

DUNDAS ROAD BUSHLAND, FORRESTFIELD

Boundary Definition: bushland (part taken to cadastre) boundary

SECTION 1: LOCATION INFORMATION

Bush Forever Site no. 319 **Area (ha):** bushland 58.1

Map no. 49

Map sheet series ref. no. 2034-II SE

Other Names: Reserve C29880 Forrestfield; Submission Area 92; Location 73 (Keighery, BJ, and Trudgen 1992)

Local Authorities (Suburb): Shire of Kalamunda (Forrestfield)

System 6 (1983): Part M53, part System area bushland, only bushland described

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Pinjarra Plain

Guildford Formation (Qpa: Mgs1)

Bassendean Dunes

Bassendean Sands (Qpb: S8)

Bassendean Dunes/Pinjarra Plain

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

VEGETATION AND FLORA

Vegetation Complexes

Combinations of Bassendean Dunes/Pinjarra Plain

Southern River Complex

Floristic Community Types

Supergroup 1: Foothills/Pinjarra Plain

2 Southern wet shrublands (most northern representation, only representation in PMR, disjunct from southern representations)

3a *Eucalyptus calophylla* — *Kingia australis* woodlands on heavy soils (most northerly representation with Site 45 and Site 481)

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau

20a *Banksia attenuata* woodlands over species-rich dense shrublands

WETLANDS

Wetland Types: palusplain, artificial channel, creek (not previously described (Keighery, BJ 1994b))

Natural Wetland Groups

Bassendean—Pinjarra transition OR Bassendean with fluvial features

Mungala (B/P.2)

Wetland Management Objectives: Conservation (27.8ha) and Conservation (unknown length) (Keighery, BJ 1994c), Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Critically Endangered (floristic community type 3a), Endangered (floristic community types 2 and 20a)

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated creek, wetlands and uplands

Vegetation and Flora: limited survey (DEP 1996 (M53 02-06), Gibson *et al.* (M53), Keighery, BJ 1994b, Keighery, BJ, and Trudgen 1992, Tingay 1990)

Structural Units: mapping (Keighery, BJ 1994b, Keighery, BJ, and Trudgen 1992)

Uplands: *Eucalyptus marginata* Open Woodland; *Eucalyptus calophylla* Woodland; scattered *Eucalyptus calophylla* and *Nuytsia floribunda* over *Caustis dioica* Sedgeland; *Banksia attenuata* and *B. menziesii* Woodland; scattered *Hakea trifurcata* clumps over *H. incrassata*, *Acacia pulchella* and *Petrophile striata* Low Shrubland; *Stirlingia latifolia*, *Daviesia physodes*, *Allocasuarina humilis* and *Verticordia densiflora* Open Low Heath
Wetlands: *Eucalyptus calophylla* Woodland; *Pericalymma ellipticum*, *Hakea sulcata* and *Stirlingia latifolia* Open Low Heath

Vegetation Condition: >90% Excellent to Very Good, <10% Good, with areas of severe localised disturbance

Total Flora: 223 native taxa (Keighery, BJ 1994b) (estimated >75% expected flora)

Significant Flora: *Conospermum undulatum* (R), *Macarthuria keigheryi* (R); *Schoenus pennisetis* (1), *Isopogon drummondii* (3), *Schoenus benthamii* (3), *Lambertia multiflora* var. *darlingensis* (3), *Conostephium minus* (4); *Verticordia lindleyi* subsp. *lindleyi* (4); *Actinostrobos acuminatus*, *Dasyopogon obliquifolius*, *Platysace juncea*,

Xanthorrhoea drummondii, *Hakea conchifolia*, *Pityrodia bartlingii*, *Byblis lindleyana*, *Drosera macrantha* (Swan Coastal Plain form, BJK and NG 228), *Isopogon asper*

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

Linkage: no adjacent bushland; part of Greenways 50, 98, 103 (Tingay, Alan & Associates 1998a); part of a regionally significant fragmented bushland/wetland linkage (Part A, Map 7)

Other Special Attributes: unusual combination of a series of rare, uncommon and restricted floristic community types; recommended to be managed as a flora conservation area (Keighery, BJ, and Trudgen 1992); recommended to be declared as an A-class Nature Reserve for the protection of flora and fauna in Gibson *et al.* 1994; part Site Category One Area, Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995); contains plant communities representative of the eastern side of the Swan Coastal Plain

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: Proposed Parks and Recreation Reservation (see Table 3, Volume 1).

DUNDAS ROAD BUSHLAND, FORRESTFIELD

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. 319 **Map no.** 58 **Map sheet series ref. no.** 2034-II SE

System 6 (1983): Part M53 Part System area bushland, only bushland described

Other Names

Reserve C29880 Forrestfield; Submission Area 92;

Location 73 (Keighery, BJ, and Trudgen 1992)

Local Authorities (Suburb)

Shire of Kalamunda (Forrestfield)

Area (ha): total 65.6; bushland 58.1

Zoning

MRS: Industrial, Public Purposes-Special Uses, Public Purposes-State Energy Commission, Controlled Access Highways

TPS: Landscape, Light Industry

Ownership Categories

State Government, Private (commercial organisation),

Local Government

Lot/Location/Reserve numbers (Purpose),

Street name

0 Tonkin Hwy; 0 Reynolds Rd; 0, 9, 20, 30, 31, 32, 121, 181 Bedford Cr; Road; 0, 43, 44 Dawson Ave; 180, 10261, 10276, 11026 Dundas Rd; 10124, 10253 Roe Hwy; 10260 Harrison Rd; 9947 Berkshire Rd

Crown Reserve

SECTION 2: REGIONAL INFORMATION

LANDFORMS AND SOILS

Pinjarra Plain

Guildford Formation (Qpa: Mgs1)

Bassendean Dunes

Bassendean Sands (Qpb: S8)

Bassendean Dunes/Pinjarra Plain

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

VEGETATION AND FLORA

Vegetation Complexes

Combinations of Bassendean Dunes/Pinjarra Plain

Southern River Complex

Floristic Community Types

Supergroup 1: Foothills/Pinjarra Plain

2 Southern wet shrublands (most northern representation, only representation in PMR, disjunct from southern representations)

3a *Eucalyptus calophylla* — *Kingia australis* woodlands on heavy soils (most northerly representation with BS45 and BS481)

Supergroup 3: Uplands centred on Bassendean Dunes and Dandaragan Plateau

20a *Banksia attenuata* woodlands over species-rich dense shrublands

WETLANDS

Wetland Types: palusplain, artificial channel, creek (not previously described, Keighery, BJ, 1994b)

Natural Wetland Groups

Bassendean—Pinjarra transition OR Bassendean with fluvial features

Mungala (B/P.2)

Wetland Management Objectives: Conservation (27.8ha) and Conservation (unknown length) (Keighery, BJ, 1994b), Resource Enhancement

Swan Coastal Plain Lakes EPP: none identified

THREATENED ECOLOGICAL COMMUNITIES

Critically Endangered (floristic community type 3a), Endangered (floristic community types 2 and 20a)

SECTION 3: SPECIFIC SITE DETAIL

Landscape Features: vegetated creek, wetlands and uplands

Vegetation and Flora: limited survey (DEP 1996 (M53 02-06), Gibson *et al.* 1994 (M53), Keighery, BJ, 1994b, Keighery, BJ, and Trudgen 1992, Tingay 1990)

Structural Units: mapping (Keighery, BJ, 1994b, Keighery, BJ, and Trudgen 1992)

Uplands: *Eucalyptus marginata* Open Woodland; *Eucalyptus calophylla* Woodland; scattered *Eucalyptus calophylla* and *Nuytsia floribunda* over *Caustis dioica* Sedgeland; *Banksia attenuata* and *B. menziesii* Woodland;



scattered *Hakea trifurcata* clumps over *H. incrassata*, *Acacia pulchella* and *Petrophile striata* Low Shrubland; *Stirlingia latifolia*, *Daviesia physodes*, *Allocasuarina humilis* and *Verticordia densiflora* Open Low Heath
Wetlands: *Eucalyptus calophylla* Woodland; *Pericalymma ellipticum*, *Hakea sulcata* and *Stirlingia latifolia* Open Low Heath

Vegetation Condition: >90% Excellent to Very Good, <10% Good, with areas of severe localised disturbance

Total Flora: 223 native taxa (Keighery, BJ, 1994b) (estimated >75% expected flora)

Significant Flora: *Conospermum undulatum* (R), *Macarthuria keigheryi* (R); *Schoenus pennisetis* (1), *Isopogon drummondii* (3), *Schoenus benthamii* (3), *Lambertia multiflora* var. *darlingensis* (3), *Conostephium minus* (4); *Verticordia lindleyi* subsp. *lindleyi* (4); *Actinostrobos acuminatus*, *Dasypogon obliquifolius*, *Platysace juncea*, *Xanthorrhoea drummondii*, *Hakea conchifolia*, *Pityrodia bartlingii*, *Byblis gigantea*, *Drosera macrantha* (Swan Coastal Plain form, BJK and NG 228), *Isopogon asper*

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

Linkage: no adjacent bushland; part of proposed Greenways 57, 117, 84 (Tingay, Alan & Associates 1997a); part of a regionally significant fragmented bushland/wetland linkage (Volume 2A, Map 8)

Other Special Attributes: unusual combination of a series of rare, uncommon and restricted floristic community types; recommended to be managed as a flora conservation area (Keighery, BJ, and Trudgen 1992); recommended to be declared as an A-class Nature Reserve for the protection of flora and fauna in Gibson *et al.* 1994; part Bushplan Site Category One Area Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995); contains plant communities representative of the eastern side of the Swan Coastal Plain

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, conservation category wetlands; under TPS Landscape Zoning, Crown Reserve

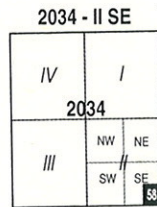
Constraints: private land; under MRS Industrial Zoning, MRD regional road requirements

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). This may include parts for which: The Bushplan Site be reserved for Parks and Recreation in the Metropolitan Region Scheme and be purchased for National Park, Conservation Park, Nature Reserve or Regional Park.



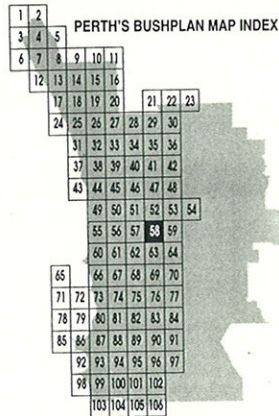
LEGEND

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

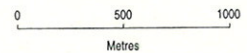


1 : 25 000 AMG Reference Grid showing Perth's Bushplan Map Sheet Breakdown

PERTH'S BUSHPLAN MAP INDEX



SCALE



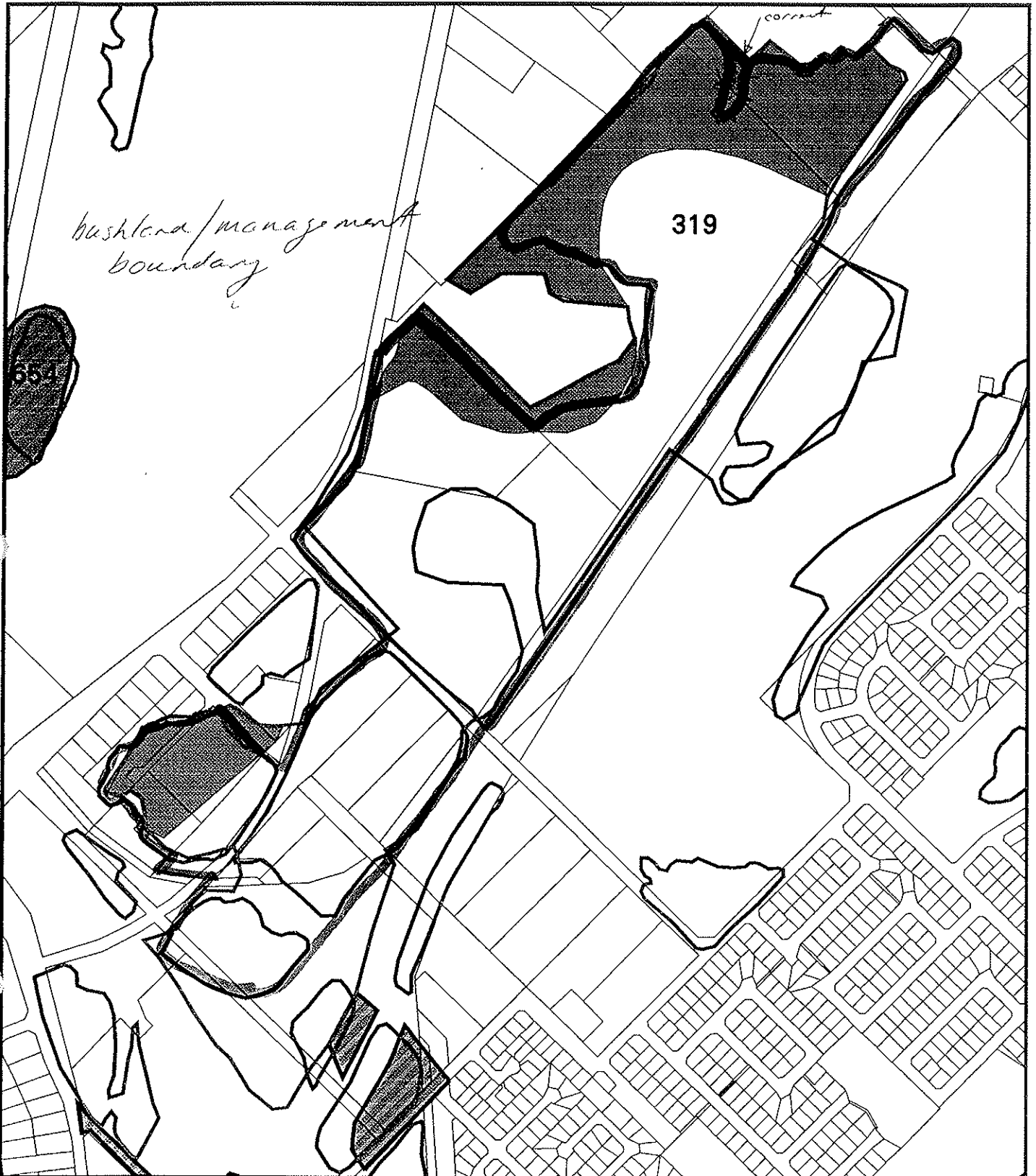
Produced by Project Mapping Section
 Land Information Branch, Ministry for
 Planning, Perth W.A. November 1998
 nwt-map11/enviro/bushplan/bushv2_58.dgn
 Cadastral Data supplied by Department
 of Land Administration, W.A.
 Wetlands Data supplied by
 Water and Rivers Commission
 Native Vegetation Extent for Study Area
 supplied by Agriculture Western Australia



COPY

WCorp. Frank
proposed water pipes to
Westrail development
See Admin File.

24/6/96



bp site 319

AG VEG 1998 BOUNDARY THEME

Cadastre

Bushplan sites refno 1-500 SCP BOUNDARY THEME

cons category wetlands

Verified CCWs (in CAH)

5756 Boundary

GW/BK 25/9

Boundary
as agreed
week 21/9
MFP/DEP
meeting

AERIAL PLOT PLEASE

MFP INTERNAL USE ONLY

Prepared By: Andrea Zappacosta

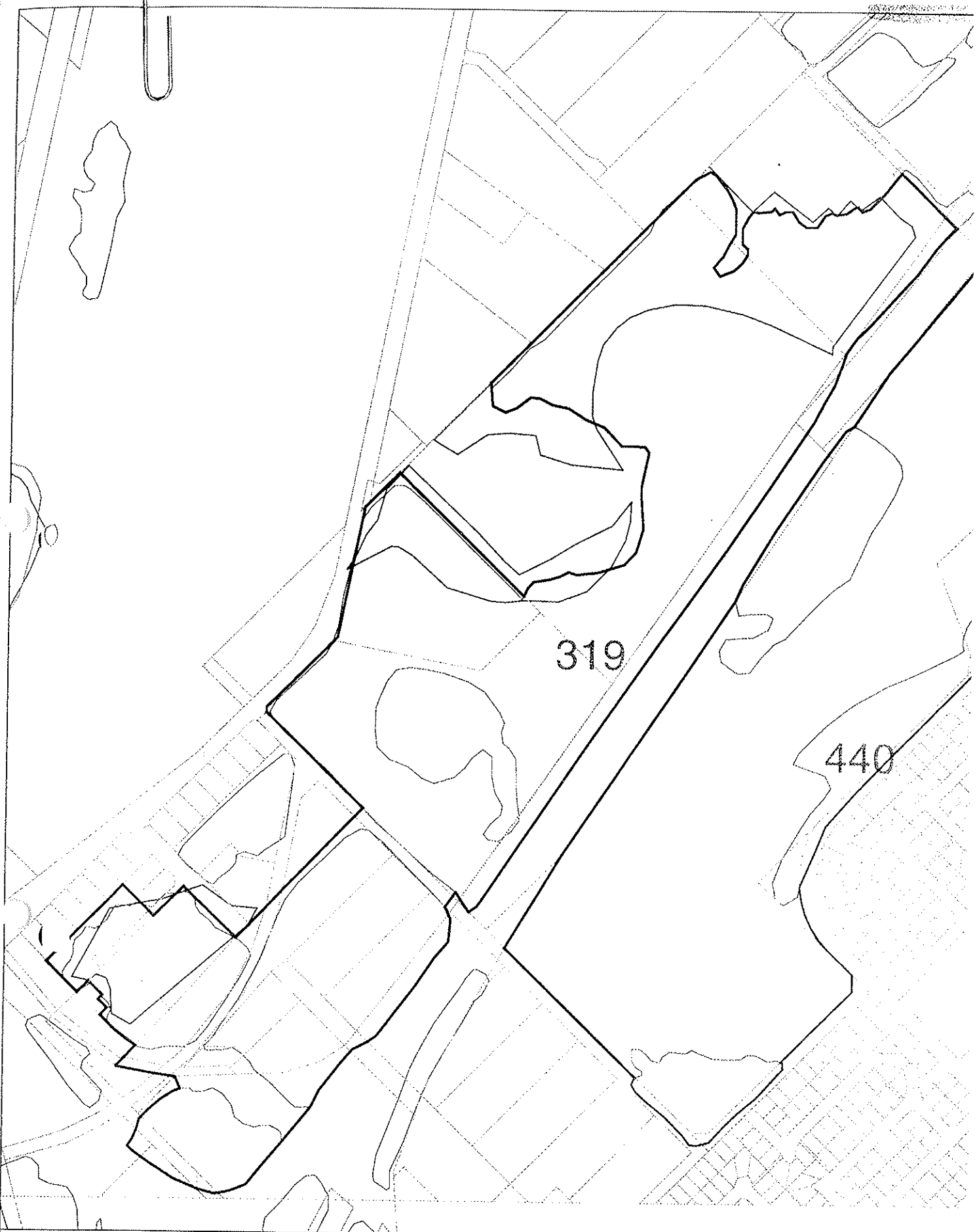
Prepared For:

