accurately mapped.)

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 293

Area (ha): bushland 268.1

Map no. 20, 21

Map sheet series ref. no. 2034-I SW

Other Names: part of proposed Gnangara Park, Submission Area 292

Local Authorities (Suburb): Shire of Wanneroo (Nowergup, Neerabup)

Includes CALM Managed Land: State Forest 65

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Spearwood Dunes

Sands derived from Tamala Limestone (Qts: S7)

Tamala Limestone (Qtl: LS1)

VEGETATION AND FLORA

Vegetation Complexes

Spearwood Dunes

Karrakatta Complex — Central and South

Cottesloe Complex — Central and South

Floristic Community Types: *not sampled, types inferred

Supergroup 2: Seasonal Wetlands

*5 Mixed shrub damplands

Supergroup 4: Uplands centred on Spearwood and Quindalup Dunes

*24 Northern Spearwood shrublands and woodlands

*28 Spearwood *Banksia attenuata* or *B. attenuata* — *Eucalyptus* woodlands

26a *Melaleuca huegelii* — *M. acerosa* shrublands on limestone ridges

27 Species-poor mallees and shrublands on limestone

WETLANDS

Wetland Types: dampland

Natural Wetland Groups:

Bassendean Dunes

Pinjar (B.1)

Wetland Management Objectives: Conservation (25.5ha) (DEP 1996)

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not assessed, Endangered (floristic community type 26a)

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: limestone ridge, vegetated uplands, vegetated wetland

Vegetation and Flora: limited survey (DEP 1996, DEP 1999, Gibson *et al.* 1994 (SVH 01-02))

Structural Units

Uplands — Sands derived from Tamala Limestone: *Banksia attenuata* and *B. menziesii* Low Woodland with scattered emergent *Eucalyptus marginata*, *E. gomphocephala* and *E. todtiana*; mixed Open Heath

Uplands — Tamala Limestone: *Melaleuca systema* and *M. huegelii* Closed Heath; *Eucalyptus petrensis* Shrub

Mallee; *Dryandra sessilis* var. *cygnorum* Closed Heath

Wetland: *Melaleuca preissiana* Low Open Woodland

Scattered Native Plants: not applicable

Vegetation Condition: >75% Excellent, <25% Very Good to Good, with areas of severe localised disturbance associated with tracks, pine plots and quarries

Total Flora: 73 native taxa, 18 weed taxa (part Site, plot-generated list only plus several dominants)

Significant Flora: possibly *Eucalyptus argutifolia* (R) (recorded from north of Shire View Hill); *Stylidium maritimum* (3); *Podolepis canescens* (unusual form with white flowers, only record on the Swan Coastal Plain in the PMR), *Acacia alata* var. *tetrantha*; Typical Tamala Limestone Taxa — *Melaleuca huegelii*, *Eucalyptus petrensis*, *Grevillea preissii*, *Stylidium maritimum*, *Acacia alata* var. *tetrantha*

Fauna: Significant reptile species: Carpet Python (*Morelia spilota*) (Submission no. 176f)

Linkage: adjacent bushland to the north (Site 135); south and west (Site 384); part of a regionally significant contiguous bushland/wetland linkage (Part A, Map 7)

Other Special Attributes: recommended for protection in the study of City of Wanneroo (Trudgen 1996); part Site Threatened or Poorly Reserved Plant Community (EPA 1994 GIS); contains five regional floristic groups; Shire View Hill is one of the tallest limestone peaks on the Plain; part Site included in Gnangara Park proposal (Bailey 1997)

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, Maintaining ecological processes or natural systems, Scientific or evolutionary importance, General criteria for the protection of wetland, streamline and estuarine fringing and coastal vegetation

Recommendation: Part A: Site with Some Existing Protection; the existing care, control and management of this Site is endorsed (proposed 'Gnangara Park' – Cabinet 1996). Part B: Strategic Negotiated Planning Solution. Part C: Basic Raw Materials Negotiated Planning Solution (see Table 3, Volume 1).

SHIRE VIEW HILL AND ADJACENT BUSHLAND, NOWERGUP/NEERABUP

Boundary Definition: protected area/management/bushland boundary (Areas of bushland within the boundaries of the Bushplan Site are not accurately mapped.)

SECTION 1: CADASTRAL INFORMATION

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

Bushplan Site no. 293

Map no. 26

Map sheet series ref. no. 2034-I SW

Other Names

Area (ha): total 269.8; bushland 268.1

Submission Area 292

Local Authorities (Suburb)

Zoning

Shire of Wanneroo (Nowergup, Neerabup)

MRS: Industrial, Rural, State Forest

TPS: Rural, Landscape

Ownership Categories

Private (commercial organisation), State Government,
Local Government, Not identified

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

8, 2514, 2522, 5204, 8505 Wattle Ave; 2522 Wesco Rd;
21 Flynn Dr; 2695, 6217 street not identified

Crown Reserve

State Forest 65

CALM Managed Land

SECTION 2: REGIONAL INFORMATION

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Tamala Limestone (Qtl: LS1)

VEGETATION AND FLORA

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Floristic Community Types: *not sampled, type inferred

Supergroup 2: Seasonal Wetlands

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*24 Northern Spearwood shrublands and woodlands

*28 Spearwood *Banksia attenuata* or *B. attenuata* — *Eucalyptus* woodlands

26a *Melaleuca huegelii* — *M. acerosa* shrublands of limestone ridges

27 Species poor mallees and shrublands on limestone

WETLANDS

Wetland Types: dampland (includes wetlands not previously described, DEP 1996)

Natural Wetland Groups:

Bassendean Dunes (includes wetlands not previously described, DEP 1996)

Pinjar (B.1)

Wetland Management Objectives: Conservation (includes wetlands not previously described, DEP 1996)

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Not assessed

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: limestone ridge, vegetated uplands, vegetated wetland

Vegetation and Flora: limited survey (Gibson *et al.* 1994 (SVH 01-02), DEP 1996)

Structural Units

Uplands - Sands derived from Tamala Limestone: *Banksia attenuata* and *B. menziesii* Low Woodland with scattered emergent *Eucalyptus marginata*, *E. gomphocephala* and *E. todtiana*; mixed Open Heath

Uplands - Tamala Limestone: *Melaleuca acerosa* and *M. huegelii* Closed Heath; *Eucalyptus petrensis* Shrub Mallee; *Dryandra sessilis* var. *cygnorum* Closed Heath

Wetland: *Melaleuca preissiana* Low Open Woodland

Scattered Native Plants: not applicable

Vegetation Condition: >75% Excellent, <25% Very Good to Good, with areas of severe localised disturbance associated with tracks, pine plots and quarries

Total Flora: 73 native taxa, 18 weeds (part Bushplan Site, plot-generated list only plus several dominants)