Map Ident: plot980528_1

Date: 28 May 98

Scale 1:9249 SYSTEM 6 AREA M-53

P&R -> bushplan



BUSHPLAN SITES CORRECTED



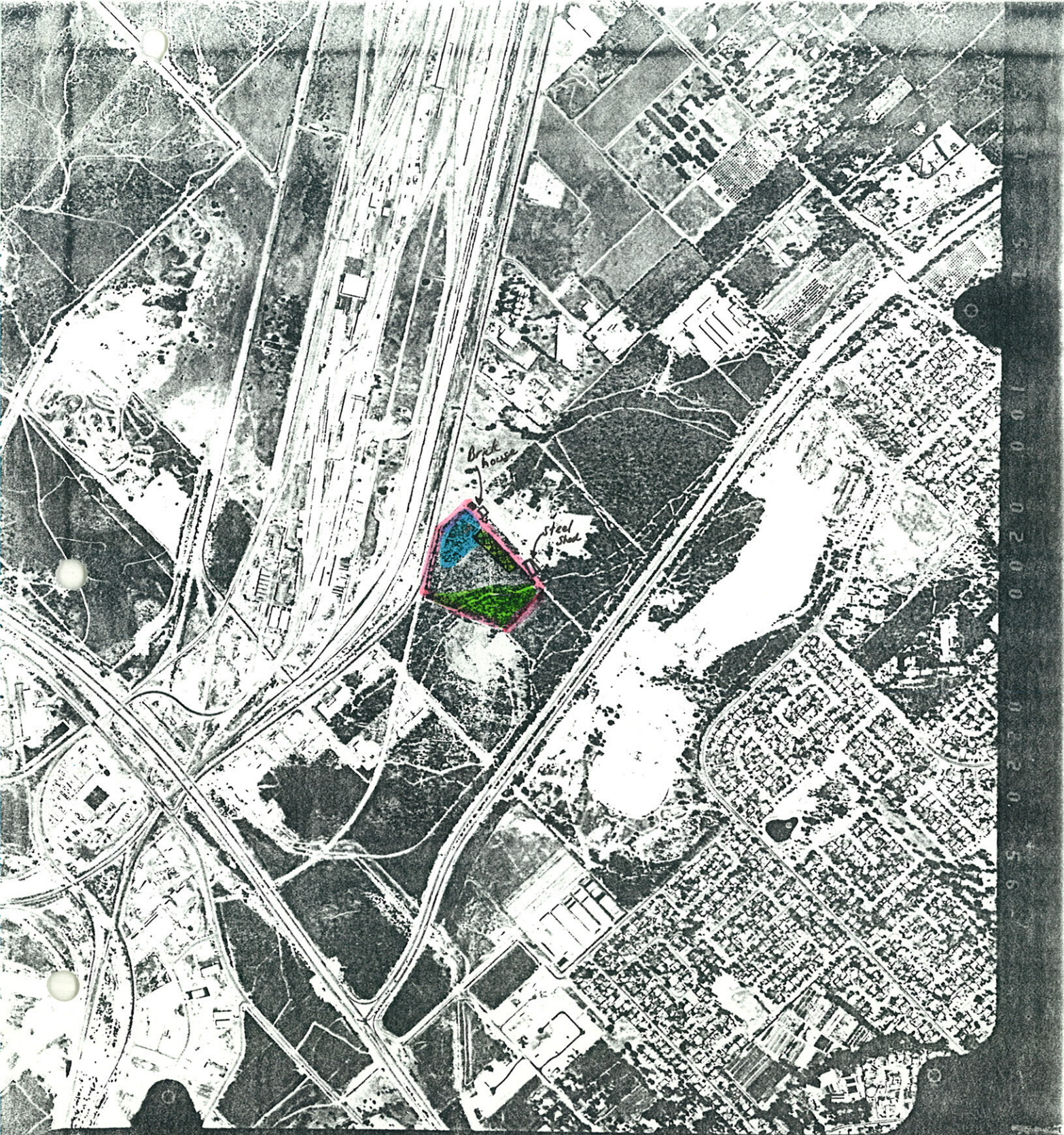
**WESTERN
AUSTRALIAN
PLANNING
COMMISSION**



**CUSTOMER
FOCUS**
WESTERN AUSTRALIA







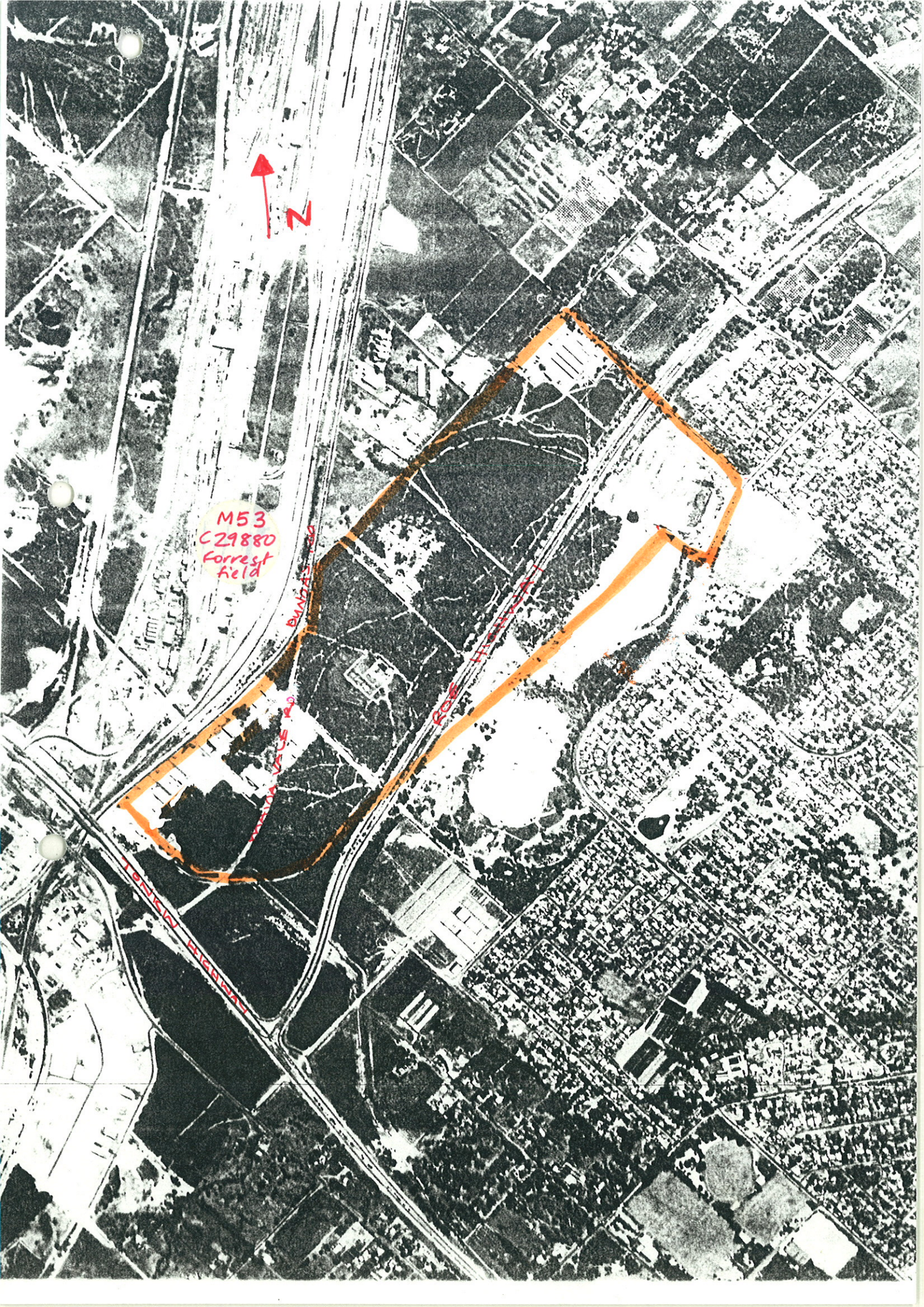
b bk 27/10/90



MAP 1



-  Area of ground survey, predominantly excellent condition
-  *Lambertia multiflora* ssp *darlingensis* PRIORITY
-  *Macarthuria*
-  See notes, area in very good condition



M53
C29880
Forrest
field



DUNDAS ST

ROSE LANE

LEONARD HIGHWAY

LOCATION

74

Location

73

Location
73

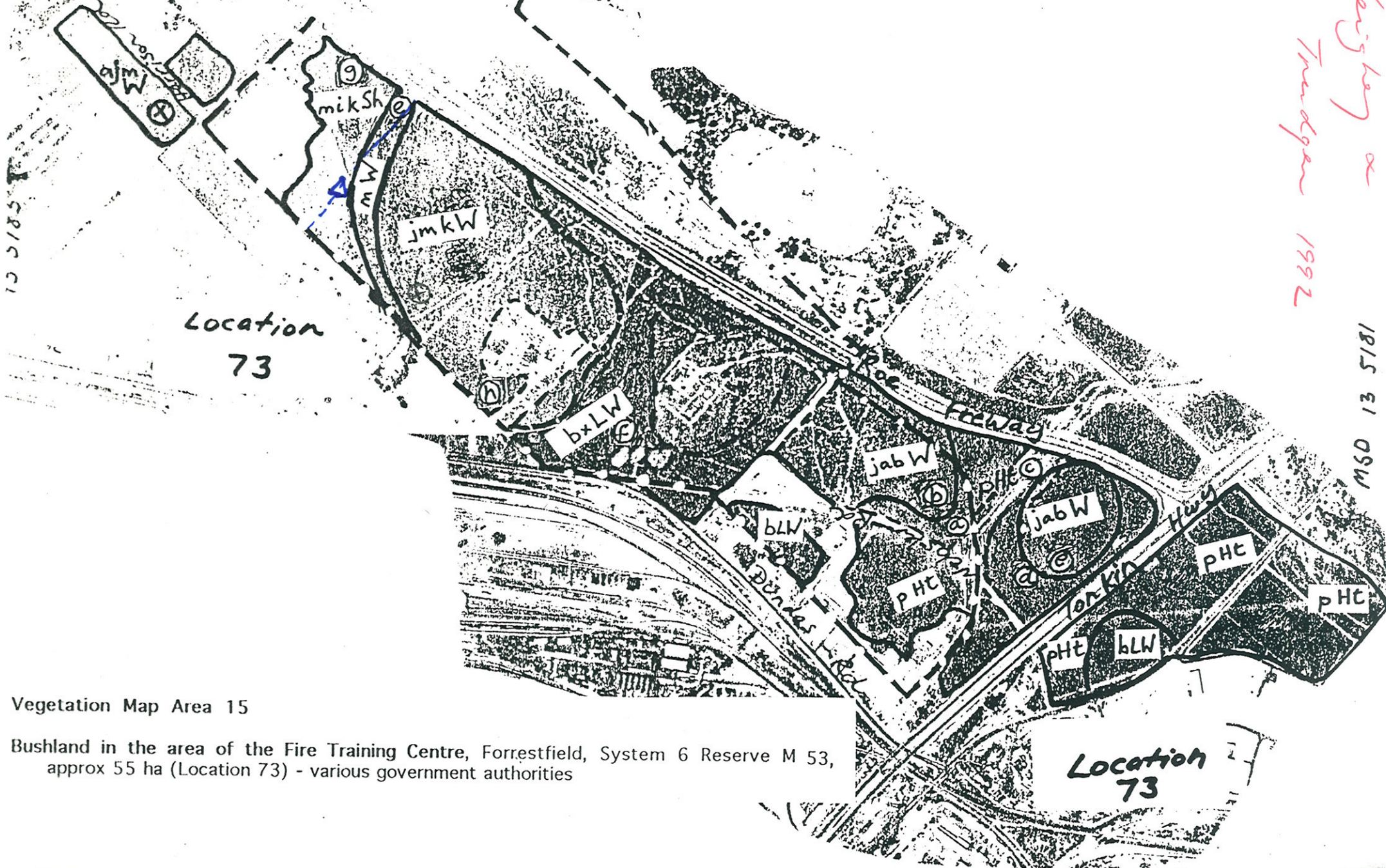
Vegetation Map Area 15

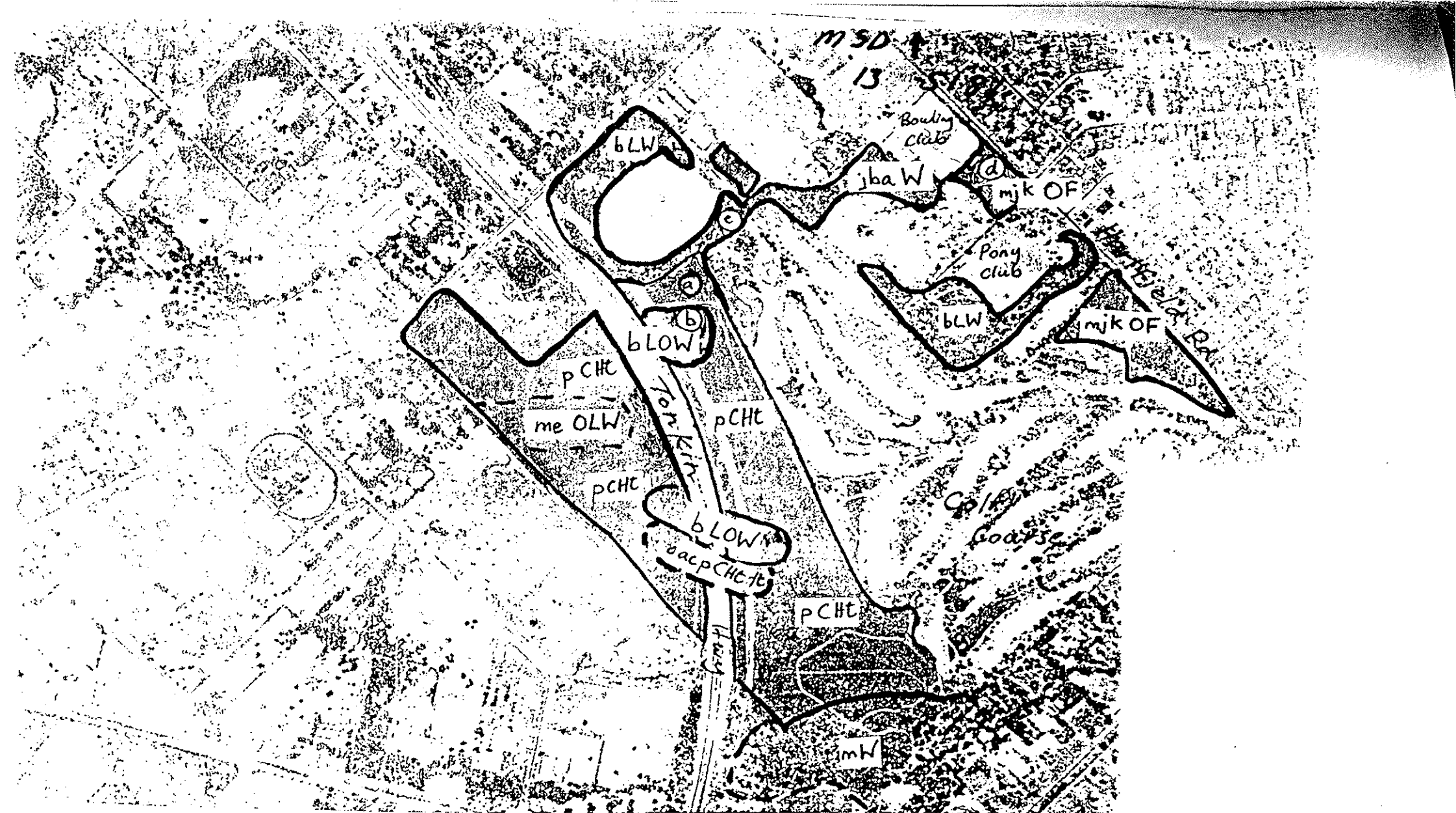
Bushland in the area of the Fire Training Centre, Forrestfield, System 6 Reserve M 53, approx 55 ha (Location 73) - various government authorities

*Keighley &
Trudgill 1992*

1815 31 05W

1815 31 05W

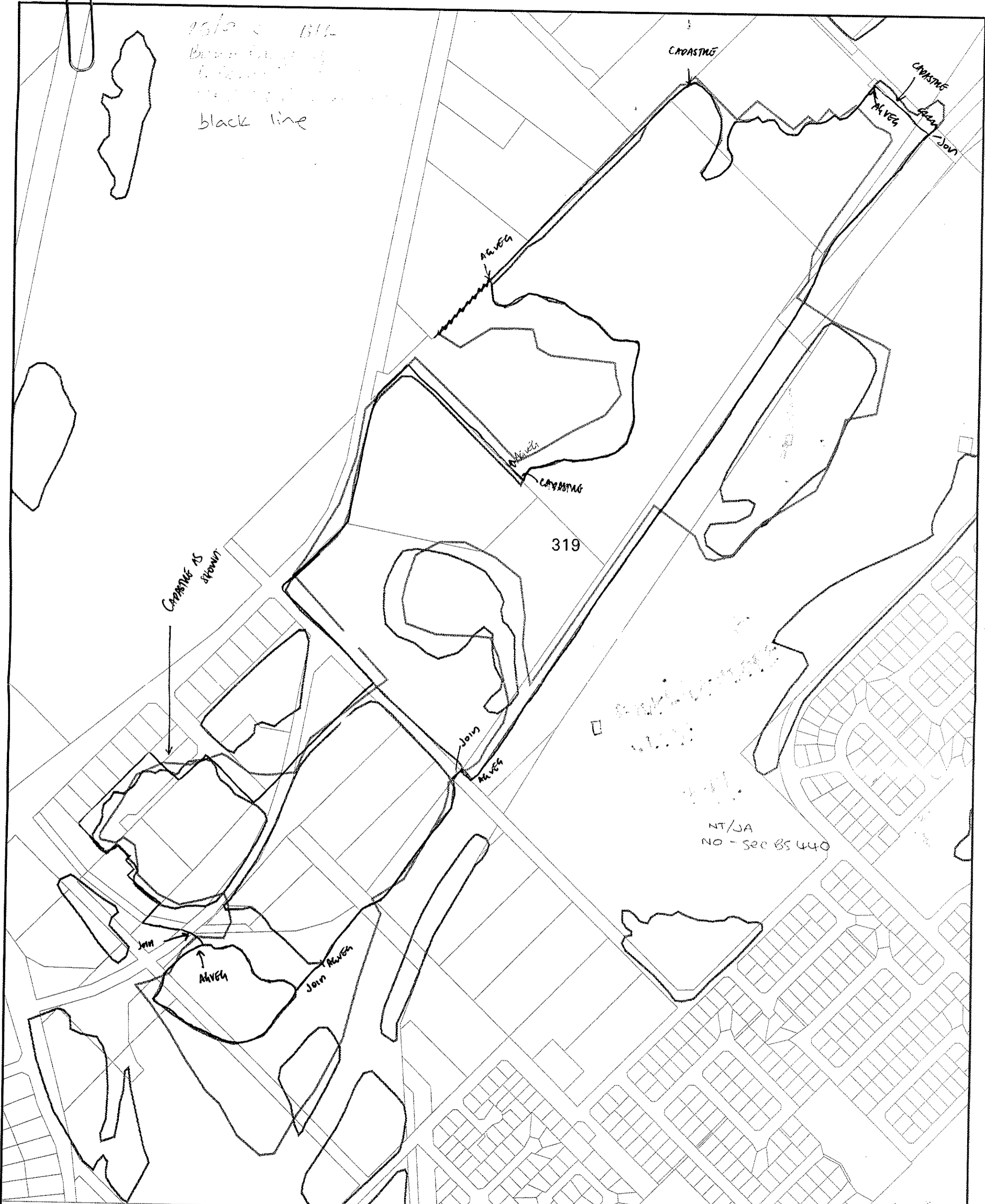







Vegetation Map Area 16

Hartfield Country Club Area, Forrestfield, greater 40 ha (Location 68) - local government

15/10/98 1512
 Bushplan site 319
 boundary theme
 black line



Bushplan Site 319

-  Bushplan sites refno 1-500 SCP BOUNDARY THEME
-  Cadastre
-  AG VEG 1998 BOUNDARY THEME

SPECIAL NOTE
 a) 2 REELS FOR 319
 1) M/S 17R
 2) BUSHPLAN
 b) NORTH EAST PORTION
 MANAGEMENT UNIT 449 E7

Map Ident: plot980929_1	DATE: 29 Sep 98
Prepared By: Andrea Zappacosta	Prepared For:
Scale 1:AUTO	MFP INTERNAL USE ONLY





BUSHPLAN SITES CORRECTED

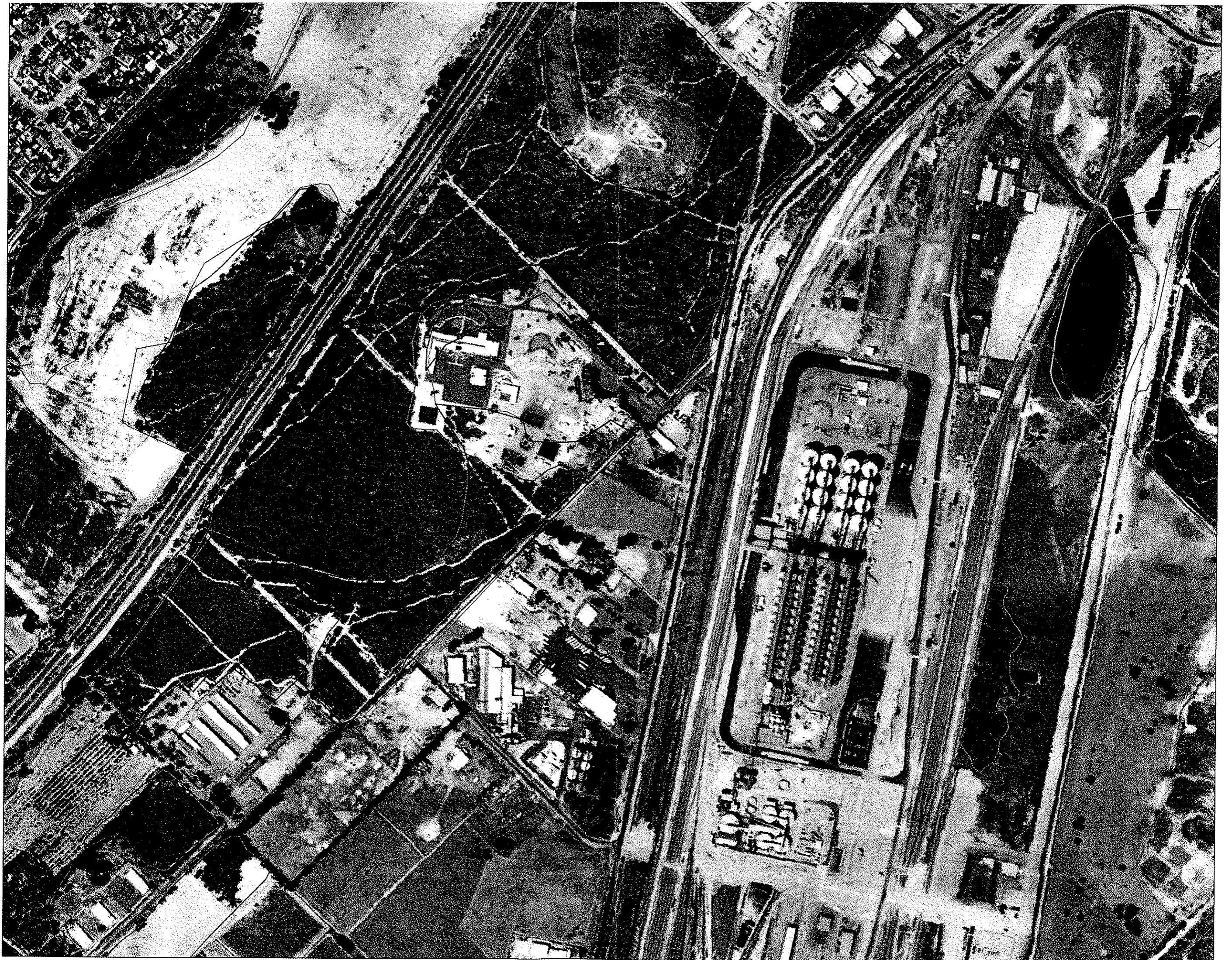


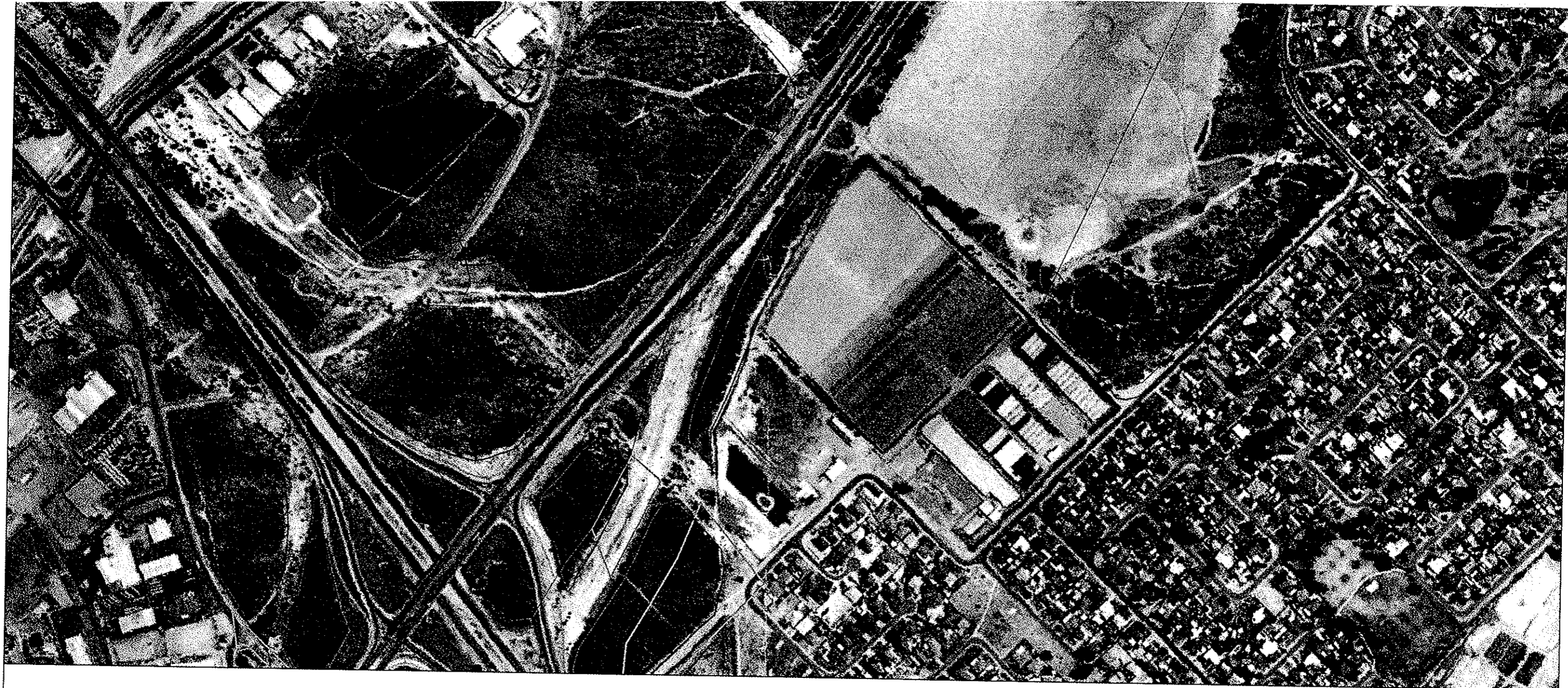
**WESTERN
AUSTRALIAN
PLANNING
COMMISSION**



**CUSTOMER
FOCUS**
WESTERN AUSTRALIA







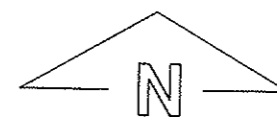
BUSHPLAN SITES CORRECTED

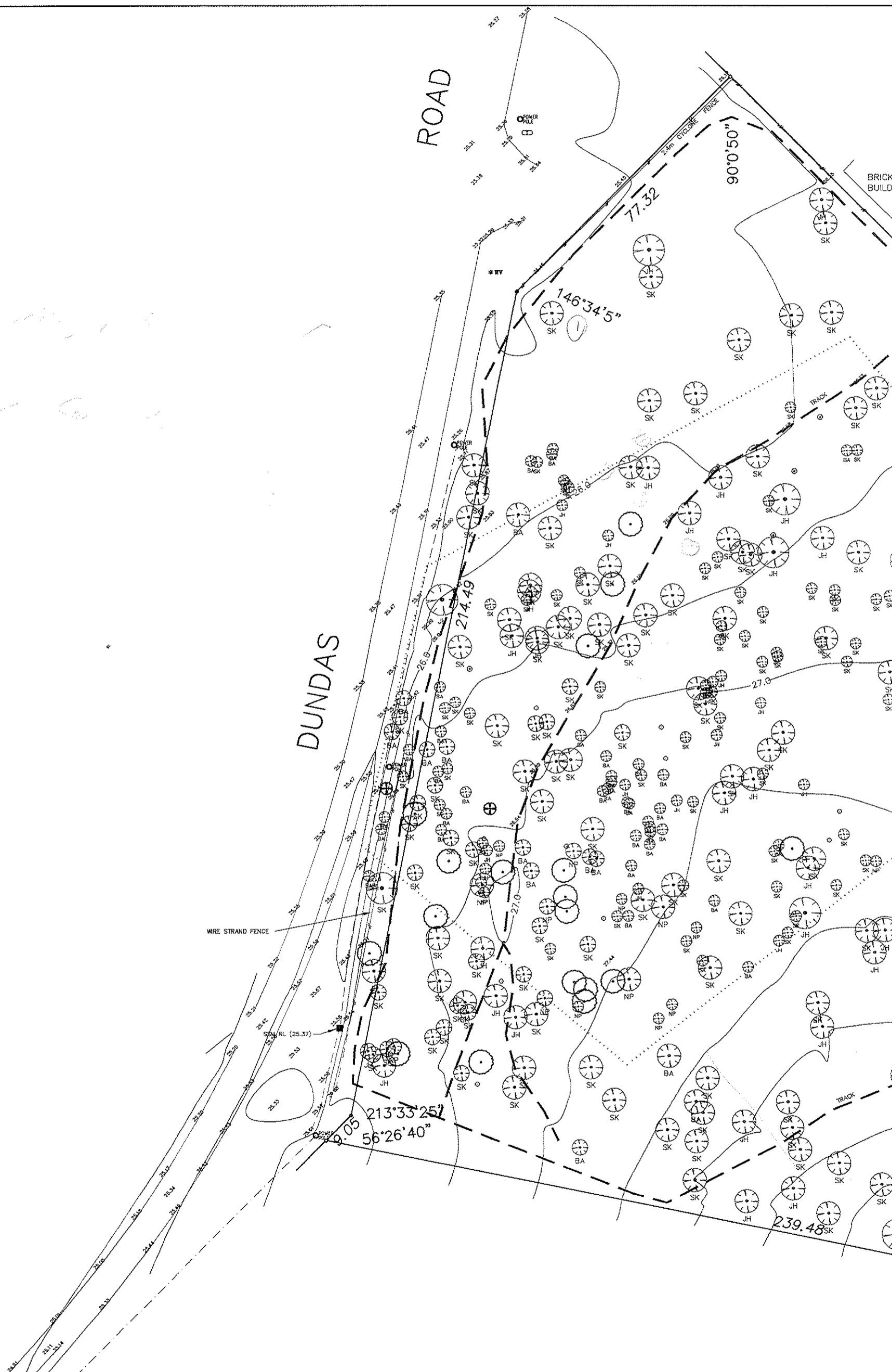


WESTERN
AUSTRALIAN
PLANNING
COMMISSION

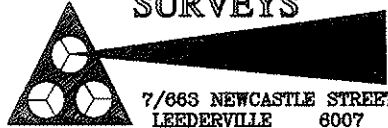


CUSTOMER
FOCUS
WESTERN AUSTRALIA





SPECTRUM SURVEYS



7/668 NEWCASTLE STREET
LEEDERVILLE 6007

SURVEYOR: CB, BW, PZ FILE: 95272.DWG

DRAWN: CB SCALE: 1:1000

CHECKED: NP DATUM: AHD
18/9/95

PROJECT:

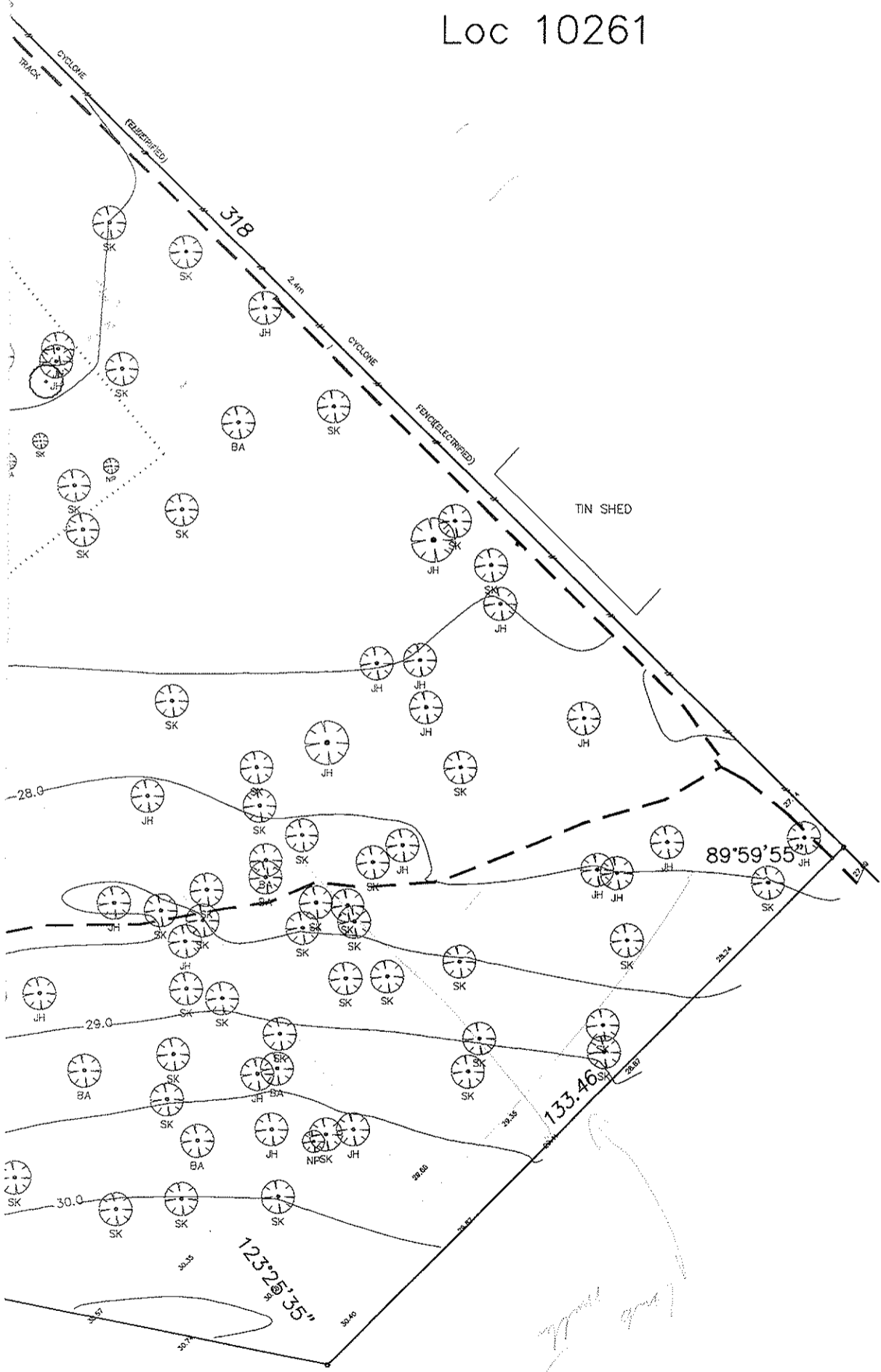
ADOLESCENT AND CHILD SUPPORT SERVICE

TITLE:

SITE SURVEY AND REPEG, LOC. 10276 MAIDA VALE ROAD



Loc 10261



Loc 8687

CLIENT:
CHRISTOU & VUKO ARCHITECTS

SYMBOL LEGEND

* LIGHT POLE	○ TELECOM PIT	⊕ JARRAH TREE
⊕ POWER DOME	⊕ STORMWATER MANHOLE	⊕ SHEOAK TREE
⊕ SEWER MANHOLE	⊕ STORMWATER GRATE	⊕ BANKSIA TREE
⊕ FIRE HYDRANT	○ TREE CLUMP	⊕ NATIVE PEAR TREE
* W WATER VALVE	○ TREE STUMP	
	○ BLACKBOY	

FIELD

NOTES:
1) TREES SYMBOLS ARE SHOWN IN FOUR DIFFERENT SIZES, FROM LARGEST TO SMALLEST, THE SYMBOL SIZES CORRELATE APPROXIMATELY TO THE FOLLOWING TREE SIZES: (a) LARGER THAN 1.0m φ (b) 0.5m - 1.0m φ (c) 0.25m - 0.5m φ (d) LESS THAN 0.25m φ.
2) WITHIN DOTTED LINES, ALL TREES ABOVE SAPLING SIZE WERE LOCATED, ELSEWHERE, ONLY TREES LARGER THAN 0.25m φ WERE LOCATED.
3) ALL TREES SHOWN, FELL WITHIN THE ABOVE CATEGORIES ACCORDING TO THE VISUAL OPINION OF THE FIELD SURVEYORS. HOWEVER, THEIR MEASUREMENTS WERE NOT PHYSICALLY RECORDED AND SOME MINOR VARIATIONS MAY EXIST. ALSO, ALTHOUGH MUCH CARE WAS TAKEN TO LOCATE ALL TREES CONFORMING TO THE ABOVE CATEGORIES, THE DENSITY OF VEGETATION CREATED THE SMALL POSSIBILITY THAT SOME TREES WERE OVERLOOKED.