Significant Flora: possibly *Eucalyptus argutifolia* (R) (recorded from north of Shire View Hill); *Stylidium maritimum* (3); *Podolepis canescens* (unusual form with white flowers, only record on the Swan Coastal Plain in the PMR), *Acacia alata* var: *tetrantha*; Typical Tamala Limestone Taxa - *Melaleuca huegelii*, *Eucalyptus petrensis*, *Grevillea preissii*, *Stylidium maritimum*, *Acacia alata* var. *tetrantha*

Fauna: no systematic survey. Significant reptile species: Carpet python (*Morelia spilota*) (Submission no. 176f)

Linkage: adjacent bushland to the north (BS135); south and west (BS384); part of proposed Greenway 32 (Tingay, Alan & Associates 1997a); part of a regionally significant contiguous bushland/wetland linkage (Volume 2A, Map 8)

Other Special Attributes: recommended for protection in the study of City of Wanneroo bushland (Trudgen 1996); Threatened or Poorly Reserved Plant Community (EPA 1994 GIS); contains five regional floristic groups, one group (floristic community type 26a) having been recommended as a 'critically threatened community' (Weston and Gibson 1997); Shire View Hill is one of the tallest limestone peaks on the Plain; part Bushplan Site included in Gnangara Park proposal (Bailey 1997)

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

Not listed

SECTION 5: SELECTION CRITERIA AND RECOMMENDATIONS

Criteria: Representation of ecological communities, Diversity, Rarity, Maintaining ecological processes or natural systems, 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 Gnangara Mound Crown Land EPP; location of Declared Rare Flora and Scheduled Fauna, conservation category wetlands; under TPS Landscape Zoning, Crown Reserve

Constraints: private land; under MRS Industrial Zoning, Priority and General Mineral Resource Area (limestone), mining tenement M70/138 (Swan Portland Cement and Perth Limestone Resources) for limestone dimension stone

Recommendation: The existing care, control and management of the CALM managed area of this Bushplan Site is endorsed. This part of the site lies within the proposed 'Gnangara Park' (concept announced by Cabinet in 1996) within which areas of remnant native vegetation, such as this Bushplan Site, should be managed in the future to retain and enhance their conservation values. The most appropriate mechanism for the protection of the remainder of this Bushplan Site to be considered through the public comment period in consultation with the land owner(s).



Bush Forever Site 293: Shire View Hill and Adjacent Bushland, Nowergup/Neerabup



- ▭ Bush Forever Sites
- ▭ Bush Forever, MRS Amendments
- ▭ Local Government Authority Boundaries
- Floristic Survey Sites of the Southern Swan Coastal Plain
 - GJKENV (Keighery 1996)
 - GRIFFIN (Griffen 1994)
 - SCP (Gibson et al 1994)
 - SYS6ENV (DEP 1996 and Trudgen & Keighery 1995)
 - SYS6ENV2 (DEP 1996 and Trudgen & Keighery 1995)
- ★ CALM Threatened Ecological Communities 2002
- ∧ Roads - Perth Metropolitan

N

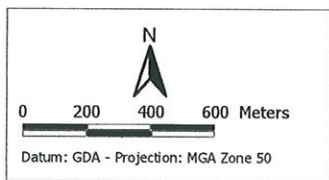
1:7500

3003060 Meters

Datum: GDA - Projection: MGA Zone 50



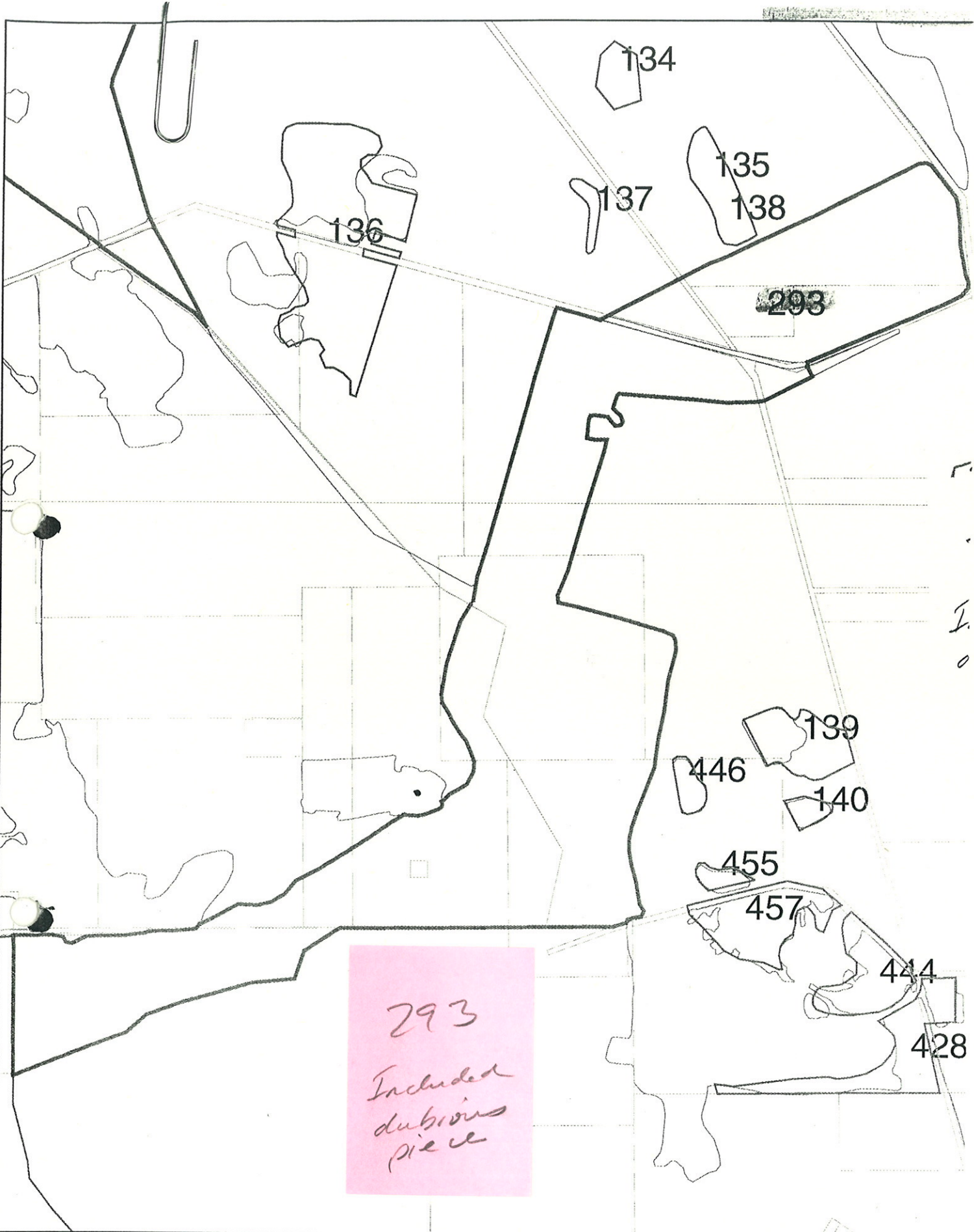
- Bush Forever Sites
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- Roads - Perth Metropolitan



**Bush Forever Site 293:
Shire View Hill and
Adjacent Bushland,
Nowergup/Neerabup**

Department of Environment

 Data Sources:
 Cadastre DLI
 Aerial Photography : Skyview DLI



BUSHPLAN SITES CORRECTED



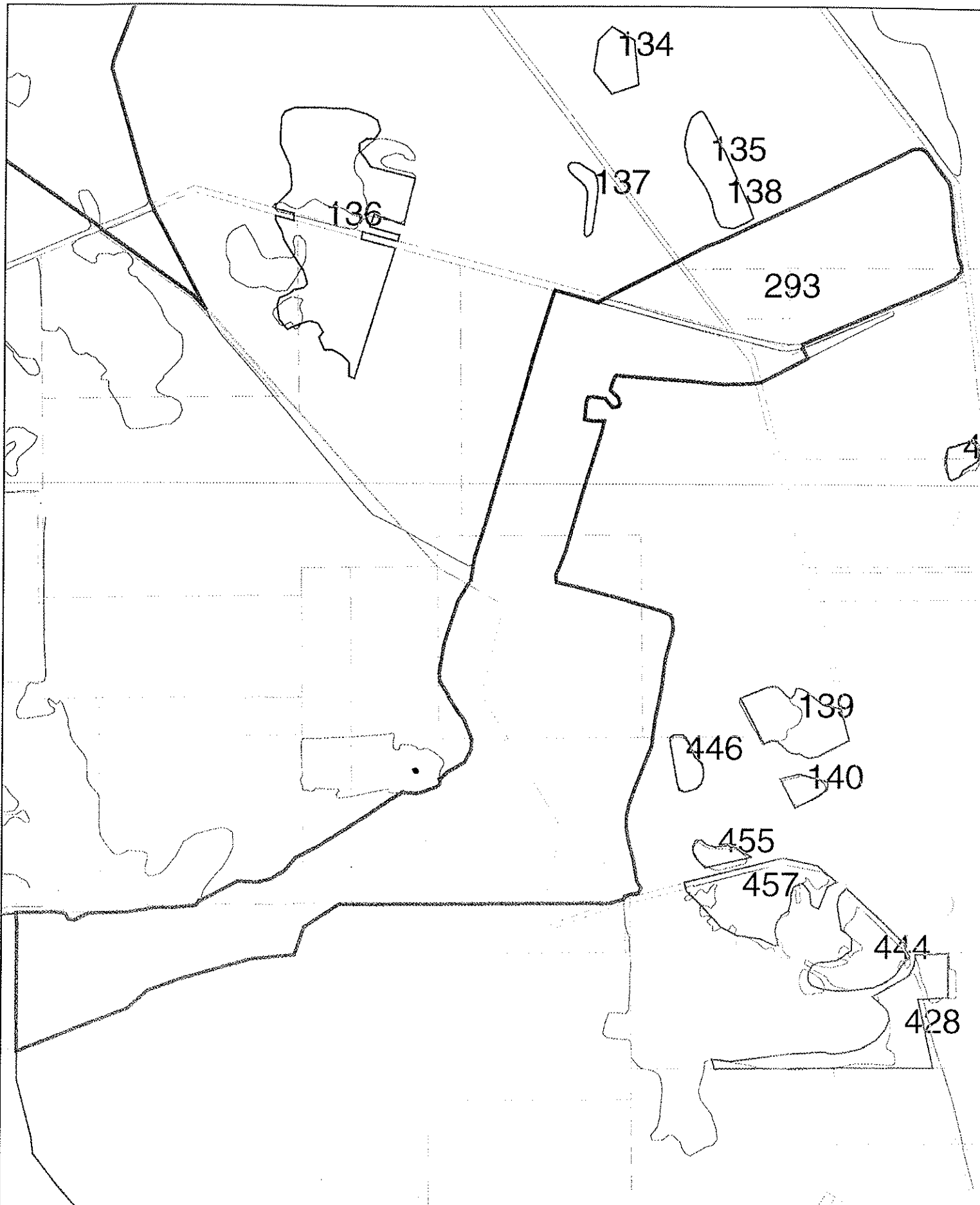
WESTERN
AUSTRALIAN
PLANNING
COMMISSION



CUSTOMER
FOCUS
WESTERN AUSTRALIA