Main Rds Dept

Roe Hwy Tonkin Hwy to Welahpool Rd

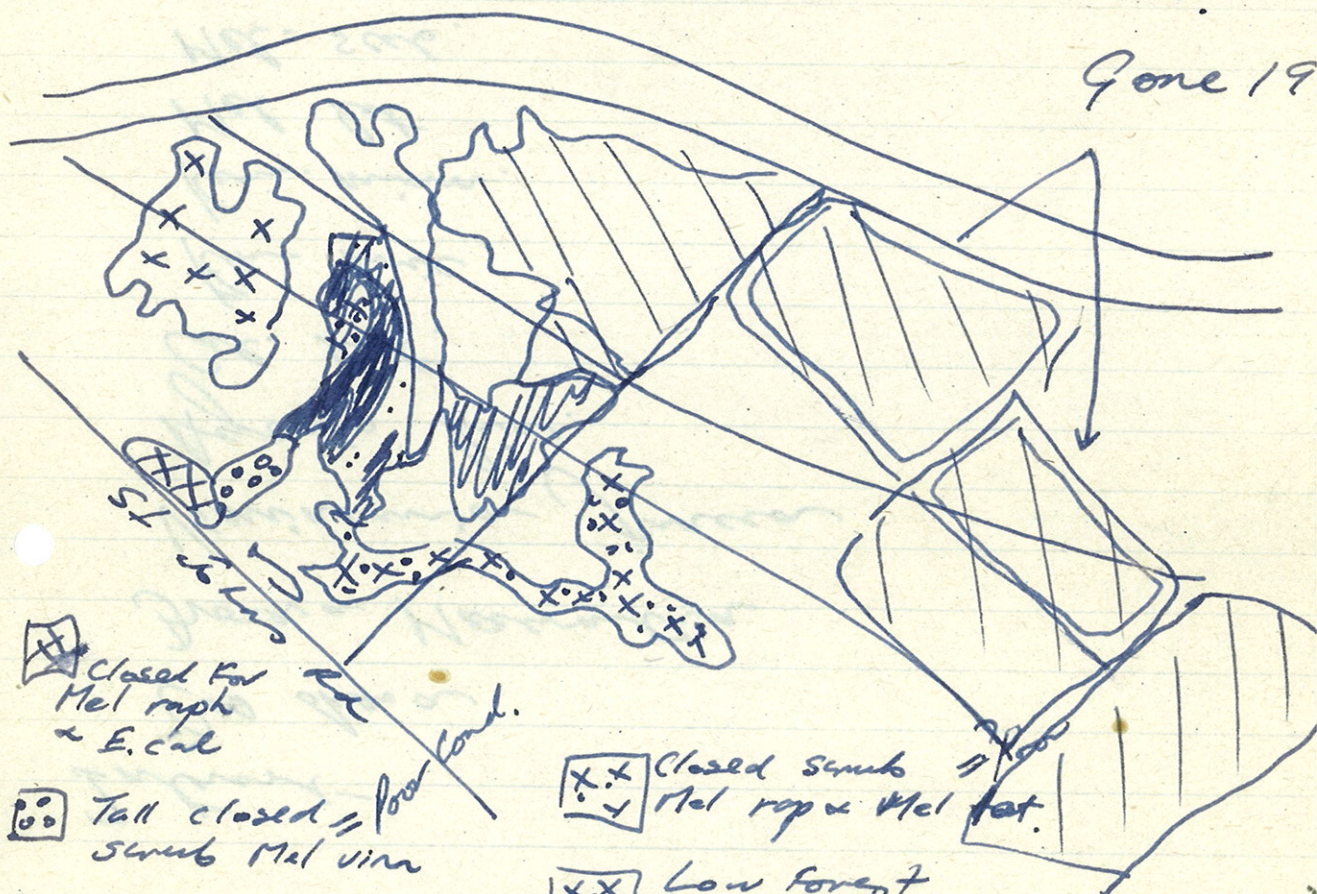
Environmental Management Plan








Feb 1991

Prepared by W.G. Martinick & Assoc Pty
for Gutteridge Hopkins & Davey Pty Ltd

The Proost Semirich & Chalme (1988)
Remainder cleared.

Done 19



-  Closed For Mel raph & E. cal
-  Tall closed, Poor scrub Mel vine
-  Closed Heath: Kheca sp Lapidospira Vart.
-  Closed Scrub Mel raph & Mel fat.
-  Low forest Kunzea & Banksia
-  Tall Scrub M. raph, Myrica, Astrot
-  Low open forest M. prostr & Myrica

Scattered *Kuigia* in the heath
~~no mention Mel vine or lot in text.~~

Interest-

Ces. shes.

Prosera Macwantha

Viminosa juncea

Agonis lin.

Cal. lat.

Ku. eric.

Ku. micra.

Mel. lat.

Mel. sub.

Mel. vin.

Vet. lindleye ssp *lind.*

Banks telnut.

A. Biol Survey of the Prop Rd Area of the
Prop Ext of the Koe Hwy
South St to Welshpool Rd

Anar Napier & Assors Nov 1989
Dony Watkins

Vege

Hakea - Vert loom Heath

Don Hah Iri, Keng. mic, Vert acc, Hak. erin,
Ac. drew, Vin jun.

Assor Vert huy, Vert davis, Meso tetrag.
Pet striata (Karnish Swp)

Mari Woodland

Mars letra (Bixton)

Ladcliffe-Burhead Hwy Biol Survey
Dec 1986

D. Backshall

R. Hut

mostly alder, little riverine on
GE Hwy but degraded

Bank telnet

Blancou

M53

4/11/94

Fire training

landscaped NOT in keeping
native, no attempt to retain
native veg. New boundary
cleared, fenced goes ACROSS
creek.

Creekline weed infested
some wet. bulb mainly 'Cane Grass'
=? Lesmurdie

Banks OK see site and
additional species.

Private Land/WAWA not
managed, rubbish dumped,
and etc see KLT 1991

Predom 'upland' weed =
Euk Love Grass

Numerous treebreaks, tracks

over entire area



M53 Reserve C29880, Forrestfield
 Bulletin 708 (MRS Amend, Foothills)

Friends Advocate Management

Other Names:

Specific Study/studies Miscellaneous studies

Flora

Vegetation Map	1	<u>2</u>	3	
Flora list	1	2	3	<u>4</u>
Significant Taxa		<u>done / suitable</u> / doubtful		

Fauna

Mammals	1	2	
Birds	1	2	RAOU
Reptiles and Amphibia	1	2	
Invertebrates	1	2	

Vegetation Condition Map Sites Comment

Disturbance Factors Comment Management

Swan Coastal Plain Floristic Survey

AHC: National Estate- Listed / Interim / Nominated / Notified NT (WA): Heritage Classification

Notes

M53 Reserve C29880, Forrestfield
 Bulletin 708 (MRS Amend, Foothills)

<p>M53.1 SECWA, Fire Brigades Board, MRD and WAWA in consultation with EPA manage areas shown in Figure 121, System 6 Red Book to maintain as much natural vegetation as possible.</p>	<p>Implementation Progressing</p>	<p>Portion of area is to be developed as a fire training centre. DPUD currently considering reserving part of the area.</p>
<p>M53.2 Protection of conservation value of private property be sought through planning procedures.</p>	<p>Implementation progressing</p>	<p>Portion of the area has been developed for light industrial purposes. DPUD currently considering reserving part of the area.</p>

LM Rare Flora

Please circle the appropriate response or respond in the space provided.

Area <u>M53</u> Name	
Title	
Published/ <u>Unpublished</u>	Date <u>in progress</u>
Author/s <u>Dave Everall</u>	
Location of Publication	
Purpose (why was the report prepared?) <u>planning</u>	
Government	<u>DPUD</u>
Corporate	
Community Group	
Management Plan	

Soils			
Units	mapped	described	referenced

Landscape		
Features	described	referenced

Flora			
Vegetation Map			
Units	Site based (no)		
Mapped			
Veg Units	Comparable Heddle <i>et al</i>	Compared Heddle <i>et al</i>	Unit not mapped by Heddle <i>et al</i>
Flora list			
Timing	%completion	Significant Taxa	
	Trees Shrubs Herbs Sedges Weeds	DRF	CALM Priority Other

Fauna			
Timing	%completion	Significant Taxa	
	Mammals	Birds	Sched1 Sched2 Other
	Reptiles	Invertebrates	

Vegetation Condition		
Site based	Mapped	Units
Disturbance Factors		
Phytophthora	observed	Other incidental
	tested	itemised

Notes	

Please circle the appropriate response or respond in the space provided.

Area M53 Name	
Title <i>Western Australian Fire Brigades Board. Fire Service Training Facility Forreestfield Notice of Intent.</i>	
Published <input checked="" type="checkbox"/> Unpublished	Date <i>Nov 1989</i>
Author/s	
Location of Publication <i>DPUD</i>	
Purpose (why was the report prepared?)	
Government	
Corporate <i>Kinhill Engineers</i>	
Community Group	
Management Plan	

Soils				
Units	mapped	<input checked="" type="checkbox"/> described	referenced	<i>brief</i>

Landscape				
Features	<input checked="" type="checkbox"/> described	referenced		<i>brief</i>

Flora <i>not adequate definition values</i>				
Vegetation Map				
Units	Site based (no)			
Mapped				
Veg Units	Comparable Heddle <i>et al</i>	Compared Heddle <i>et al</i>	Unit not mapped by Heddle <i>et al</i> .	
Flora list				
Timing	% completion		Significant Taxa	
	Trees	Shrubs Herbs	Sedges	Weeds
				DRF CALM Priority Other

Fauna <i>no work possibly bandicoots</i>				
Timing	% completion		Significant Taxa	
	Mammals	Birds	Sched1 Sched2 Other	
	Reptiles	Invertebrates		

Vegetation Condition		
Site based	Mapped	Units
Disturbance Factors		
Phytophthora	observed	Other incidental
	tested	itemised

Notes
<i>eg Conosperma undulatum = Con. triplinervium</i>

DUNDAS ROAD BUSHLAND, FORRESTFIELD**Boundary Definition:** bushland boundary**SECTION 1: CADASTRAL INFORMATION****Bushplan Site no.** 319 **Map no.** **Map sheet series ref. no.** 2034-II SE
System 6 (1983): M53 Part System area bushland, only bushland described**Other Names**Reserve C29880 Forrestfield; Submission Area 92;
Location 73 (BJ Keighery and Trudgen 1992)**Local Authorities (Suburb)**

Shire of Kalamunda (Forrestfield)

Area (ha): Total: 76.233, Bushland: 73.301**Zoning****MRS:** Industrial, PP-Special Uses, PP-State Energy
Commission, Rural, Important Regional Roads,
Controlled Access Highways**TPS:** General Industry, Light Industry, Recreation/Open
Space, Rural**Ownership Categories (Purpose)**

State Government

Commercial Organisation

Multiple Owners

Local Government

Vacant Crown Land

Lot/Location numbers, Street name121 Maida Vale Rd, 0, 20, 181 Keymer Rd, 0, 30, 31,
32, 43, 44 Epsom Av, 0 ?, 0 Bedford Cr, 0 ?, 0 Hardy rd

1 Dundas Rd, 22 Bedford Cr, 8 Carolyn Pl, 9 Bedford Cr

10124, 10125, 10253 Roe Hwy, 10260 Harrison Rd,

10261, 10276, 11026 Dundas Rd, 11239 Dawson Av,

17 Berkshire Rd

0 Cohn St

?, Road

SECTION 2: REGIONAL INFORMATION**LANDFORM AND SOILS****Pinjarra Plain**

Guildford Formation (Qpa: Mgs1)

Bassendean Dunes

Bassendean Sands (Qpb: S8)

Bassendean Dunes/Pinjarra Plain

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

VEGETATION AND FLORA**Vegetation Complex****Combinations of Bassendean Dunes/Pinjarra Plain**

Southern River Complex

Floristic Community Types**Supergroup 1: Foothills/Pinjarra Plain****2** Southern wet shrublands

(most northern representation, only representation in PMA, disjunct from southern representations)

3a *Eucalyptus calophylla* — *Kingia australis* woodlands on heavy soils (most northerly representation with BS45 and BS46)**Supergroup 3: Uplands, centred on Bassendean Dunes and the Dandaragan Plateau****20a** *Banksia attenuata* woodlands over species rich dense shrublands**WETLANDS****Wetland Types:** palusplain, artificial channel, creek (not previously described, DEP 1996)**Consanguineous suite****Bassendean — Pinjarra transition OR Bassendean with fluvial features**

Mungala (B/P.2)

Wetland Management Objective: Conservation (34.508ha), Resource Enhancement**Lake EPP:** none identified**THREATENED ECOLOGICAL COMMUNITIES/SPECIES****Critically Endangered** (floristic community type 3a), **Endangered** (floristic community type 20a)**SECTION 3: SPECIFIC SITE DETAIL****Landscape Features:** vegetated creek, wetlands and uplands**Vegetation and Flora:** limited survey (DEP 1996 (M53 02-06), Gibson *et al.* 1994 (M53), BJ Keighery 1994b, BJ Keighery and Trudgen 1992, Tingay 1990, Tingay and Assoc. 1996)**Structural Units:** mapping (BJ Keighery 1994b, BJ Keighery and Trudgen 1992)

Uplands: *Eucalyptus marginata* Open Woodland; *Eucalyptus calophylla* Woodland; scattered *Eucalyptus calophylla* and *Nuytsia floribunda* over *Caustis dioica* Sedgeland; *Banksia attenuata* and *B. menziesii* Woodland; scattered *Hakea trifurcata* clumps over *H. incrassata*, *Acacia pulchella* and *Petrophile striata* Low Shrubland; *Stirlingia latifolia*, *Daviesia physodes*, *Allocasuarina humilis* and *Verticordia densiflora* Open Low Heath

Wetlands: *Eucalyptus calophylla* Woodland; *Pericalymma ellipticum*, *Hakea sulcata* and *Stirlingia latifolia* Open Low Heath

Scattered Natives: not applicable

Vegetation Condition: >90% Excellent to Very Good with <10% Good with areas of severe localised disturbance

Total Flora: 223 native taxa (estimated >75% expected flora)

DRF/Priority and significant flora: *Conospermum undulatum* (R), *Macarthuria keigheryi* (R), *Schoenus pennisetis* (1), *Isopogon drummondii* (3), *Schoenus benthamii* (3), *Lambertia multiflora* var. *darlingensis* ms (3), *Platysace ramosissima* (3), *Conostephium minus* (4); *Verticordia lindleyi* subsp. *lindleyi* (4); *Actinostrobos acuminatus*, *Dasyopogon obliquifolius*, *Platysace juncea*, *Xanthorrhoea drummondii*, *Hakea conchifolia*, *Pityrodia bartlingii*, *Byblis gigantea*, *Drosera macrantha* scp (BJKandNG 228), *Isopogon asper*

Fauna: significant mammal species: Quenda (*Isoodon obesulus*) (Friend 1996)

Linkage: bushland linkage south (BS320) via Tonkin Highway, linkage to east (BS123) and west (BS386) via Crumpet Creek; part of proposed Greenway 57, 117, 84 (A Tingay & Associates 1997)

Other Attributes: Unusual combination of series of uncommon and restricted floristic community types; recommended to be managed as a flora conservation area (BJ Keighery and Trudgen 1992); recommended to be declared as an A class Nature Reserve for the protection of flora and fauna in Gibson *et al.* 1994, part Bushplan Site Category One Area Middle Canning Catchment Study (Evangelisti & Associates *et al.* 1995); Contains plant communities representative of the eastern side of the Swan Coastal Plain

SECTION 4: INTERNATIONAL AND NATIONAL SIGNIFICANCE

not listed

SECTION 5: INCLUSION CRITERIA AND RECOMMENDATIONS

Criteria met for inclusion: 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: Private land

Recommendation: The most appropriate mechanism for the protection of this Bushplan Site be considered through the public comment period in consultation with the landholder/s and other interested parties and further specified in the final report.

added 22/7

PIONEER PARK BUSHLAND, FORRESTFIELD

SECTION 1: CADASTRAL INFORMATION

Bushplan Site no. 440 Map no. Map sheet series ref. no. 2034-II SE

System 6 (1984): M53 Part System area bushland, only bushland described

Other Names Area (ha): Total 15.362, Bushland 7.165

Local Authorities (Suburb)
Shire of Kalamunda (Forrestfield)

Lot/Location numbers, Street name
?, 11239 Dawson Av, 12588 ?

Zoning
MRS: Urban, Rural
TPS: Recreation/Open Space, Rural
Ownership Categories (Purpose)
Data unavailable

SECTION 2: REGIONAL INFORMATION

LANDFORM AND SOILS

Pinjarra Plain

Guildford Formation (Qpa: Mgs1)

Bassendean Dunes

Bassendean Sands (Qpb: S8)

VEGETATION AND FLORA

Vegetation Complex

Combinations of Bassendean Dunes/Pinjarra Plain

Southern River Complex

Floristic Community Types: *not sampled, types inferred

Supergroup 3: Uplands, centred on Bassendean Dunes and the Dandaragan Plateau

*20a *Banksia attenuata* woodlands over species rich dense shrublands

WETLANDS

Wetland Types: palusplain

Notes on vegetation condition and significant taxa in Reserve 37997, part M53
B.J. Keighery 29th February 1996

Methods and Limitations

Approximately two hours were spent in the reserve (28/2/96). The survey was limited by time of the year and the effects of a fire in summer 1994/5. Consequently the annual and geophytic flora of the area could not be well observed. All condition ratings are conditional, needing to be checked in late spring and early summer.

Vegetation Condition

The vegetation in the study area was in predominantly excellent condition. An area approximately 20 metres wide stretching from the brick house to the steel shed in the Fire Training Centre on the northern boundary of the study area was in very good condition appearing to have been partially cleared in the past (Map 1). The entire area was burnt in summer 1994/5 but regeneration is progressing well. Plants that have regrown from lignotubers, bulbs and rhizomes flowered in 1995 and there were many seedlings of plants that had regenerated from seed.

There is no significant weed invasion evident in the majority of the study area. Disturbed areas along the southern boundary adjacent to the abandoned Water Authority installation and the boundary with Dundas Road are invaded by Perennial Veldt Grass. While the entire area of M53 is characterised by a great deal of severe localised disturbance associated with the tracks and the developed lands (SEC buildings, the Fire Training Centre and an abandoned Water Authority installation) the only severe localised disturbance in the study area was the proliferation of tracks along Dundas Road and a series of recent drilling pads (approximately seven) in the north western area. There had been some timber cutting in the north western corner.

Significant Taxa

Three Priority taxa (Atkins, 1995) were found in the study area; *Lambertia multiflora* var *darlingensis* ms, *Conospermum undulatum* and *Macarthuria* sp. Mullering (B.J. Keighery).

Conospermum undulatum is endemic to the eastern side of the Swan Coastal Plain in the Perth Region and has been recommended for declaration as declared rare flora by two recent surveys (Kelly *et al.* 1993 and Gibson *et al.* 1994). This taxon was found scattered throughout most of the study area (Map 1).

Macarthuria sp. Mullering (B.J. Keighery) is known from two locations, in the Coojarloo area (northern sandplain) and Kenwick. The original location of the Kenwick population is not exact and the study area may well be the same as this previous collection. Presently this species is classed as priority 1 but as both areas in which it has been found are well surveyed (Patrick *et al.* in prep, Kelly *et al.* 1993 and Gibson *et al.*) it should be considered for declaration as declared rare flora. This taxon was located in the north western corner of the study area (Map 1) its area of location being centred on the area with scattered *Kingia*.

Lambertia multiflora var *darlingensis* ms is located in the south eastern areas of the study area (Map 1).

The area described as being in very good condition had the lowest concentration of priority taxa.

Geographically Significant Taxa

The area of M53 is characterised by a series of taxa that normally occur north and south of the study area and on the Scarp and Plateau. A series of these taxa were located in the study area on this visit. These were:

- from the sandplains to the north: *Dasyogon obliquifolius* (north to Eneabba) and *Pityrodia bartlingii* (Geraldton to Busselton and inland to the wheatbelt)
- from the Scarp and Plateau: *Lambertia multiflora* ssp. *darlingensis*, *Jacksonia restioides*, *Mesomelaena tetragona* and *Persoonia elliptica*

There may well be others present as the fire and the time of year were not ideal for flora survey.

Note: see Vegetation and Flora Report for System Six Proposed Reserve - M53, Bronwen Keighery, November 1994 for more detail on the entire area.

DEPARTMENT OF CONSERVATION AND

HEAD OFFICE
HACKETT DRIVE CRAWLEY
WESTERN AUSTRALIA
Phone (09) 386 8811
Telex AA 94585
Facsimile (09) 386 1578

STATE
50 HAYMAN ROAD
WESTERN AUSTRALIA
Phone (09) 367 0333
Telex AA 94616
Facsimile (09) 367 0466

Please address all correspondence to Executive Director, P.O. Box 104, COMO W.A. 6152

COPY 1995
Your Ref: 110/81 M53
Our Ref: 0.5.12
Enquiries: Mr L Mutter
Phone: 364 0712

The Chairman
Environmental Protection Authority
1 Mount Street
PERTH WA 6000

ENVIRONMENTAL PROTECTION AUTHORITY	
15 JUN 1990	
File No. CT6/M53	Initials FK

Attention: Miss F Keating

SYSTEM 6 RECOMMENDATIONS M53, FORRESTFIELD - RESERVE 37260

I refer to your correspondence dated 20 April 1990.