B 76/84c 22/10/98

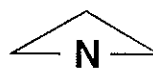









BUSHPLAN SITES CORRECTED



WESTERN
AUSTRALIAN
PLANNING
COMMISSION



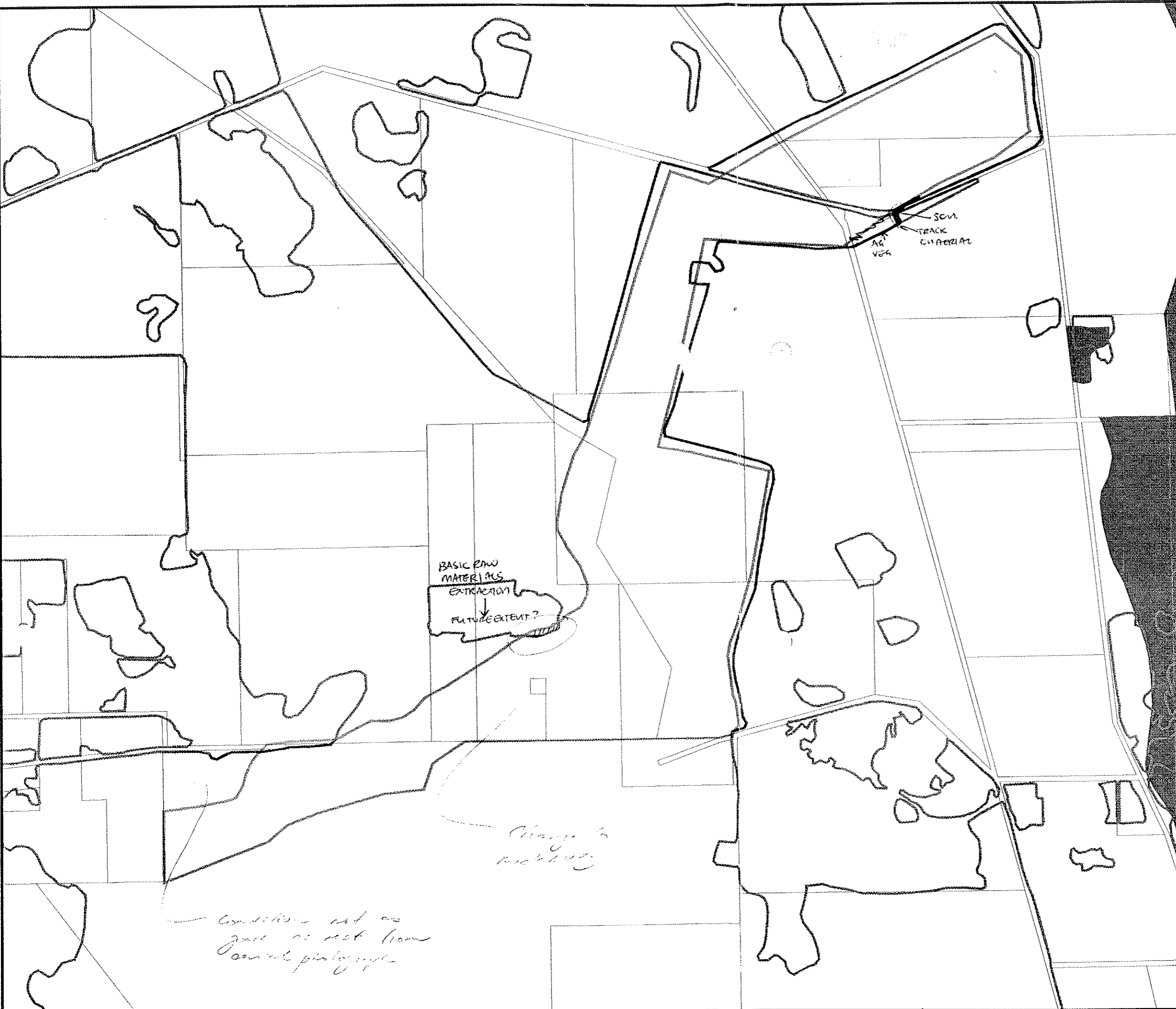
bp site 293

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

basis for original boundary? COR 23/98

- merge with lake buffer - lake to W*
- south of community*
- limestone ridge (700 on ridge)*
- most possible area but good consideration of competing demands*
- very quality*

See description for detail of values




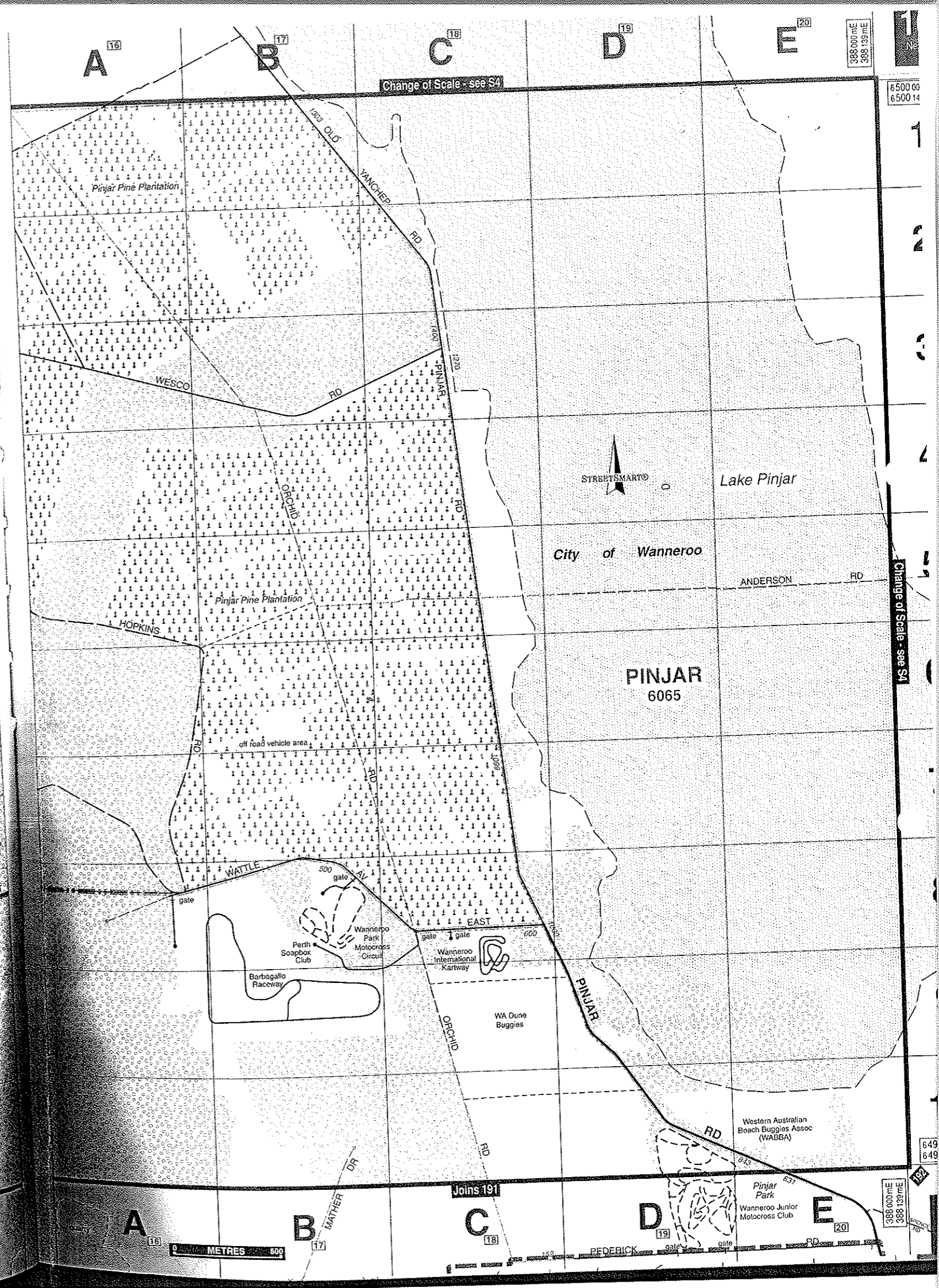
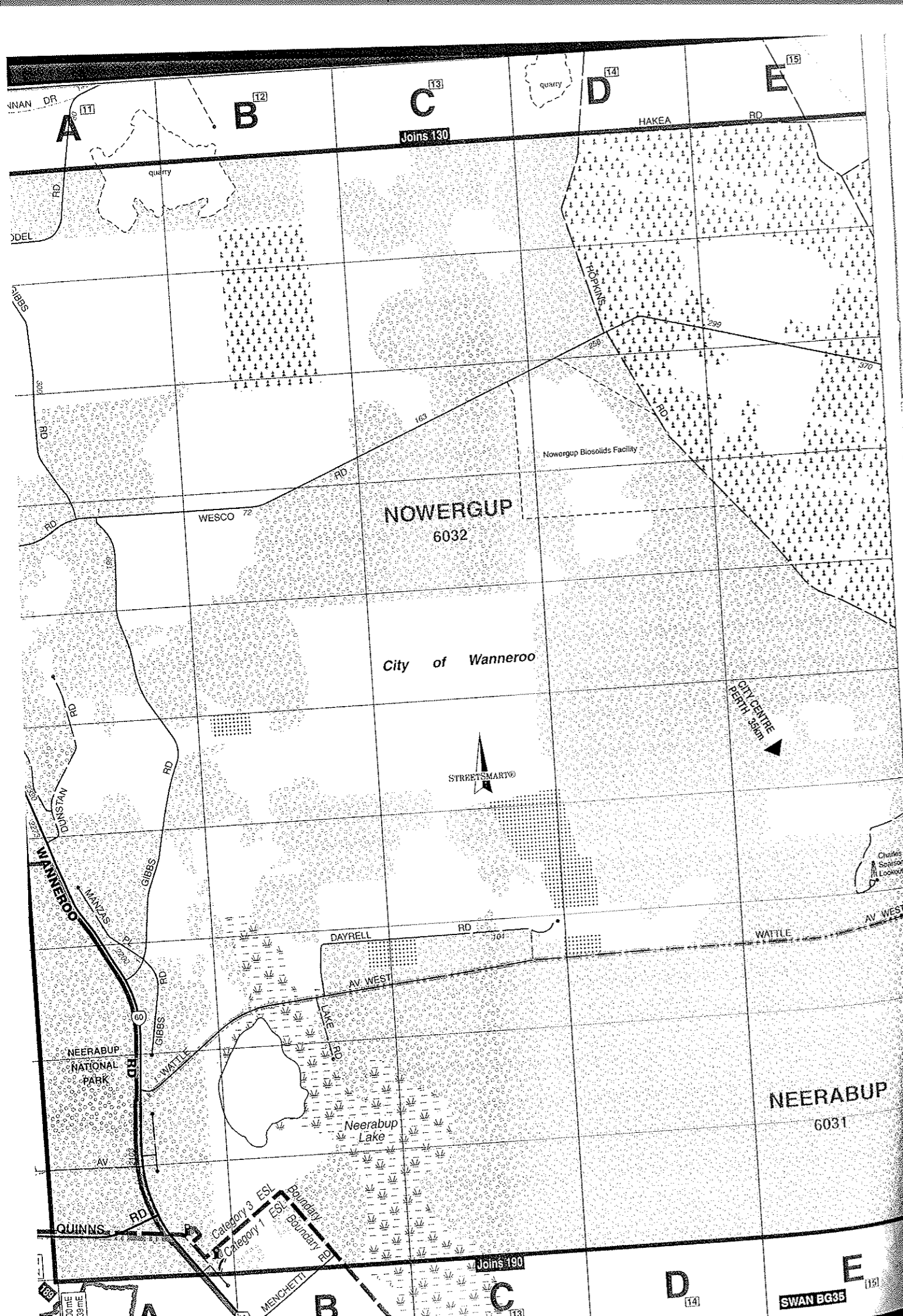
Conditions not as good as rest from aerial photographs