Officers from this Department have undertaken an inspection of Reserve 37260. Two species of flora listed on the Reserve Flora List were found. A population of approximately 40 Isopogon drummondii was found at the location shown on the attached map. Conospermum undulatum was fairly common on this reserve and the entire M53 area, but the species distribution is restricted to just a few areas.

Isopogon drummondii has a priority 1 code on the Reserve List - Very High Risk Taxa. (Species which are known from one or a few localities on lands under immediate threat, under consideration for declaration as rare flora but in need of urgent high priority further survey.) As a result of recent surveys, Isopogon drummondii is likely to be gazetted as a Declared Rare Flora next year.

Conospermum undulatum has a priority 3 code on the Reserve List - Vulnerable Taxa. (Species which are known from several localities some of which are on lands not under immediate threat, under consideration for declaration as rare flora but in need of further survey.)

Another species described as rare in the Metropolitan Region, Dasyogon obliquifolius, is also found on the Reserve.

The Isopogon drummondii population is outside the area to be developed while the Conospermum undulatum and Dasyogon obliquifolius are well represented on the remainder of Reserve 37260 and M53. The Department of Conservation and Land Management (CALM) has no objections to the Fire Training Centre development providing the WA Fire Brigade undertakes to protect the remaining area of natural vegetation, particularly the area containing Isopogon drummondii. CALM can be contacted regarding appropriate management practices.

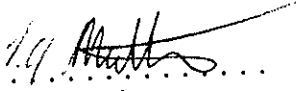
36899 INFO

The other areas of M53 have also been inspected and contain significant populations of Isopogon drummondii, Conospernum undulatum, Verticordia lindleyi (also Priority 1) as well as species which are rare in the Metropolitan Region or at the limit of their distribution.

It is CALM's understanding that the Environmental Protection Authority is requiring that a Structure Plan be prepared for the area. CALM is in favour of this initiative and can provide information on the presence of rare flora. CALM's Metropolitan Region can be contacted in this regard on 364 0712 or 364 0716.

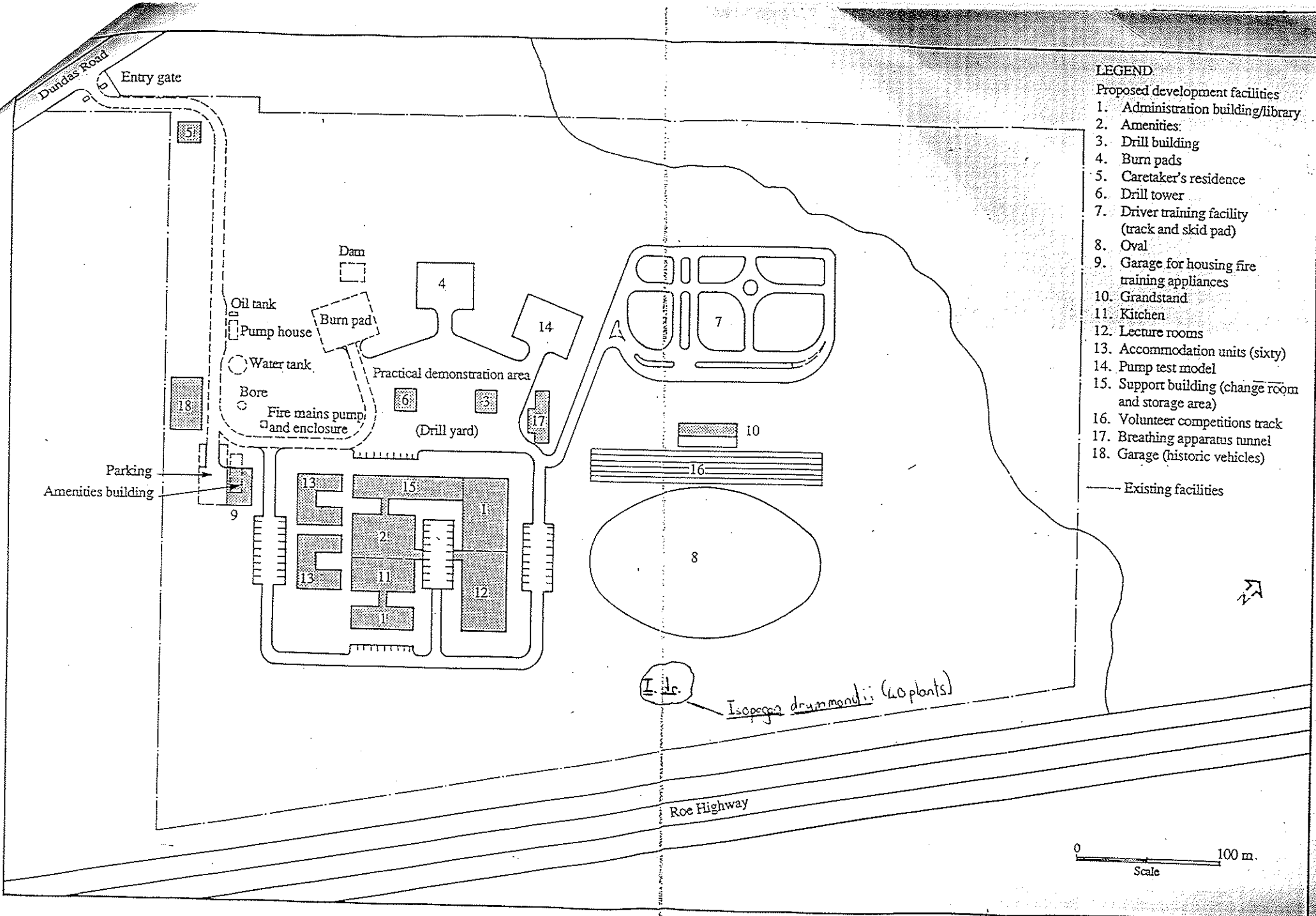
Thank you for the opportunity to provide comment.

Yours faithfully


.....
for Syd Shea
EXECUTIVE DIRECTOR

11 June 1990.

att Location Map.



- LEGEND**
- Proposed development facilities
1. Administration building/library
 2. Amenities
 3. Drill building
 4. Burn pads
 5. Caretaker's residence
 6. Drill tower
 7. Driver training facility (track and skid pad)
 8. Oval
 9. Garage for housing fire training appliances
 10. Grandstand
 11. Kitchen
 12. Lecture rooms
 13. Accommodation units (sixty)
 14. Pump test model
 15. Support building (change room and storage area)
 16. Volunteer competitions track
 17. Breathing apparatus tunnel
 18. Garage (historic vehicles)
- Existing facilities

0 100 m.
Scale

Figure 4.1
CONCEPTUAL LAYOUT OF PROPOSED TRAINING CENTRE DEVELOPMENT

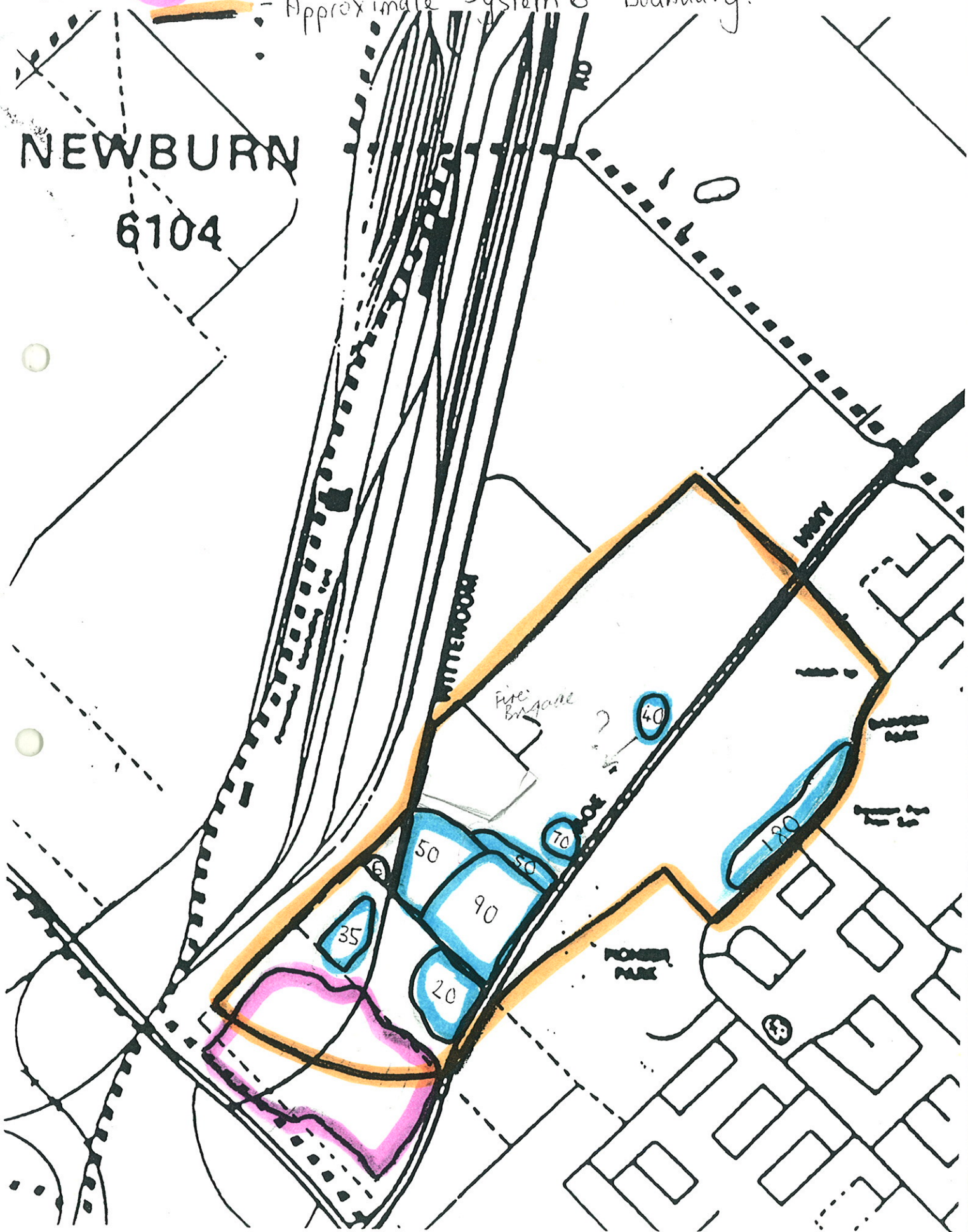
KIN HILL 1990

⑩ - Locations where Isopogon drummondii is found. The number indicates the estimated number of plants (*sand species*)

○ - Location where Verticordia lindleyi is found. (*waterlogged flat species - palusplain*)

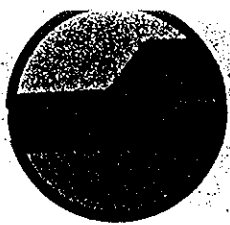
— - Approximate System 6 Boundary.

NEWBURN
6104



CONSERVATION AND LAND MANAGEMENT

STATE OPERATIONS HEADQUARTERS
50 HAYMAN ROAD COMO
WESTERN AUSTRALIA
Phone (09) 367 0333
Telex AA 94616
Facsimile (09) 367 0466



JOHN CRAWLEY
WESTERN AUSTRALIA
Phone (09) 386 8811
Telex AA 94585
Facsimile (09) 386 1578

Please address all correspondence to Executive Director, P.O. Box 104, COMO W.A. 6152

Our Ref: 054-1-1-3P2U
0.10.8
Enquiries: Mr L Mutter
Phone: 364 0712

Chief Executive
Department of Planning
and Urban Development
469-489 Wellington Street
PERTH WA 6000

Attention: Ms Kym Zagwocki

SYSTEM SIX AREA M53 - FORRESTFIELD

I refer to your undated correspondence and copy of the M53 Area Structure Plan.

The Department of Conservation and Land Management (CALM) is in favour of the basic concept outlined in the plan. CALM considers the primary objective in planning for the area should be "to ensure the protection of the largest consolidated area possible".

It is recognised that implementation of the concept will be a difficult task requiring considerable discussion between the various authorities to resolve conflicting demands for the area.

Specific comments on the Structure Plan are:-

- * Section 4.1 It is our understanding that Reserve 29880 contains the rubbish tip site. It is difficult on the ground to determine if the rubbish tip occurs on 29880 or part of 36238. The rubbish tip is not completely cleared, but has two strips of vegetation bordering it, one along Roe Highway (western strip) and the other along Dawson Avenue (eastern strip). The western strip contains the priority one species Conospernum undulatum, as well as Banksia incarna, which is its southern most limit of range. The eastern strip contains an estimated 180 plants of the Priority one species Isopogon drummondii as well as Conospernum undulatum; Priority one species (Very High Risk Taxa) are plant species known from one or a few localities on lands under immediate threat, under consideration for declaration as rare flora but in need of urgent high priority further survey.

OWNER

14/20

Hudlin Pty Ltd
Harden, East & Conti Pty Ltd
20 Kings Park Road
West Perth 6005

15/63

Minorco Pty Ltd
P O Box 40
Willetton 6155

16/68

W M Matthews
c/- J E Matthews "Coondee"
West Brookton 6306

17/80

W M Matthews
c/- J E Matthews "Coondee"
West Brookton 6306

18/92

Meleann Ltd
2 Currajong Street
West Footscray 3012

a) R J Peters
11 The Coombe
Mosman Park 6012

b) G Papagioftsis
20 Grey Street
Bayswater 6053

c) D Papagioftsis
92 Bedford Crescent
Forrestfield 6058

19/98

R D & M D Gibbons
Dunstan Road
Waikerie 5330

20/67 & 28

M R D

21/83

Frank Jasper Pty Ltd
P O Box 577
Kalgoorlie 6430

22/91

Wimarley Properties Pty Ltd
49 Ventnor Avenue
West Perth 6005

23/95

Evenis & Sons
44 Berehaven Avenue
Thornlie 6108

CANTWELL CRESCENT

24/34

D S Macliver
16 Lancett Court
Sorrento 6020

AS AT 9/7/90

DUNDAS ROAD

HOUSE NUMBER

OWNER

- | | |
|-------|---|
| ① 627 | Thonac Nominees Pty Ltd
37 Victoria Park
Wattle Grove 6107 |
| ② 631 | a) M & A & D Furfaro
120 Maida Vale Road
High Wycombe 6057

b) S Furfaro
169 Canning Road
Kalamunda 6076 |
| ③ 635 | Petroleum Calibrations
24a William Street
Beckenham 6107 |
| ④ 639 | Orton Industrial Pty Ltd
97 Belmont Avenue
Belmont 6104 |
| ⑤ 643 | D Jackson & A S Musgrove
48 Central Avenue
Redcliffe 6104 |
| ⑥ 651 | a) M S & T A Althorpe
28 Brae Road
High Wycombe 6057

b) Mr R I Althorpe
28 Dorchester Road
Forrestfield 6058 |
| ⑦ 653 | Waldemar Investments Pty Ltd
P O Box 188
Bentley 6102 |
| ⑧ 655 | Waldemar Investments Pty Ltd
P O Box 188
Bentley 6102 |
| ⑨ 657 | J & P G Boye
606 Metcalf Road
Ferndale 6155 |
| ⑩ 659 | B G Hill & J E Ford
659 Dundas Road
Forrestfield 6058 |
| ⑪ 661 | Wentworth Floorcoverings Agencies
194 William Street
Gooseberry Hill 6076 |
| ⑫ 663 | J N R Caloutti Nominees
4 Cressall Road
Balcatta 6021 |

- an unpublished list of 21 species of DRF, Priority Flora and other significant plants found in stands of Floristic Community Type (FCT) 20a in Forrestfield and nearby, and
- searches of CALM's Rare Flora Database for the locations Forrestfield, Maida Vale, Newburn, Welshpool, Wattle Grove, Kewdale and High Wycombe, which provided five species additional to the FCT 20a list..

Table 1 lists these 26 species and gives conservation codes for the DRF and Priority species among them. These are the principal species sought during the searches of the property. Other species found during the searches were checked against two other tables and another CALM database for conservation status: (1) an unpublished provisional, comprehensive list of significant flora in the Perth Metropolitan Area, (2) The Department of Conservation and Land Management Declared Rare and Priority Flora List (3 December 1998) and (3) CALM's Max database.

Phase 2 was the field work, which comprised walks through and around the property on Monday, 29 June and Wednesday, 1 July 1998. Although compilation of a comprehensive species list was not among the aims of the field work, all native species observed during the field work were recorded. Specimens of plants not readily identifiable in the field were collected for subsequent identification.

Phase 3 was identification, part of which was done in the field and part of which was done at the Western Australian Herbarium, where specimens were checked against identified collections and against keys and descriptions in floras and taxonomic works. Assistance was provided by other botanists, particularly M. Hislop, M. Trudgen, B. Keighery and G. Keighery. Their help and access to the Herbarium are gratefully acknowledged.

Results

One hundred species of native plants were recorded during the project, of which seven are significant species. All of these species are listed in Table 2, along with numerical codes for their family names and indications of which of the three vegetation types they were found in.

Two of the significant species are of particular interest: the DRF smokebush *Conospermum undulatum* and the P4 featherflower *Verticordia lindleyi* subsp. *lindleyi*. Photographs of these two species are reproduced in Plates 2 and 3.

Fifteen smokebush shrubs were found among the woollybush shrubs in the northwestern corner of the property, and an uncounted number of featherflower shrubs were found with *Verticordia densiflora* shrubs in the southwestern end of the property. I marked most plants of the smokebush with short strips of plastic red flagging tape.

Conclusions and Discussion: Vegetation

The larger, *Pericalymma* swamp, and probably also the smaller, *Astarta* sp. 'Brixton' one, is shown on the Water Authority's Map Sheet 2034 II SE (Perth SE) as belonging to a Palusplain wetland type which has been assigned a Preliminary Wetland Management Category of 'c' (for Conservation; note, though that all vegetated sections of extensive wetlands were assigned a Management Category of Conservation). The Map Identification Number assigned to the wetland of which the property's swamp is a part is 85.

The *Pericalymma* swamp is, in my experience, unusual in being both tall and very dense and, at the same time, having a dense herbaceous ground layer, particularly of *Dielsia stenostachya*, *Cytogonidium leptocarpoides*, *Patersonia occidentalis* (swamp form) and other sedges and sedge-like plants. Although from a distance the swamp vegetation looks uniform

(see Plate 1A), it is actually quite varied in terms of the associated shrubs and ground layer species in the stand and their dispersal within it.

The woollybush vegetation in the property's northwest corner belongs to Floristic Community Type 20a, which, along with more than 30 other floristic community types, is described by Gibson, Keighery, Keighery, Burbidge and Lyons (1994) for a small part of the Swan Coastal Plain between Gingin and Busselton. Type 20a has the greatest number of species of any of the Gibson community types on the Swan Coastal Plain between Bunbury and Gingin and is classified as endangered by English and Blyth in their 1997 report on Threatened Ecological Communities. The woollybush that now dominates the stand on the property is indicative of disturbance, probably including removal of banksia and eucalypt trees.

The larger, teatree swamp probably belongs to Floristic Community Type S2, and the smaller, *Astartea* swamp may belong to Type S1. Both types were circumscribed after the 1994 Gibson *et al.* report. Conservation significance and reservation status do not appear to have been assigned to either.

Conclusions and Discussion: Flora

Conospermum undulatum is a sparsely branched, rather inconspicuous shrub except when it is in flower, beginning soon. Then it has very conspicuous small grey flowers on stalks at the tops of the shrubs. Although the shrub is locally common in a few areas of bush in Forrestfield, it apparently occurs only in Floristic Community Type 20a vegetation in the Forrestfield area and is not in any secure conservation reserve.

Verticordia lindleyi subsp. *lindleyi* is an open shrub with a sporadic occurrence between Gingin and Cannington and with one population near the Murray River. It has reddish-pink, feathery flowers normally in the November-January period, but some of the property's plants are currently in flower. It grows on sandy clay soils near winter-wet depressions on the eastern side of the coastal plain. Such habitats are apparently rare in the Forrestfield area, though there are some a few kilometres south in Kenwick and Cannington.

It is possible, even likely, that there are other significant species on the property, especially herbaceous plants which were not in leaf, let alone in flower, at the time of the searches. It is also likely that no other DRF or Priority species listed in Table 1, possibly except some P4 plants, are on the property. There may be other significant species in the smaller, southwestern wetland, species which may not have previously been recorded in the Forrestfield area.

If you would like clarification or have any questions about anything in this report, please contact me any time.

Yours sincerely,



Enclosures:

Tables 1 and 2

Plates 1, 2 and 3

Definition of 'significant' species

CALM Conservation Codes

Table 1

DRF, Priority and other Significant Species Recorded in the Forrestfield Area

Species	Conservation Code
Actinostrobilus acuminatus	
Anthotium junciforme	P4
Banksia incana	
Blancoa canescens	
Conospermum undulatum	DRF
Conostephium minus	P4
Dasyopogon obliquifolius	
Drosera occidentalis subsp. occidentalis	P4
Dryandra pteridifolia subsp. vernalis	P3
Eremaea fimbriata	
Eucalyptus marginata subsp. elegantella	P2
Grevillea thelemanniana	P4
Haemodorum loratum	P3
Hakea conchifolia	
Isopogon drummondii	P3
Lambertia multiflora var. darlingensis	P3
Macarthuria keigheryi	DRF
Olax scalariformis	P3
Persoonia sulcata	
Pityrodia bartlingii	
Schoenus latitans	
Stenanthemum humile	
Stylidium crossocephalum	
Tripterococcus paniculatus ms	P1
Xanthorrhoea acanthostachya	
Xanthorrhoea drummondii	

Table 2

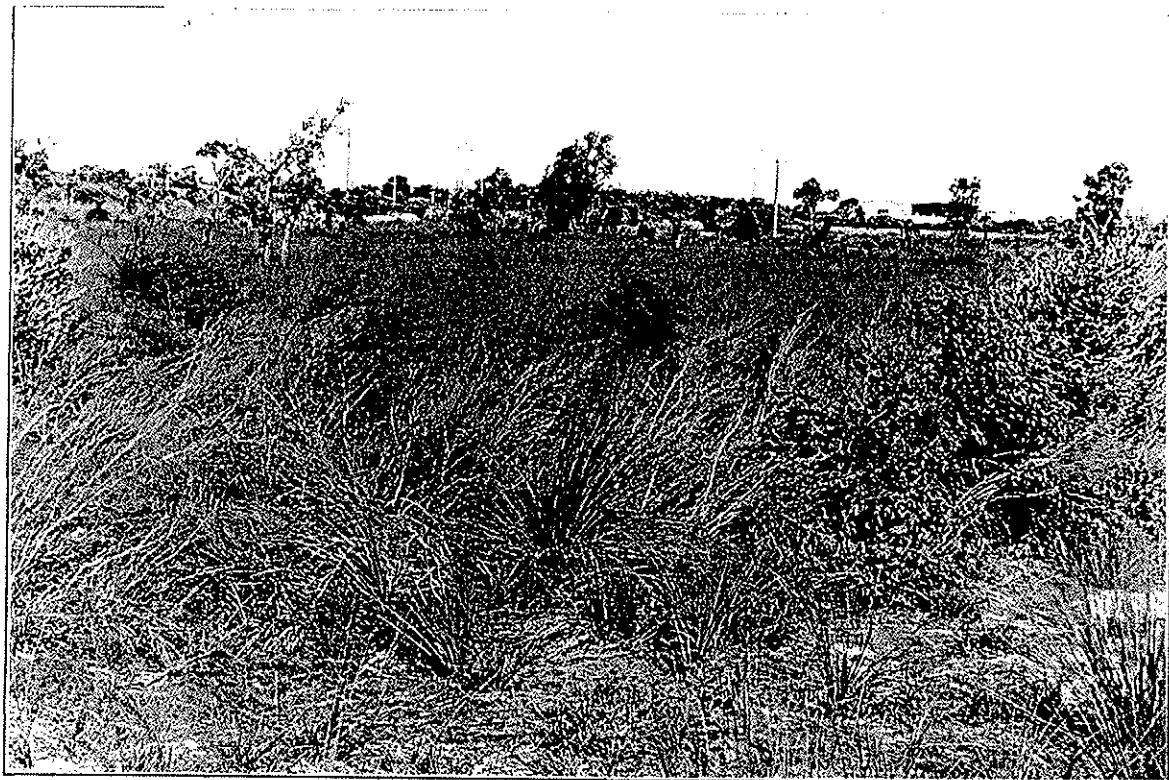
Flora of 83 Bedford Crescent, Forrestfield

Scrub Upland vegetation in NW corner, dominated by Woolly Bush (*Adenanthos cygnorum*)
 SwC Central swamp, dominated by Teatree Bush (*Pericalymma ellipticum*), covers > 2/3 of property
 SwS Small swamp in southern area, characterised by *Astartea* sp. 'Brixton' and *Meeboldina cana*
 Signif Significant species: [P] – previously a priority species; P4 – currently Priority 4;
 DRF – Declared Rare Flora, Threatened; R – north end of range; S – significant in the Perth area

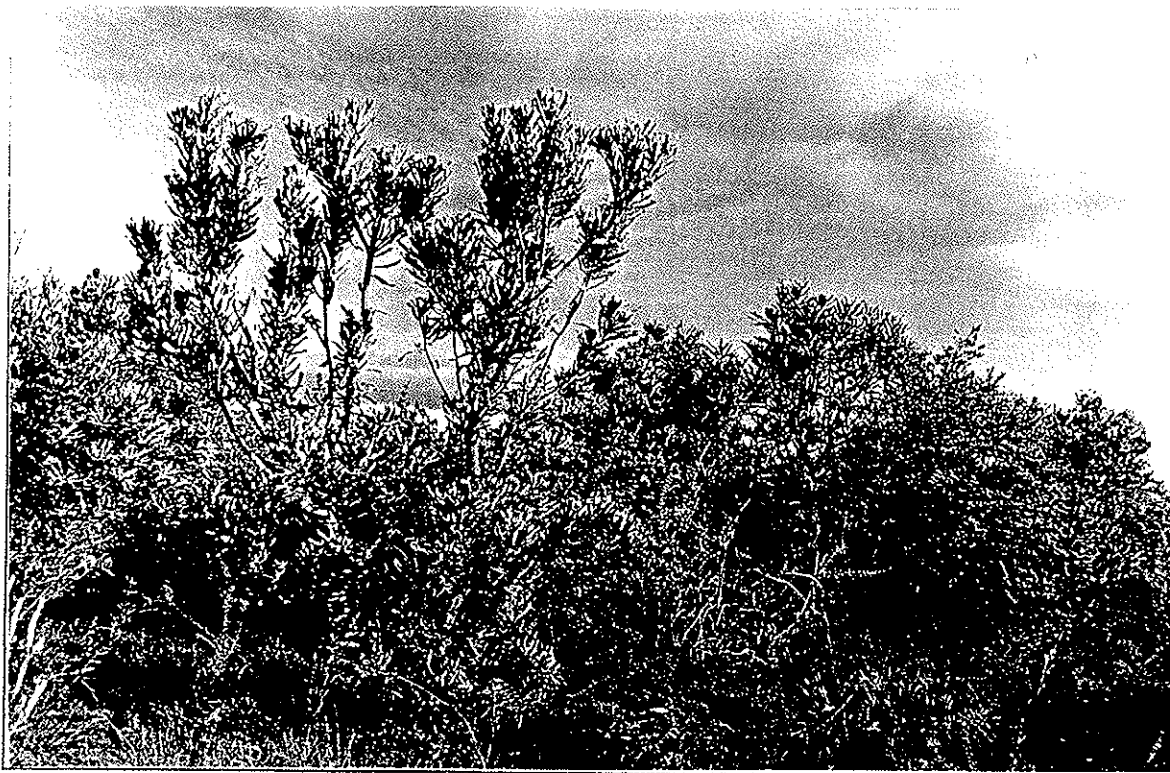
Species	Family	Scrub	SwC	SwS	Signif
<i>Acacia applanata</i> Maslin	163		X		
<i>Acacia pulchella</i> R.Br. var. <i>glaberrima</i> Meisn.	163	X			
<i>Adenanthos cygnorum</i> Diels	090	X			
<i>Alexgeorgea nitens</i> (Nees)L.A.S.Johnson & B.G.Briggs	039	X			
<i>Allocasuarina fraseriana</i> (Miq.)L.A.S.Johnson	070	X	X		
<i>Amphipogon turbinatus</i> R.Br.	031	X			
<i>Arnocrinum preissii</i> Endl.	054F	X			
<i>Astartea</i> sp. 'Brixton' [aff. <i>fascicularis</i> (Labiill.)DC.]	273		X	X	
<i>Astroloma stomarrhena</i> Sond.	288	X			
<i>Banksia attenuata</i> R.Br.	090	X			
<i>Banksia menziesii</i> R.Br.	090	X			
<i>Banksia telmatiaea</i> A.S.George	090		X		
<i>Baumea rubiginosa</i> (Spreng.)Boeck.	032		X		
<i>Bossiaea eriocarpa</i> Benth.	165	X			
<i>Burchardia umbellata</i> R.Br.	054J	X			
<i>Calectasia cyanea</i> R.Br.	054C		X		
<i>Calytrix aurea</i> Lindl.	273	X			
<i>Cassytha</i> ? <i>flava</i> Nees	131		X		
<i>Cassytha</i> ? <i>glabella</i> R.Br.	131			X	
<i>Centrolepis aristata</i> (R.Br.)Roem.& Schult.	040		X		
<i>Conospermum undulatum</i> Lindl.	090	X			DRF
<i>Conostephium pendulum</i> Benth.	288	X			
<i>Conostephium preissii</i> Sond.	288	X			
<i>Conostylis aurea</i> Lindl.	055	X			
<i>Conostylis setigera</i> R.Br.	055	X			
<i>Corymbia calophylla</i> (Lindl.)K.D.Hill & L.A.S.Johnson	273		X		
<i>Cyathochaeta avenacea</i> (R.Br.)Benth.	032		X		
<i>Cytonidium leptocarpoides</i> (Benth.)B.G.Briggs & ...	039		X		
<i>Dampiera linearis</i> R.Br.	341	X	X		
<i>Dasypogon bromeliifolius</i> R.Br.	054C	X	X		
<i>Dasypogon obliquifolius</i> Nees	054C	X			[P]
<i>Daviesia triflora</i> Crisp	165	X			
<i>Desmocladus fasciculatus</i> (R.Br.)L.A.S.Johnson & ...	039	X			
<i>Dielsia stenostachya</i> (W.Fitzg.)L.A.S.Johnson & ...	039		X		[P]
<i>Drosera erythrorhiza</i> Lindl.	143	X			
<i>Drosera menziesii</i> DC.	143	X			
<i>Dryandra lindleyana</i> Meisn. Var. <i>lindleyana</i>	090		X		
? <i>Eriostemon spicatus</i> A.Rich.	175	X			
<i>Eucalyptus marginata</i> Sm.	273		X		
<i>Eutaxia virgata</i> Benth.	165		X		

Gompholobium confertum (DC.)Crisp	165		X		
Gompholobium tomentosum Labill.	165	X			
Gompholobium ? tomentosum Labill.	165		X		
Gonocarpus cordiger Nees	276	X			S
Haemodorum sparsiflorum F.Muell.	055		X		
Hakea ceratophylla (Sm.)R.Br.	090		X		R
Hakea sulcata R.Br.	090		X		
Hakea varia R.Br.	090		X		
Hemiandra glabra Benth.	313	X			
Hibbertia huegeli (Endl.)F.Muell.	226	X			
Hibbertia hypericoides (DC.)Benth.	226	X			
Hovea trisperma Benth.	165	X	X	X	
Hypolaena exsulca R.Br.	039	X			
Jacksonia densiflora Benth.	165	X	X		
Jacksonia lehmannii Meisn.	165	X			
Johnsonia pubescens Lindl.	054F		X		
Kingia australis R.Br	054C	X	X		
Laxmannia ramosa Lindl.	054F	X			
Lechenaultia expansa R.Br.	341		X		
Lepidosperma ? longitudinale Labill.	032		X		
Lepidosperma ? pubisquameum Steud.	032		X		
Leucopogon conostephioides DC.	288	X			
Lomandra nigricans T.Macfarlane	054C	X			
Lomandra preissii (Endl.)Ewart	054C		X		
Lyginia imberbis R.Br.	039	X			
Lysinema ciliatum R.Br.	288	X			
Macarthuria australis Endl.	110A	X			
Macrozamia riedlei (Gaudich.)C.A.Gardner	016A	X			
Meeboldina cana (Nees)L.A.S.Johnson & B.G.Briggs	039		X	X	
Melaleuca pauciflora Turcz.	273		X		
Melaleuca preissiana Schauer	273		X		
Melaleuca seriata Lindl.	273		X		
Mesomelaena pseudostygia (Kuek.)K.L.Wilson	032	X			
Mesomelaena tetragona (R.Br.)Benth.	032	X	X		
Nemcia reticulata (Meisn.)Domin	165	X			
Nuytsia floribunda (Labill.)Fenzl	097	X	X		
Patersonia occidentalis R.Br.	060	X			
Patersonia occidentalis R.Br., swamp form	060		X		
Pericalymma ellipticum (Endl.)Schauer	273		X	X	
Persoonia saccata R.Br.	090	X			
Petrophile linearis R.Br.	090	X			
Phlebocarya ciliata R.Br.	055	X	X		
Phlebocarya filifolia (F.Muell.)Benth.	055	X			[P]
Pronaya fraseri (Hook.)E.M.Benn.	152		X		
Scaevola repens de Vriese	341	X			
Schoenus rigens S.T.Blake	032		X		
Scholtzia involucrata (Endl.)Druce	273	X			
Stirlingia latifolia (R.Br.)Steud.	090	X	X		
Stylidium brunonianum Benth.	343	X	X		
Stylidium dichotomum DC.	343		X		
Stylidium piliferum R.Br.	343		X		

<i>Stylidium repens</i> R.Br.	343	X			
<i>Synaphea spinulosa</i> (Burm.f.) Merr.	090	X			
<i>Thysanotus ? multiflorus</i> R.Br.	054F		X		
<i>Thysanotus ? patersonii</i> R.Br.	054F	X	X		
<i>Thysanotus ? sparteus</i> R.Br.	054F		X		
<i>Verticordia densiflora</i> Lindl.	273		X	X	
<i>Verticordia lindleyi</i> Schauer subsp. <i>lindleyi</i>	273			X	P4
<i>Xanthorrhoea preissii</i> Endl.	054D	X	X		
<i>Xylomelum occidentale</i> R.Br.	090	X			



A. *Pericalymma ellipticum* swamp. (ASW 98.VI.2-_)



B. *Banksia menziesii*. - Woollybush scrub. (ASW 98.VI.2-_)

Principal vegetation of 83 Bedford Crescent, Forrestdale.



Conospermum undulatum at 83 Bedford Crescent, Forrestdale.

(ASW 98.VII.2-)



Verticordia lindleyi subsp. *lindleyi* at 83 Bedford Crescent, Forrestdale.

(ASW 98.VI.2-)

'Significant' Species

The term 'significant species' as used in this report refers to species that are:

- o rare, geographically restricted or apparently rare or restricted because they are poorly collected or recorded,
- o at the limits of their ranges or in areas outside their normal ranges or habitats,
- o particularly susceptible or vulnerable to environmental changes, especially ones caused by humans, either directly or indirectly,
- o diminishing significantly in abundance or geographical range due to clearing and other environmental changes associated with agriculture, mining, recreation, urbanisation and provision of services, or
- o poorly represented in secure conservation reserves.

The term 'significant' is used in this report instead of 'vulnerable', 'threatened', 'depleted' or 'endangered' because these terms either are too limited in their scope or implications or, as Leigh, Boden and Briggs (1984) put it, "have become highly emotive through popular usage, making it difficult to develop objective criteria for use in ascribing species to various categories". Leigh, Boden and Briggs and Hopper *et al.* (1990) discuss appropriate terminology in more detail.

Some significant species are gazetted as rare species: most are not.

DECLARED RARE AND PRIORITY FLORA LIST

28

for Western Australia

KJ Atkins 3 December, 1997

CONSERVATION CODES

R: Declared Rare Flora - Extant Taxa

Taxa which have been adequately searched for and are deemed to be in the wild either rare, in danger of extinction, or otherwise in need of special protection, and have been gazetted as such.

X: Declared Rare Flora - Presumed Extinct Taxa

Taxa which have not been collected, or otherwise verified, over the past 50 years despite thorough searching, or of which all known wild populations have been destroyed more recently, and have been gazetted as such.

1: Priority One - Poorly known Taxa

Taxa which are known from one or a few (generally <5) populations which are under threat, either due to small population size, or being on lands under immediate threat, e.g. road verges, urban areas, farmland, active mineral leases, etc., or the plants are under threat, e.g. from disease, grazing by feral animals, etc. May include taxa with threatened populations on protected lands. Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

2: Priority Two - Poorly Known Taxa

Taxa which are known from one or a few (generally <5) populations, at least some of which are not believed to be under immediate threat (i.e. not currently endangered). Such taxa are under consideration for declaration as 'rare flora', but are in urgent need of further survey.

3: Priority Three - Poorly Known Taxa

Taxa which are known from several populations, and the taxa are not believed to be under immediate threat (i.e. not currently endangered), either due to the number of known populations (generally >5), or known populations being large, and either widespread or protected. Such taxa are under consideration for declaration as 'rare flora' but are in need of further survey.

4: Priority Four - Rare Taxa

Taxa which are considered to have been adequately surveyed and which, whilst being rare (in Australia), are not currently threatened by any identifiable factors. These taxa require monitoring every 5-10 years.

Note, the need for further survey of poorly known taxa is prioritised into the three categories depending on the perceived urgency for determining the conservation status of those taxa, as indicated by the apparent degree of threat to the taxa based on the current information.

*Extracts from a proposed
Structure plan for M53
by Turpay and Assoc for EPA.*

1. INTRODUCTION

This report has been prepared for the Environmental Protection Authority (EPA). It provides a Structure Plan for an area in Forrestfield close to the junction of the Tonkin Highway and Roe Freeway which is the subject of recommendations of the System 6 Study (Department of Conservation and Environment, 1983). The area in question is referred to in the System 6 Study as M53 Reserve C29880, Forrestfield and is shown in Figure 1. It includes several reserves and a number of privately owned freehold lots.

The System 6 Study was prepared by the EPA with the objective of establishing a system of conservation reserves on the Swan Coastal Plain and the Darling Range and the recommendations for M53 relate to the protection of natural vegetation. However some of the lots have been developed for light industry since 1983 when these recommendations were made and others are proposed to be developed or are for sale. In addition, one reserve has been cleared, another is being developed by the WA Fire Brigades Board, and the sale of a third is being considered.

It has therefore become apparent that appropriate planning measures are necessary if a representative sample of the natural vegetation is to be protected in accordance with the System 6 recommendations. This Structure Plan provides the basis for those measures. It indicates sections within M53 where development could be allowed and others where protection of the vegetation should be the planning priority.

It is emphasised that the approach here is to provide a structure plan aimed at protection of the conservation values of M53. Methods for achieving protection are suggested for some sections of the area but, in general, the mechanisms for achieving the Structure Plan must be determined by the various statutory authorities involved.