Change in boundary

SCM TRACK CAPITAL

BASIC RAW MATERIALS EXTRACTION
FUTURE EXTENT?

Map Ident: plot980909_1
 Prepared By: Andrea Zappacosta
 Prepared For:
 Date: 09 Sep 98
 Scale 1:15273

 MFP INTERNAL USE ONLY



QUADRAT No. SUH-01 VEGETATION TYPE _____
 DATE FIRST TRIP 2/18/93 VOLUNTEERS _____
 DATE SECOND TRIP 2/16/93 VOLUNTEERS _____
 BOTANIST: AD/ML AS/ML

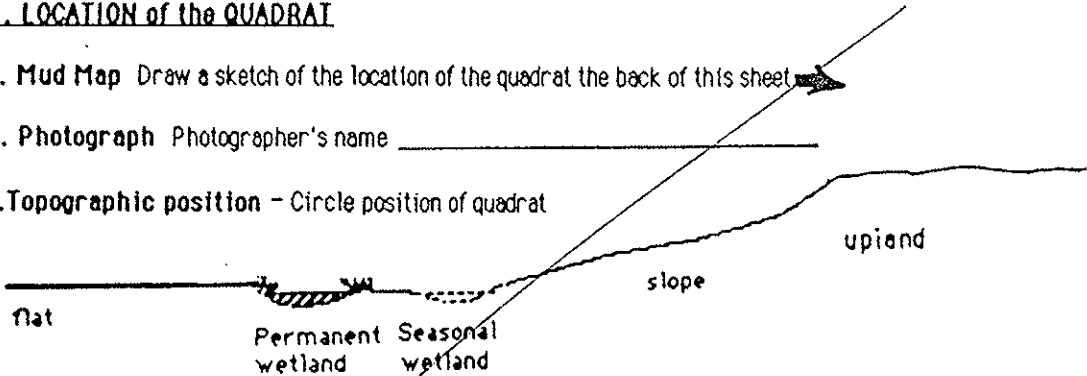
SUH

1. LOCATION of the QUADRAT

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

b. Photograph Photographer's name _____

c. Topographic position - Circle position of quadrat



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

2. SITE DATA - Circle the correct response

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

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

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

3. VEGETATION STRUCTURE AND COVER. Record appropriate cover class

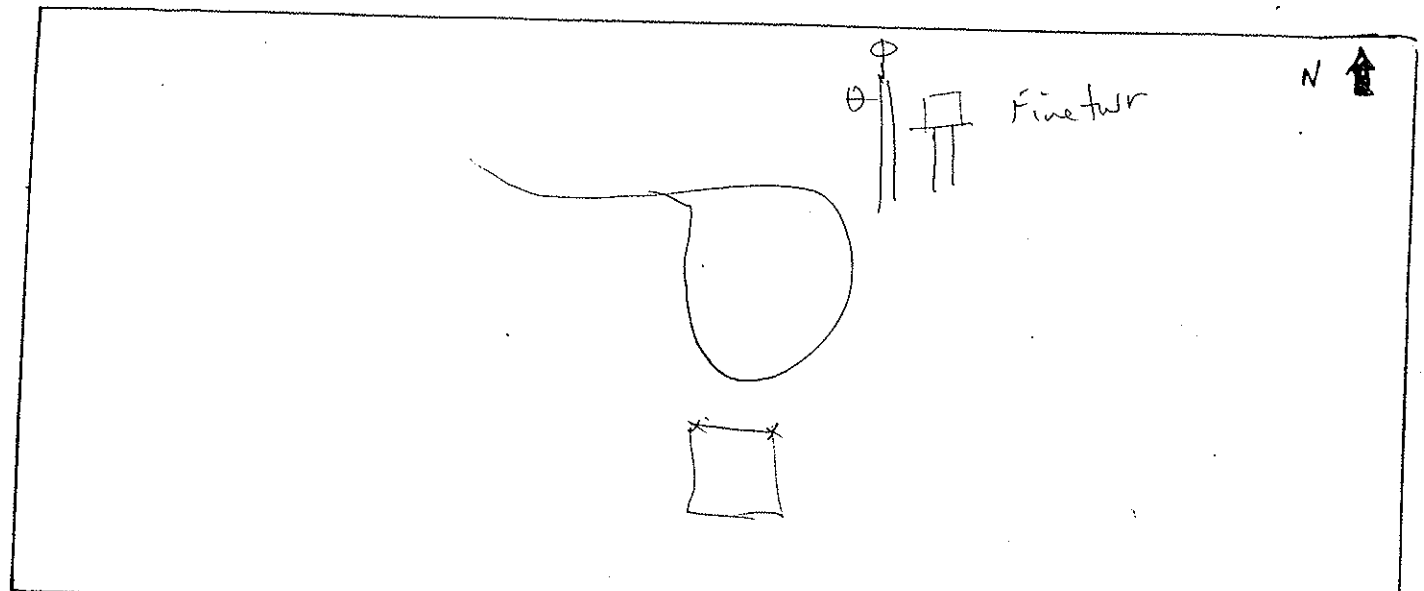
Cover Class - percentage classes	over 70%	TREES				MALLEES				Height (metres)
	50-70%	LIFE FORM		LIFE FORM		LIFE FORM		LIFE FORM		
	30-50%	COVER CLASS (%)		COVER CLASS (%)		COVER CLASS (%)		COVER CLASS (%)		
20-30%	SHRUBS				SHRUBS				Height (metres)	
10-20%	LIFE FORM		LIFE FORM		LIFE FORM		LIFE FORM			
2-10%	COVER CLASS (%)		COVER CLASS (%)		COVER CLASS (%)		COVER CLASS (%)			
0%	BUNCH GRASSES		HERBS		SEDGES		SEDGES		Height (metres)	
under 2%	LIFE FORM		LIFE FORM		LIFE FORM		LIFE FORM			
under 1%	COVER CLASS (%)		COVER CLASS (%)		COVER CLASS (%)		COVER CLASS (%)			

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

LIFE FORM	over 2m	2.0-1.5m	1.5-1.0m	1.0m - .5m	under 5m
COVER CLASS (%)		7-10			2-10

LIFE FORM	under .5m	under .5m (except creepers)	over .5m	under .5m
COVER CLASS (%)	2-10%	30-50		20-30%

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



b Road Location Shire View Hill	c. Latitude 31° 39' 37.5"	Longitude 115° 46' 27.7"
		Altitude 113m ± 100m

d. Photograph Photographer's name NL 31 Photo No

e. Topographic position - Circle position of quadrat



2. SITE DATA - Circle the correct response

Slope flat gentle steep

Aspect

N	NE	E	SE	S	SW	W	NW
---	----	---	----	---	----	---	----

Surface soil Bt Spudgy loam exposed limestone (40% plot)

Sub-surface soil Limestone

Drainage well mod poor

Wet All year winter/spring

Litter (% cover) 20

% Bare ground 20

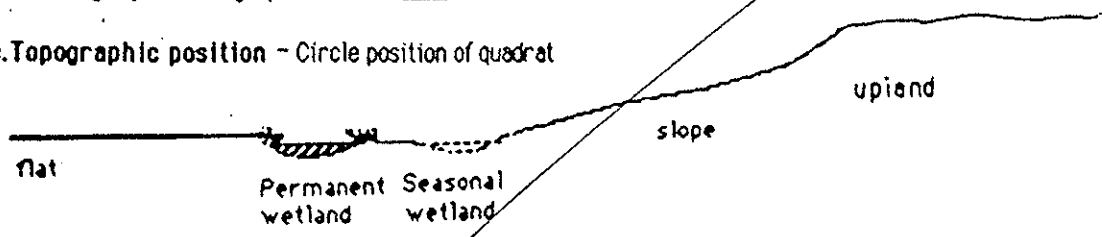
2. VEGETATION CONDITION

EXCELLANT		Comments lots of rabbit grazing on lower shrubs. good moss + lichen layer.
VERY GOOD	XXXXXX	
GOOD	✓	
POOR		
VERY POOR		

QUADRAT No. SVA 02 VEGETATION TYPE _____
 DATE FIRST TRIP 2/18/93 VOLUNTEERS _____
 DATE SECOND TRIP 2/10/93 VOLUNTEERS _____
 BOTANIST: NS/M D. J. W. / NS / MC

1. LOCATION of the QUADRAT

- a. Mud Map Draw a sketch of the location of the quadrat the back of this sheet
- b. Photograph Photographer's name _____
- c. Topographic position - Circle position of quadrat