2. THE SYSTEM 6 STUDY RECOMMENDATIONS

M53 is described in the System 6 Study as containing "... a significant uncleared portion of the eastern Coastal Plain near Perth. The vegetation is low open-forest of Banksia, mixed with some Jarrah. Over a hundred species of indigenous flora occur in the reserves. Some, including *Isopogon drummondii* and *Dasyogon* species, are of particular importance, occurring in few localities elsewhere. The swamp flats just north of the junction of Maida Vale Road and Hardey Road support low closed-heath with composition unlike other swamp vegetation near Perth." (p228).

The recommendations relating to M53 are as follows:

Margo
There are some references
in this extract
- The ref is probably
too out of date to
copy + be of use.
Cheers
G.M.H.

4. CURRENT AND PROPOSED LAND USES

4.1 The Reserves

The status of the reserves within M53 in August 1990 in terms of development and vegetation was as follows:

C29880	totally cleared of vegetation
C36238	mostly uncleared adjacent to the Roe Highway
C33525	the very small sector within the boundary of the System 6 area is not developed
C37981	northern sector comprising about 60% of reserve developed with major buildings
C37260	about 15% developed for fire training purposes but about 50% affected by development proposals (see below)
C37997	undeveloped within the System 6 area
C31709	approximately 30% cleared including now defunct sewage treatment/pump station.

The WA Fire Brigades Board has notified the EPA of its intent to develop a training facility on Reserve C37260 (Kinhill Engineers Pty Ltd, 1989). The proposal which affects about 14ha of 51% of the site (Figure 3) has been approved.

The Asset Management Taskforce acting on behalf of the Western Australian Government has considered the sale of Reserve C31709 for use for industrial purposes.

4.2 Freehold Lots

All of the smaller freehold lots along and near Dundas Road have been developed for light industrial purposes as have the larger Lots 41 and 42 and part of Lot 9.

5. EXISTING VEGETATION

The current distribution of vegetation is shown in Figure 4. At the macro level there are three major vegetation associations. These are as follows:

An open woodland of Jarrah (*Eucalyptus marginata*) and Marri (*E. calophylla*) and some scattered Christmas Trees (*Nuytsia floribunda*) close to the creek which runs through Reserve C37260 (Kinhill Engineers, 1989). The substorey of this association is dominated by *Hakea trifurcata* and scattered *Kingia australis*.

A mixed Jarrah, Sheoak (*Allocasuarina fraseriana*); very open to open woodland growing on Bassendean dune soils over much of the reserves and part of the private lots. The mid-storey comprises *Banksia attenuata*, *B. grandis* and *B. menziesii* and in smaller numbers *Persoonia elliptica* and *Xylomelum occidentale* (Woody Pear). The understorey is dominated by *Adenanthos cygnorum*, *A. humilis*, *Lambertia multiflora* and *Hakea ruscifolia*.

Wetland associations of very open *Melaleuca raphiophylla* or *M. priessiana* and *Nuytsia floribunda* woodland and/or *Kingia australis* emergent above a mixed closed shrub layer in the southern sector on private lots and Main Roads Department Reserves.

A survey of Reserve C37260 (Kinhill Engineers, 1989) recorded 92 species of flora (see Appendix 1). This corresponds with the System 6 study figure of more than 100 species for the whole of M53. The survey also found two species of *Dasygogon* on this reserve, *D. obliquifolius* which was abundant and *D. bromeliifolius*. *D. bromeliifolius* is known from only two localities in the Perth region. The list of flora for Reserve C37260 is provided in Appendix A.

Officers from the Department of Conservation and Land Management (CALM) have also inspected M53 and have mapped the distribution of *Isopogon drummondii* and *Verticordia lindleyi*. CALM has informed the EPA that special protection measures are warranted for these two species.

6. THE STRUCTURE PLAN

6.1 Objectives

The Structure Plan has been based on the following objectives:

- (i) to preserve the major proportion of the three major vegetation units of the area consistent with the recommendations of the System 6 Study
- (ii) to protect a significant proportion of the populations of *Isopogon drummondii* and *Verticordia lindleyi* in accordance with the recommendations of the Department of Conservation and Land Management
- (iii) to enable the present and proposed use of part of the area as a Training Centre for the WA Fire Brigades Board
- (iv) to consolidate and allow a limited expansion of the industrial estate in the southern sector of the area.

5/7/43.

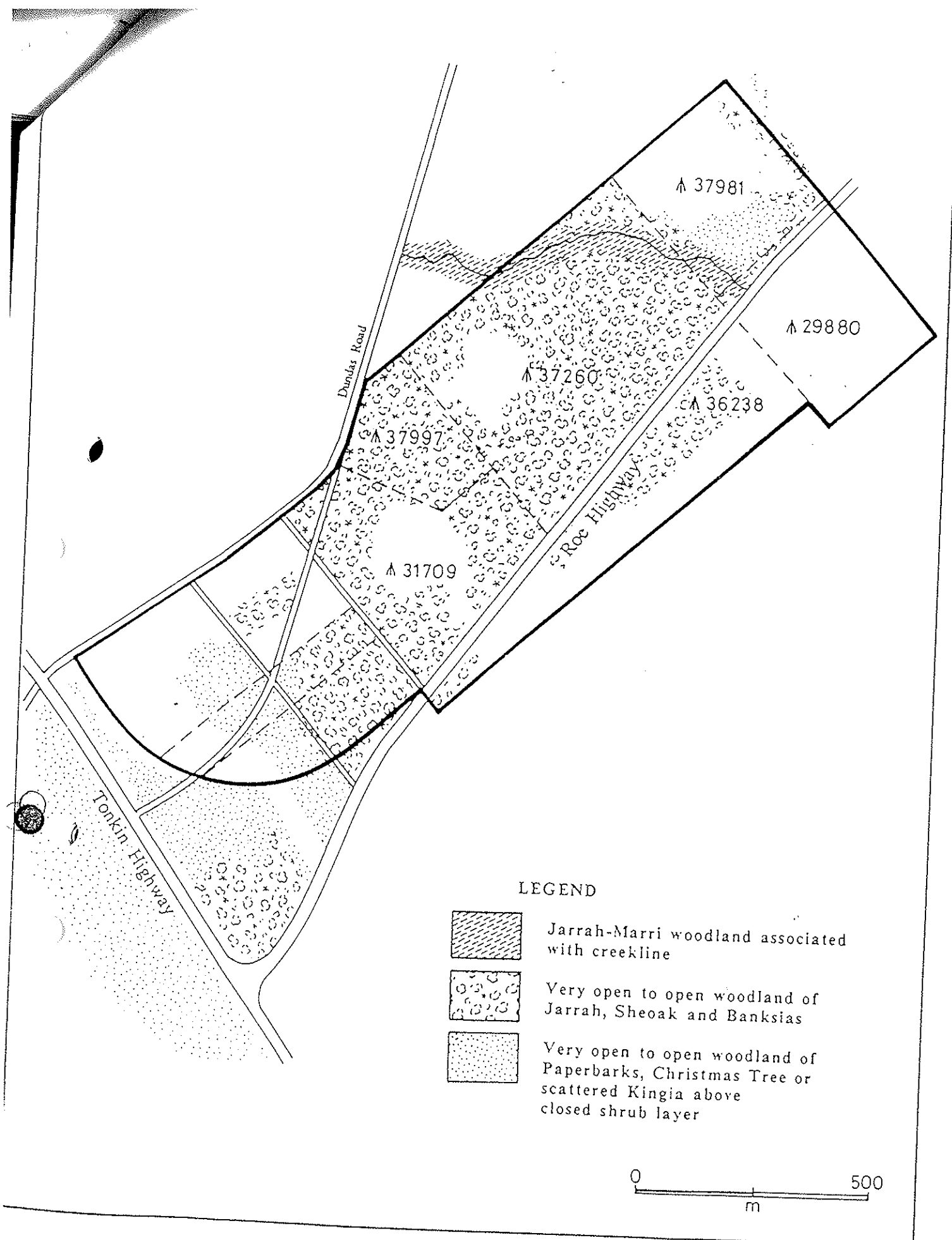


FIGURE 4 DISTRIBUTION OF VEGETATION IN M53

B3 319 Foot (1993)

LIBRARY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WESTRALIA SQUARE
141 ST. GEORGE'S TERRACE, PERTH

**VEGETATION AND FLORA
SURVEY
OF THE
SHIRE OF KALAMUNDA
VESTED RESERVES**

**VOLUME 1 - REPORT
OCTOBER 1992 TO MARCH 1993**

**PAUL ARMSTRONG RESEARCH OFFICER
SHIRE OF KALAMUNDA**

TABLE OF CONTENTS

INTRODUCTION	Page 1
METHODOLOGY	Page 2
2.1 RESERVES	Page 2
2.2 ANALYSIS	Page 3
RESULTS AND DISCUSSION	Page 6
3.1 FLORA	Page 6
3.1.1 Species Distribution	Page 9
3.1.2 Range Extensions	Page 11
3.1.3 Declared Rare and Priority Species	Page 12
3.1.4 Unidentified species	Page 15
3.1.5 Introduced Species	Page 15
3.2 RESERVES	Page 17
3.2.1 Assessment	Page 17
3.2.2 Comments on specific reserves	Page 21
3.3 COMPUTER FILES	Page 20
CONCLUSION	Page 21
4.1 FLORA	Page 21
4.2 RESERVES	Page 22
4.3 OVERALL	Page 22
ACKNOWLEDGMENTS	Page 23
REFERENCES	Page 24

LIST OF APPENDICES

APPENDIX I.	SPECIES LIST	Page 25
APPENDIX II.	SPECIES RICHNESS	Page 45
APPENDIX III.	SPECIES DISTRIBUTION	Page 47
APPENDIX IV.	VEGETATION CONDITION	Page 51

LIBRARY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WESTRALIA SQUARE
141 ST. GEORGE'S TERRACE, PERTH

LIBRARY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
WESTRALIA SQUARE
141 ST. GEORGE'S TERRACE, PERTH

VEGETATION AND FLORA
SURVEY
OF THE
SHIRE OF KALAMUNDA
VESTED RESERVES

VOLUME 2 - RESERVE SPECIES LIST

OCTOBER 1992 TO MARCH 1993

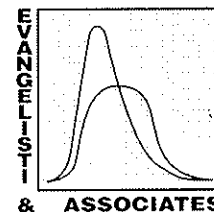
BY PAUL ARMSTRONG RESEARCH OFFICER

SHIRE OF KALAMUNDA

MARCH 1993

TABLE OF CONTENTS

	Page
SHEET 01	1
SHEET 02	4
SHEET 05	6
SHEET 06	16
SHEET 10	33
SHEET 11	39
SHEET 12	50
SHEET 14	54
SHEET 15	61
SHEET 16	80
SHEET 21	85
SHEET 22	86



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

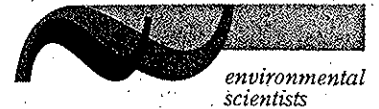
in association with

Landvision
Consultants in Urban and Environmental Planning

and

The V & C Semeniuk Research Group
Environmental Scientists

October 1995



26 August 1996

TM:ct/063.96057

The Chief Executive Officer
Environmental Protection Authority
Westralla Square
St Georges Terrace
PERTH WA 6000

Attention: Mr Garry Middle

Dear Gary,

As previously discussed Alan Tingay & Associates has been working on behalf of the Department of Family and Children's Services at Reserve 37997, Dundas Road Forrestfield. It is at this location that the department intends to construct an Adolescent and Child Support Facility. This facility will provide up to date assessment and care facilities for up to 12 children at a time.

Site selection for this facility was based on a number of considerations including location, available land, community developments and cost, among a variety of other factors. Reserve 37997 was the only location that met these requirements of the department.

Following site selection Alan Tingay and Associates was commissioned to undertake an environmental assessment of the site. The purpose of this assessment was to identify any environmental considerations that might pose a limitation to development at this site. As part of this assessment particular emphasis was placed on flora and vegetation values.

The environmental assessment identified that the site was largely unconstrained other than retaining remnant bushland of recognised value and four "Priority" species of flora. These findings were used as inputs to the planning and design elements of the intended development. As a result of this work the facility has been located to cause minimal impact on significant flora and to retain the majority of the undisturbed remnant bushland. The location of the facility is also optimal in respect to the operations of the facility. The location of the facility within the site reflects a balance between these competing needs.

The environmental assessment report including a description of management initiatives and the intended location of the facility is attached.

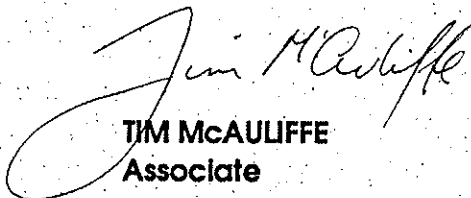
21 Howard Street
Perth 6000
Western Australia

Tel: (09) 481 3434
Fax: (09) 481 3435

The site is currently zoned "public purpose" under the Shire of Kalamunda Town Planning Scheme No 2 and as "community welfare purposes" under the Metropolitan Region Scheme. The intended use of this site is consistent with its current zoning. However, the reserve also forms part of the proposed System 6 area M53 and as such is of interest to your department. Consequently the attached report is provided for your information and to allow you to become familiar with the development.

As previously agreed it would be mutually beneficial to meet and discuss aspects of the intended development. Consequently, John Goldsmith will shortly be in contact with you to arrange a suitable time for this meeting. In the interim, if you have any queries please do not hesitate to contact either myself or John.

Yours sincerely,



TIM McAULIFFE
Associate

BFS# 319

copy 2 of 2

DEPARTMENT OF FAMILY AND CHILDREN'S SERVICES

**ENVIRONMENTAL ASSESSMENT
ADOLESCENT AND CHILD SUPPORT CENTRE,
RESERVE 37997 DUNDAS ROAD, FORRESTFIELD**



ALAN TINGAY & ASSOCIATES

AUGUST 1996

REPORT NO: 96/56

BS 319

PB133

FOOT/PINJ

DEPARTMENT OF FAMILY AND CHILDREN'S SERVICES

**ENVIRONMENTAL ASSESSMENT
ADOLESCENT AND CHILD SUPPORT CENTRE,
RESERVE 37997 DUNDAS ROAD, FORRESTFIELD**

ALAN TINGAY & ASSOCIATES

AUGUST 1996

REPORT NO: 96/56

TABLE OF CONTENTS

SUMMARY

1. INTRODUCTION.....	1
1.1 General.....	1
1.2 Planning Context.....	1
1.3 Purpose	2
2. REVIEW OF RESERVE 37997	3
2.1 Landform and Topography.....	3
2.2 Wetlands.....	3
2.3 Adjacent Land Uses.....	3
2.4 Zoning.....	3
2.5 System 6	3
2.6 Aboriginal Sites	4
3. VEGETATION AND FLORA ASSESSMENT	5
3.1 Background	5
3.2 Methods.....	5
3.3 Results.....	7
3.3.1 Plant Communities.....	7
3.3.2 Flora Survey	8
3.3.3 Significant Flora.....	8
3.3.4 Vegetation Condition	10
3.4 Regional Context	10
3.5 Conclusions.....	12
4. LOCATION AND DESIGN OF FACILITY	13
4.1 Location	13
4.2 Design of Facility.....	13
5. ENVIRONMENTAL MANAGEMENT	14
6. CONCLUSION	16
REFERENCES.....	17

FIGURES

PHOTOGRAPHS

APPENDICES

LIST OF FIGURES

1. Regional Location
2. Cadastral Boundaries and Topography
3. Vegetation Map
4. Vegetation Quality
5. Distribution of Significant Flora
6. Surveyed Location of Trees
7. Significant Flora and Works Area

LIST OF PHOTOGRAPHS

1. North Western Corner of Reserve 37997, Dundas Road
2. Firebreak Adjacent to Western Boundary, Near Dundas Road
3. Midway Along Southern Boundary, Looking Towards Dundas Road
4. Banksia Woodland in South Eastern Corner of Reserve 37997
5. Recent Tree Felling, South Eastern Corner of Reserve 37997
6. Midway Along North Eastern Boundary, Looking Towards the WA Bush Fires Board Training Academy

ACKNOWLEDGMENTS

Assistance of Bronwen Kelghery of the Department of Environmental Protection in allowing access to unpublished reports is gratefully acknowledged.

SUMMARY

The Department of Family and Childrens Services has identified the need for a purpose built facility for Adolescent & Child Support Services and proposes to establish such a facility at Reserve 37997, Dundas Road, Forrestfield.

The facility will cater for up to 12 children who experience behavioural problems, and will provide up to date crisis care accommodation, assessment and treatment.

This environmental assessment provides a review of Reserve 37997, investigates vegetation and flora issues (including mapping of Priority species) and presents the Proponent's commitments regarding environmental management of the site.

The flora survey undertaken as part of this assessment identified and mapped four Priority listed flora species within Reserve 37997. This information was then used to site the facility to cause minimal impact to these species. Other factors which have influenced the siting of the facility within the Reserve include retention of bushland for visual screening and, linkage with adjacent bushland areas.

The proposed facility achieves a minimal impact upon the receiving environment and will retain the majority of the remnant bushland including Priority listed flora. The centre will occupy 15% of the total site.

The environmental management commitments described in this report combine to result in a sustainable development and allow for the long-term preservation of the environmental attributes of Reserve 37997.

1. INTRODUCTION

1.1 General

The Department of Family and Children's Services proposes to establish an Adolescent and Child Support facility at Reserve 37997, Dundas Road, Forrestfield.

The State Government in conjunction with the Department of Family and Children's Services has identified a strong need for a purpose built centre to provide up to date assessment and care facilities for some of the state's most difficult to work with young people. The new centre will operate as the "hub" of a network of existing health, community and education services and will cater for up to 12 children.

The State benefits of the facility have been recognised by State Cabinet who endorsed the facility in April 1995.

Site selection for the Adolescent and Child Support facility was based upon an assessment of 12 sites by the following criteria.

- Location (neighbours, buffer etc)
- Size of the land available
- Land profile
- Cost of providing utility services to the site
- Vesting order over the land
- Cost to purchase land
- Surrounding developments
- Community developments (Medical, schools, shops, transport etc.)
- Site costs
- Cabinet Approval
- Zoning of land
- Timeframe

1.2 Planning Context

The subject land is currently zoned for Public Purpose under the Shire of Kalamunda Town Planning Scheme No 2 and Public Purpose (Community Welfare) under the Metropolitan Region Scheme.

The proposed use of this land is in accord with this zoning allowing development of the site. However, this subject land is part of the recommended System 6 area M53 and contains environmental values of significance.

The subject land was included in the System 6 recommendations primarily due to the size and quality of remnant vegetation occurring on the site. In recognition of the area's environmental values the proponent has maintained liaison with the Department of Environmental Protection (DEP) during the development of this proposal.

This continued liaison has resulted in the proponent commissioning Alan Tingay and Associates to prepare this Environmental Assessment Report.

1.3 Purpose

This report has been based on a review of the subject land's environmental values including physical, biological and human environmental considerations. A particularly detailed review of the site's flora and vegetation associations have been undertaken due to the subject land's recognised flora significance.

The result of the environmental assessment has been incorporated into the planning and design of the proposal with the intention of avoiding unnecessary negative environmental impact.

This report represents the findings of the environmental assessment studies together with management and planning initiatives aiming to avoid any significant environmental impact as a result of the proposed development.

2. REVIEW OF RESERVE 37997

2.1 Landform and Topography

The subject land is situated within the Bassendean Dune geomorphic setting. The Bassendean Dune soils comprise sand which is light grey at the surface and yellow at depth. The sand is fine to medium grained, is moderately well sorted and has an aeolian origin. Alluvial plain occurs to the north east of the study area.