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

2. SITE DATA - Circle the correct response

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

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

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

3. VEGETATION STRUCTURE AND COVER Record appropriate cover class

In D. sen back / scrub

Cover Class - percentage classes

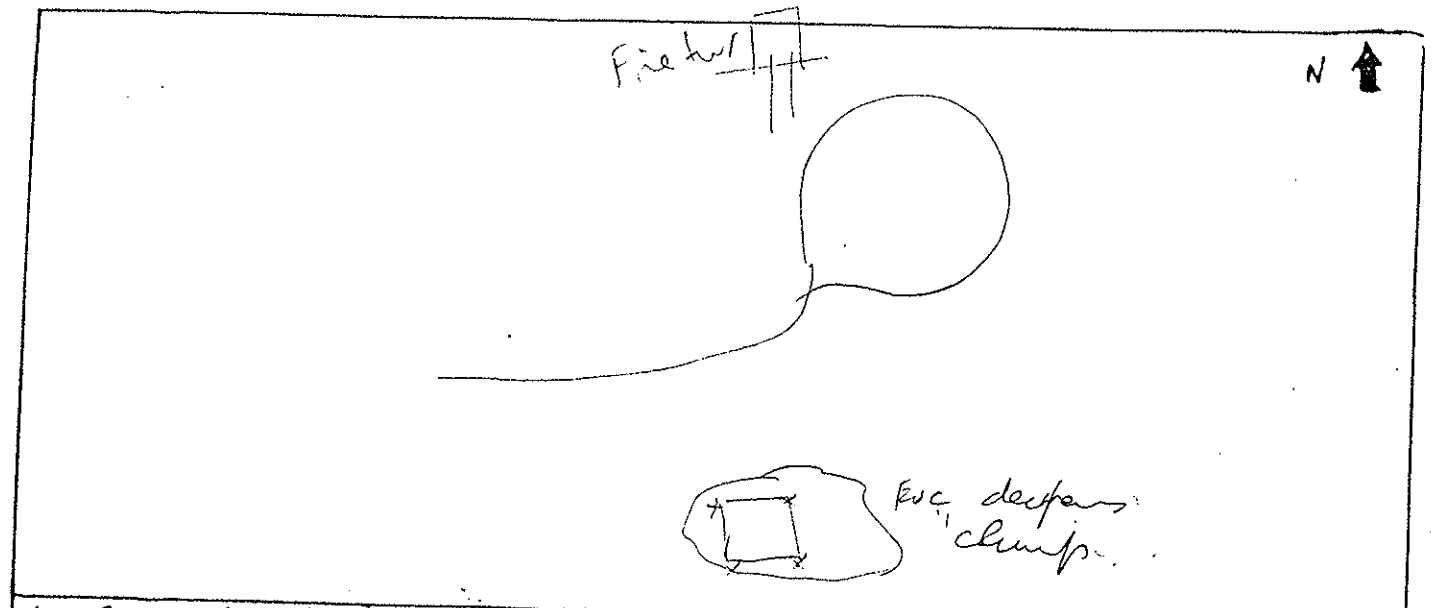
LIFE FORM	TREES		MALLEES	<i>Few deep</i>	
	<i>> 15m</i> 5-15m		<i>Under 5m</i> 	MALLEE SHRUB <i>less than 8m</i> 	MALLEE TREE <i>8m or more</i>
COVER CLASS (%)	<i>> 15m</i> 5-15m		<i>30-50</i>		

LIFE FORM	SHRUBS	<i>D. xos</i> <i>X. presii</i>				
		<i>over 2m</i>	<i>2.0-1.5m</i>	<i>1.5-1.0m</i> <i>High light</i> <i>Baked 2/12</i>	<i>1.0m - .5m</i>	<i>under 5m</i>
COVER CLASS (%)			<i>30-50</i>			

LIFE FORM	BUNCH GRASSES	HERBS	SEDGES	
	<i>under .5m</i> 	<i>under .5m</i> <i>(except creepers)</i> 	<i>over .5m</i> 	<i>under .5m</i>
COVER CLASS (%)				

Height (metres)

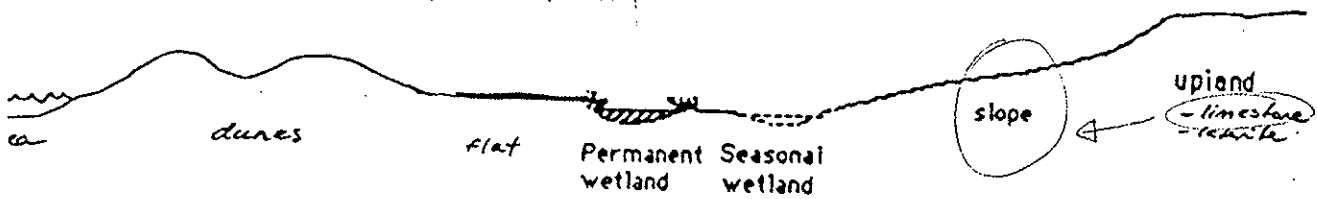
a. Mud Map Draw a sketch of the location of the quadrat:



b Road Location	c. Latitude	Longitude
Shrine View Hill	31° 37' 41.3"	115° 46' 26.4"
		Accuracy 90m ± 100m

d. Photograph Photographer's name Ng 34 Photo No

e. Topographic position - Circle position of quadrat



2. SITE DATA - Circle the correct response

Slope flat gentle steep

Aspect

N	NE	E	SE	S	SW	W	<u>NW</u>
---	----	---	----	---	----	---	-----------

Surface soil DK GR SANDY LOAM exposed limestone 10%

Sub-surface soil LIME STONE & yellow sand.

Drainage well mod poor

Wet All year winter/spring

Litter (% cover) 30

rock
% Bare ground 20

2. VEGETATION CONDITION

EXCELLANT		Comments <u>Thicket within Dry season</u>
VERY GOOD	<u>✓</u>	
GOOD		
POOR		
VERY POOR		

J. Whinn 7/12

SHIRE VIEW HILL AND ADJACENT BUSHLAND, NOWERGUP/NEERABUP

Bushplan Site no. 293 Map no. 26

Background

A field inspection of Road Bushplan Site 293 was made by Bronwen Keighery (DEP) and Valerie Thompson (MfP) on 6/8/99 to check a portion of the Site that appears not to be bushland but is mapped as bushland.

Site Comments/Adjustment

The comment under 'Boundary Definition' that - "Areas of bushland within the boundaries of the Bushplan Site are not accurately mapped." was supported. It is considered that the area of Completely Degraded vegetation (area on the NW boundary adjacent to the road) should be removed from the Site as it does not meet the definition of bushland. The Site should be enlarged to the SW to compensate for this reduction in width to maintain at least the width shown. This Site is the minimum width considered acceptable and was considered constrained by limestone resource AND proposed or actual industrial zoning.

Swan Cement

A Division of Adelaide Brighton Cement Ltd ACN 007 870 199

176

BS 293

PB109

24 March, 1999

The Hon GD Kierath, MLA
Minister for Planning
13th Floor, Dumas House
2 Havelock Street
WEST PERTH WA 6005

RECEIVED MINISTER'S OFFICE		
MIN NO:	01778	
26 MAR 1999		
ACK <input checked="" type="checkbox"/>	OFFICER <input checked="" type="checkbox"/>	MW
MFP <input checked="" type="checkbox"/>	OMPA <input type="checkbox"/>	WADOT <input type="checkbox"/>
SRA <input type="checkbox"/>	EPRA <input type="checkbox"/>	HOWA <input type="checkbox"/>
<input checked="" type="checkbox"/> DRAFT REPLY	<input type="checkbox"/> DIRECT REPLY	
<input type="checkbox"/> ADVISE	<input type="checkbox"/> ATTENTION	
<input type="checkbox"/> INFO	<input type="checkbox"/>	
<input type="checkbox"/> FILE	<input type="checkbox"/>	
REQUIRED BY	177 1000	

Dear Minister

Re: Perth's Bushplan Proposal

We have been advised through industrial sources that a large proportion of limestone reserves held by our company have been included in Perth's Bushplan.

From our belated observation of Bushplan, it would appear to have been a desk top or broad brush study in places with no observation of what is happening on the ground – for example:

1. Site number [redacted] covers an operational Mining Lease 70/143.
2. No account has been taken of 4 areas already designated and reserved on ML 70/138, 141, 143 for the protection of rare and endangered flora.
3. Little if any account has been taken of limestone reserves which lie within the resource and priority limestone resource areas nominated under the Ministry of Planning's basic Raw Materials Policy.
4. Further examples have been defined in the attached detailed summary of Bushplan sites affecting strategic limestone reserves.

Should our resources be steralised through this proposal, Swan Cement would seek compensation for costs incurred and loss of revenue. As an example costs associated with our mining lease ML 70/142 which contains in excess of 45 million tonnes of limestone would be as follows:

1. Holding costs in work carried out to establish resource rates and rent since 1957 = \$1.5m.
2. 50% metallurgical grade limestone which would require importing @ \$23/t = \$517m
3. Lost revenue from remaining @ 0.75c/t = \$16.87m.

SUBMISSION NO. 463
ON NOISSIEMENTS

MINISTER'S OFFICE
14 APR 1999
805-2-1-32pt12
FILE

IS TRA MIN LSL BUSHPLAN



LEATH RD (P.O. BOX 528), KWINANA, WESTERN AUSTRALIA 6167
TELEPHONE: (08) 9499 2222 COUNTRY: 1800 199 212
ADMIN. FAX: (08) 9499 2299 SALES FAX: 1800 651 910
INTERNET ADDRESS: <http://www.adbri.com.au/abcl/swan.html>



Proposed Inclusion in Bushplan ML 70/143, Hopkins Road, Nowergup

Bushplan Site No. 293

Bushplan site number 293 covers an area of Tamala Limestone and associated Spearwood Sands.

ML 70/143 covers Crown Land which is held as a reserve for mining purposes by Swan Cement. ML 70/143 skirts along the edge of Swan Cement limestone resources for the proposed limestone extraction for cement and lime products. As Swan Cement's requirements are temporarily being met from elsewhere the southern portion of ML 70/143 is currently being extracted for limestone blocks under sub-lease. The affected area extends into a small portion of Bushplan site 293, between the current excavation and the Trig. Station/Fire Tower (Reserve 8505).

The significance of the vegetation is difficult to gauge when the Floristic Community Types are recorded as * "not sampled, types inferred". The site was assessed for Swan Portland Cement on several occasions with detailed flora studies being conducted as part of the Consultative Environmental Review. All populations of the rare *Eucalyptus Argutifolia* have been searched in the field and surveyed accurately so they could be protected. This process resulted in the finding of a new population of *Eucalyptus Argutifolia*. *Eucalyptus Petrensis* was also located and the populations noted.

Whilst Bushplan notes the presence of these species under significant flora, only a small proportion of the known populations in the area are included within Bushplan Site 293. Other populations to the north have been excluded from the area to be excavated through strict conditions developed jointly between CALM, DEP and Swan Cement. Swan Cement has a detailed revegetation plan in place for the areas to be excavated.

Vegetation studies suggest that the community types should be ascribed to 26a which is well represented in other locations, for example at Nowergup and further north where it has been nominated for inclusion in Bushplan. Other communities present are interpreted to be related to types 24 and 28 which are listed as "Well Reserved" but "Susceptible" and "Low Risk", A Floristic Survey of the Southern Swan Coastal Plain (1994). Unpublished report for the Australian Heritage Commission, prepared by the Department of Conservation and Land Management and Conservation Council of Western Australia. Significant Eucalypts of community type 27 have already been earmarked for protection by Swan Cement of which a large part lies outside Bushplan site 293.

It would appear from Bushplan map 26 that limestone on ML 70/143 will impinge slightly on nominated Bushplan site 293 to the north of the Trig. Station/Fire Tower, located on Reserve 8505. This reserve will contain the flora nominated for protection.

At this stage the only fair way to resole Bushplan will be to adjust the boundary of site 293 to incorporate the mining requirements of ML 70/143. Some consideration could be given to include the known populations of *Eucalyptus Argutifolia* further north which would have been excluded from the proposed area of limestone extraction.

Whisson, Gary

From: Keighery, Bronwen
Sent: Monday, 10 December 2007 3:35 PM
To: Olejnik, Craig
Cc: Keighery, Greg; English, Val; Whisson, Gary
Subject: Lot 8 Wattle Ave

Dear Craig

Further to our telephone conversation of earlier today I have spoken with Greg and can now send you the following.

Species information or TEC

Wattle 03 10mX10m Quadrat Sheet: 3 pages by fax

I trust the information will be legible, please let me know if there is a problem. The determination of the area of TEC 26a is based on the Wattle 03 quadrat.

New Melaleuca species

The species should be referred to as *Melaleuca* aff. *systema* (G.J. Keighery 16705) which is derived from the specimen in the Herbarium as described below. This species is only known from this single location. Other limestone ridges supporting TEC 26a are known to support an unusual late flowering form of *M. systema* but this taxon is different from these. Brendan Lepschi, an expert on Melaleucas, has been sent material and recognized *Melaleuca* aff. *systema* (G.J. Keighery 16705) as a distinctive taxon.

I trust this is adequate information for the present.

Cheers Bronwen

PERTH 06972942

Melaleuca aff. *systema*

Myrtaceae

Plant Description: Slender erect single 2-3 m high and 1-2 m wide. Flowers pale yellow; in full flower.

Vegetation: *Melaleuca cardiophylla*, *M. sp.*, *M. systema* tall closed shrubland.

Site Description: Rugged limestone ridge. Mossy black sand.

Frequency: dominant locally.

Locality: Wanneroo Shire Reserve, Wattle Avenue, Neerabup **State:** WA

Lat: 31° 39' 16.8" S **Long:** 115° 45' 58.1" E (GDA94)

Collector: G.J. Keighery 16705

Collection Date: 23 December 2004

Origin: PERTH

Duplicates to: CANB

Bronwen Keighery

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email bronwen.keighery@dec.gov.wa.au

WILD 1574 UAGA
Nr 13037 152.72

000071

- 5022 - 1 267 - 57 100 0200 0280 56 -

000000 003124 20 01 25 60 1936

WILD 1574 UAGA
Nr 13037 15272

000072



- 5022 - 1 267 - 57 100 0200 0280 56 -

000000 003124 210125 60 1903

WILD 15/4 UA6A
Nr 13037 152.72

000073

- 5022 - 1 266 - 57 100 0200 0280 56 -

000000 003124 20 0125 60 1937

WILD 1574 UAGA
Nr 13037 152.72

000075

- 5022 - 1 268 - 57 100 0200 0300 56 -

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