The topography of the study area is shown in Figure 2. The highest elevation (30.5m AHD) occurs mid-way on the southern boundary, and the lowest elevation at 25.5m AHD occurs on the north western boundary, adjacent to Dundas Road.

2.2 Wetlands

The northern portion of the subject land is classified as a High Conservation wetland by the Environmental Protection Authority and Water Authority of W.A Wetland and Natural Resources Mapping (1994).

However, field examination carried out in July and August 1996 indicates that the northern portion of the reserve is not subject to inundation or seasonal waterlogging and as such, the mapped boundary of the wetland should be subject to reassessment.

No portion of Reserve 37997 is subject to the Swan Coastal Plain Lakes Environmental Protection Policy (EPA, 1992).

2.3 Adjacent Land Uses

A variety of land uses adjoin Reserve 37997. They include the Training Academy for the WA Fire Brigade Board (on the northern boundary), Dundas Road (to the west) and a decommissioned sewage treatment site to the south and east. Roe Highway is located approximately 200m east of Reserve 37997.

2.4 Zoning

The subject land is currently zoned under the Metropolitan Region Scheme for Community Welfare Purposes. The Class C reserve 37997 is vested with the Minister for Community Welfare.

2.5 System 6

Reserve 37997 is located within the recommended System 6 area M53 (DCE, 1983).

The specific recommendations for M53 are as follows:

M53. 1 That the State Energy Commission, the WA Fire Brigades Board, the Main Roads Department and the Metropolitan Water Authority, in consultation with the Department of Conservation and Environment, manage the area so as to retain as much as possible of the remnant vegetation.

M53.2 That the protection of the conservation value of natural vegetation on the privately owned freehold land be sought through planning procedures to be developed as recommendation in Recommendations 14, Chapter 4. (DCE, 1983).

2.6 Aboriginal Sites

A review of the Aboriginal Affairs Department site register indicates that there are no known Aboriginal sites occurring within the subject land, or in its immediate vicinity.

3. VEGETATION AND FLORA ASSESSMENT

3.1 Background

A vegetation and flora survey was conducted in July 1996 to provide information to assist in the planning and design of the proposed development. The scope of the investigation was to:

- Identify the plant community types;
- conduct a flora survey;
- Identify and locate any significant flora;
- survey the vegetation condition; and
- discuss the plant community types and the flora in a regional conservation context.

An unpublished report (Keighery, 1994) was also obtained for the investigation from the Department of Environmental Protection on the proposed System Six reserve that included the study area.

3.2 Methods

A field investigation of the remnant vegetation was undertaken on 30 June and 1 July 1996, during which the area was walked over. Using Muir's method of vegetation classification (Muir, 1977), the area was found to comprise four associations and a species list was prepared for each of the associations. Those species that could not be identified in the field were sampled for later identification at the Perth Herbarium.

From the CALM lists of DRF and Priority flora, a list of significant taxa potentially occurring on the site was compiled (Table 1). In addition to the CALM list, *Macarthuria* sp. Mullering (B. J. Keighery 517) was recorded in the report on the area by B. Keighery (1994). Familiarity of all species was checked with reference material. The following table represents the species considered to potentially occur on the site prior to the field survey.

Table 1

List of significant taxa and the current level of significance. These taxa were searched for during the investigation. This list was based on information provided by CALM for Forrestfield area and B. Keighery (1994).

Taxa	Priority rating (P)
<i>Aotus cordifolia</i>	P3
<i>Astroloma foliosum</i>	P2
<i>Conospermum undulatum</i>	P4
<i>Conostephium minus</i>	P4
<i>Eucalyptus marginata</i> ssp. <i>elegantella</i>	P1
<i>Grevillea thelemanniana</i>	P4
<i>Isopogon drummondii</i>	P3
<i>Lambertia multiflora</i> var. <i>darlingensis</i>	P3

<i>Laslopetalum bracteatum</i>	P4
<i>Macarthuria</i> sp. Mullering (B. J. Keighery 517)	P1
<i>Nemcia acuta</i>	P3
<i>Olaax scalariformis</i>	P3
<i>Templetonia drummondii</i>	P3
<i>Thysanotus anceps</i>	P3
<i>Tripterococcus</i> sp. Cannington (A. S. George 16201)(aff. ' <i>panicularis</i> ')	P1
<i>Verticordia lindleyi</i> ssp. <i>lindleyi</i>	P4

Locations of all significant flora were marked on the site plan to a level of accuracy that was practical for a field based programme (Figure 5).

Vegetation condition was assessed based on the level of degradation and disturbance with the latter recorded onto a site plan as Figure 4. Levels of degradation were based on the following criteria (Trudgen, 1991 In Keighery and Trudgen, 1992):

- excellent - pristine or nearly so, no obvious signs of damage.
- very good - some relatively slight signs of damage eg. fire blackened tree trunks and some non aggressive weed species;
- good - more obvious signs of damage eg. impact on vegetation structure and possibly some more aggressive weed species;
- poor - basic vegetation structure remains or the ability to regenerate it, very obvious signs of disturbance eg. grazing or partial clearing and even more aggressive weed species;
- very poor - severely impacted by human activities, some regeneration possible, usually with a number of aggressive weed species present; and
- completely degraded - areas almost to completely without native species in the vegetation structure, eg. cleared or 'parkland cleared', with the area comprising of weed or crop species with the occasional native plant.

Levels of disturbance used the following criteria;

- pristine (P) - no apparent disturbance;
- slightly disturbed (SD) - almost pristine, minimal disturbance observed;
- disturbed (D) - significant numbers of weed species present;
- obviously disturbed (OD) - patches of cleared land;
- severely disturbed (SED) - up to 30% of native vegetation remaining; and
- degraded (Deg) - all native vegetation removed.

3.3 Results

3.3.1 Plant Communities

The study area was divided into four vegetation associations. Two of which differed mainly in the period since the last fire (Areas 1 and 3), the others differ in vegetation structure. Using Muir's (1977) classification each is described below:

- Jarrah Open Woodland (AREA 1.) - Open Low Woodland A of *Eucalyptus marginata* 10-15m tall over Open Low Woodland B of *Allocasuarina fraseriana* and *Banksia menziesii* 3-8m tall over Open Scrub of *Adenanthos cygnorum* 2-3m tall over Heath B of *Stirlingia latifolia* to 1.5m tall over Dwarf Scrub D of mixed species to 0.5m tall over Very Open Herbs and Very Open Low Sedges. This covered the northern 30% of the study area and was recorded as being burnt in the summer of 1994/5;
- Jarrah Woodland (AREA 2.) - Woodland to Forest of *Eucalyptus marginata* 10-20m tall over Open Low Woodland A of *Allocasuarina fraseriana* to 5-10m tall over Low Woodland B of mixed *Banksia menziesii* and *B. attenuata* to 3-5m tall over Open Low Scrub B of *Stirlingia latifolia* to 1.5m tall over Dwarf Scrub D to Low Heath D of mixed species to 0.5m tall over Very Open Herbs and Very Open Low Sedges. This covered the south-western to central to eastern 51% of the study area and was recorded as being burnt in the summer of 1994/5;
- Jarrah Woodland (long unburnt)(AREA 3.) - Open Woodland of *Eucalyptus marginata* 6-20m tall over Open Low Woodland A of *Allocasuarina fraseriana* to 2-8m tall over Low Woodland B of *Banksia menziesii* to 2-5m tall over Low Scrub A and B of *Allocasuarina humilis* and *Lambertia multiflora* var. *darlingensis* to 1-2m tall over Low Heath C of mixed species to 0.5-1m tall over Very Open Herbs to 0.3m tall. This covered 1.2% of the area, comprising a narrow strip approximately 10m wide along the southern boundary and was long unburnt (>10 years estimated); and
- Banksia Woodland (AREA 4) - Low Woodland A of *Banksia menziesii* and *Allocasuarina fraseriana* with occasional *Eucalyptus marginata* to 5-12m tall over Open Scrub of *Adenanthos cygnorum* and *Banksia attenuata* to 2-4m tall over Heath A and B to Low Scrub A and B of *Stirlingia latifolia* and *Lambertia multiflora* var. *darlingensis*, to 0.5-1.5m tall over Low Heath D to Dwarf Scrub D of mixed species to 0.5m tall over Very Open Herbs and Very Open Low Sedges. This covered the eastern 18% of the study area and was recorded as being burnt in the summer of 1994/5

Areas covered by each of these vegetation associations are shown in Figure 3.

3.3.2 Flora Survey

Overall, 102 floral taxa were recorded from the site including 14 introduced species. Distribution between the associations was; 69 species were recorded from Area 1, 87 from Area 2, 52 from Area 3 and 78 from Area 4 (Figure 3). The species list is attached as Appendix 1.

The two dominant families recorded, those with the most species, for the area were Proteaceae with 15 species and Papilionaceae with 13. Visually the dominant families were Myrtaceae (*Eucalyptus marginata*), Proteaceae (*Banksia menziesii* and *Stirlingia latifolia*), Casuarinaceae (*Allocasuarina fraseriana*) and Papilionaceae (no dominants). These are typical of the woodlands of the south west of Western Australia. The genus with the greatest number of species was *Davlesia* with five, next most common were *Acacia* and *Banksia*, both with three species.

The fungal root pathogen *Phytophthora cinnamomi* (jarrah dieback) was most likely present in the study area. This was evident from the amount of staggling (dead branches on the jarrah trees) that has occurred on the mature jarrah trees. Most of the smaller trees appeared healthy.

Had the survey been conducted in spring or early summer the species list may have been considerably longer, as annuals and cryptic species not readily observable in winter would have been recorded.

3.3.3 Significant Flora

During the investigation four significant species were recorded from the area, these were:

- *Conospermum undulatum*, Priority 4;
- *Isopogon drummondii*, Priority 3;
- *Lambertia multiflora* var. *darlingensis*, Priority 3; and
- *Macarthuria* sp. Mullering (B. J. Keighery 517), Priority 1.

Locations found for each significant species are shown in Figure 5. Listed below are the four species with brief descriptions of the plant and known distribution details.

Conospermum undulatum, P4

This species was common and wide spread through Areas 2,3 and 4 with occasional occurrences in Area 1. It grows as a shrub to 1m in height with a spread of approximately 0.5m. Mature plants have flowering spikes extending 0.5m above the plant, even when not in flower these spikes make it readily visible. However, as a juvenile it is inconspicuous and could be overlooked. Distribution of the species was recorded by Kelly et al. (1993) as very restricted, occurring over a 14km range between High Wycombe and Martin. Kelly et al. (1993) also recorded its vegetation associations as *Banksia* and *Eucalyptus* woodlands, growing on sand or clayey-sandy soils, often over laterite on flat to slightly sloping ground, in the foothills of the Darling Scarp.

Kelly et al. (1993) lists 29 populations, with little prospect of new populations being found. None of these were conservation reserves.

Isopogon drummondii, P3

This species was restricted to three populations on the southern side of the study area, within Areas 2 and 4. It grows as a shrub to 0.7m in height with a spread of approximately 1m. When in flower from February to April, (Kelly et al., 1993) the plant is readily observed and identifiable, even when not in flower it can be recognised. Distribution of the species was recorded by Kelly et al. (1993) as from Perth to Cockleshell Gully in the north. In the Perth area it is restricted to the foothills of the Darling Scarp between Orange Grove and Stratton. It occurs in association with *Banksia menziesii*-*B. attenuata* woodlands over dense low heath.

Kelly et al. (1993) records the species as occurring in 20 locations in the Perth area, none of which were conservation reserves. About half were on private property, of which five were then being considered for development. Kelly et al. (1993) concluded with "Acquisition of land as conservation reserves would be desirable to enable adequate protection of this species in the southern extent of its range."

Lambertia multiflora var. *darlingensis*, P3

This species was common and wide spread through Area 4 and with less common occurrences in Area 2. It grows as a shrub to 1.5m in height with a spread of approximately 1m. When mature, the plants height and leaf colour makes this species readily recognisable. However as a juvenile it is inconspicuous and could be missed when undertaking a survey. Distribution of the species was recorded by Hnatluk (1995) as restricted between Chittering Valley and south to Busselton. It occurs mainly as isolated populations at the base of the Darling Scarp in deep yellow sands or loamy, clayey or gravelly soils. Vegetation associated with this taxa are known and *Banksia* and *Eucalyptus* low woodlands.

Macarthuria sp. Mullering (B. J. Keighery 517), P1

This species was common and wide spread through Area 1 and with less common occurrences in Areas 2 and 4. It grows as a shrub to 0.3m in height with a similar spread. This species was only found in areas of disturbance (fire) where the surrounding ground was almost clear. Most plants were less than 0.1m in diameter, with a few up to 0.3m. Not a great deal is known about the taxa. From the few collections recorded, the taxa is known from Mullering, Cooljarloo and Perth (B. Keighery, pers com). One of the two Perth collections are from "Kewdale" this location has been searched for in recent years and not found. The other known location is the current site. It is suspected that the two Perth sites may be the same location. Plants have only been recorded after some form of disturbance, fire in this case.

No current DRF species were highlighted in the CALM report though the status of the priority species identified may be subject to review in the near future. Knowledge of these species was used and if present would most likely be recorded. All Priority species listed were readily observable during the time of the survey and presumably been recorded if present.

3.3.4 Vegetation Condition

Vegetation condition using Trudgen's (Keighery and Trudgen, 1992) method of assessment resulted in a "very good" condition rating for most of the area. The remainder was in good condition, including along Dundas Road extending approximately 10-20m from the road reserve eastwards. The lower rating was due to the moderate level of damage to the understorey vegetation structure. In a study covering the same area Keighery and Trudgen (1992) made a similar assessment.

Disturbance rating for most of the area was; slightly disturbed. The exceptions were:

- main tracks were clear of all vegetation for 2-3m in width (degraded);
- minor tracks had vegetation still mostly intact but recently flattened (obviously disturbed);
- two trees had recently been felled for firewood, resulting in flattening of the vegetation (disturbed);
- The northern corner appears to have suffered repeated disturbances resulting in some weed invasion (disturbed);
- extended use of vehicles adjacent to Dundas Road and intersections of main tracks has resulted in adjacent vegetation being cleared (obviously disturbed);
- rubbish dumping near Dundas Rd (obviously disturbed);
- parts of old car bodies (severely disturbed); and
- drill pads used within the last few years, resulted in the flattening and smothering of shrub vegetation (severely disturbed).

All of these disturbances could be ameliorated with only a moderate amount of effort. The greatest difficulty would be to prevent repeated disturbances. Weed invasion was minimal in all areas except those close to Dundas Rd.

3.4 Regional Context

The study area, as mapped by Heddle, Loneragan, and Havel (1980) forms part of the Southern River Complex and is adjacent to the Forrestfield Complex. They recorded the areas remaining of these two complexes as 18% and 8% respectively. The Department of Planning (unpublished) currently consider 6-10% of the Forrestfield Complex remaining and with its condition in the top 6-10% of that remaining.

Keighery and Trudgen (1992) considered all remnant vegetation, with "the structure intact" on the eastern side of the Swan Coastal Plain of flora

conservation value and made recommendations for its protection and management.

The study area comprised part of the System Six (The Darling System - System 6, 1983) recommendation for a proposed reserve, an area known as M53. M53 covers an area of approximately 55ha. Keighery and Trudgen (1992) comment it "has an unusual combination of vegetation associations that reflect the various combinations of alluvial and aeolian sands at the location.". The various associations occurring in the reserve "is representative of most of the associations characteristic of the sandy and to a lesser extent the heavy soils of the Pinjarra Plain.". Keighery and Trudgen (1992) make the recommendation that any development be restricted to those areas that are already degraded. Also, all bodies with vested land in the M53 be urged to retain and manage the areas for flora conservation values.

Keighery and Trudgen (1992) recorded in excess of 15 significant flora from the M53 proposed reserve.

The flora recorded during the study included several species with significant distribution attributes, either usually restricted to the Darling Scarp and Plateau, north or south of the Metro area. From Keighery and Trudgen's 1992 and Keighery's 1994 reports the following 11 species have such distributions:

- *Caustis dloica* - restricted to the eastern side of the Swan Coastal Plain, the Darling Scarp and extends north of Bullsbrook;
- *Conospermum undulatum* - restricted to the eastern side of the Swan Coastal Plain;
- *Dasypogon obliquifolius* - restricted to the eastern side of the Swan Coastal Plain and the sandplains to the north (to Eneabba);
- *Isopogon drummondii* - restricted to the eastern side of the Swan Coastal Plain and a disjunct distribution in the northern sandplain (Moora to Mt Lesueur);
- *Jacksonia restioides* - restricted to the eastern side of the Swan Coastal Plain, the Darling Scarp and Plateau and north to Eneabba, east to Northam and south to Pingelly;
- *Kingia australis* - restricted to the eastern side of the Swan Coastal Plain, the Darling Scarp, north to Hill River and south to Albany;
- *Lambertia multiflora* var. *darlinensis* - restricted to the eastern side of the Swan Coastal Plain and the Darling Scarp;
- *Mesomelaena tetragona* - restricted to the eastern side of the Swan Coastal Plain, the Darling Scarp and Range and north to Geraldton and south to Cape Arid National Park;

- *Persoonia elliptica* - restricted to the eastern side of the Swan Coastal Plain, the Darling Scarp and extends south to Albany;
- *Pityrodia bartlingii* - restricted to the eastern side of the Swan Coastal Plain and from the sandplains north to Geraldton, south to Busselton and east to the wheatbelt; and
- *Stachystemon vermicularis* - restricted to the eastern side of the Swan Coastal Plain and the Darling Scarp, extending south to Dwellingup.

Additional location details were obtained on the above species from Marchant et al. (1987)

3.5 Conclusions

The area under investigation forms part of a significant proposed reserve (M53) of the System Six Study. Due to the small amounts of the native vegetation remaining on the eastern side of the Swan Coastal Plain any remnant in good condition may be of significance.

Also of significance was the number of Priority taxa and the number of individual plants found on the site. Populations or individuals of these taxa were scattered over most of the study area. Any future development of the site should be sensitive to the remaining vegetation, particularly priority species.

4. LOCATION AND DESIGN OF FACILITY

4.1 Location

It is proposed to locate the Adolescent and Child Support facility at Reserve 37997, Dundas Road, Forrestfield. The regional location is shown in Figure 1 and the specific location within the reserve is shown in Figure 7.

As noted in the Introduction, the selection of Reserve 37997 as the proposed site was based upon site selection criteria and an assessment of 12 sites in the Perth Metropolitan area. Reserve 37997 was the only location meeting all the criteria.

4.2 Design of Facility

The building footprint of the proposed facility is shown in Figure 7. The centre has been designed to provide an attractive, low key appearance with appropriate security features. Surveys of a wide range of people and organisations working with children in crisis were conducted by the Department to gather ideas for the most suitable and up to date design. The facility design maximises use of natural lighting. The interior design is developed to give a domestic atmosphere. Within the Reserve the location of the facility, access way and associated areas has been dictated by several factors. These include:

- Minimisation of disturbance to Priority flora.
- Retention of bushland around the facility for visual screening.
- Avoiding undisturbed vegetation in the south eastern portion of the reserve, to provide for a link with bushland adjacent to the reserve.

Consideration of these factors led to the delineation of the works area, access way, and building footprint shown in Figure 7. This design has a minimal impact of Priority flora species affecting a few individuals of *Macarthuria sp* Mullering and *Conopseum undulatum*. The design retains substantial areas of bushland around the facility and provides an effective bushland link with adjacent bushland areas, in the south eastern portion of the reserve.

The approximate area shown as the extent of the works in Figure 7, is 0.9ha or 15% of the overall reserve area of 5.96ha.

5. ENVIRONMENTAL MANAGEMENT

The Department of Family and Children's Services recognises the environmental values of Reserve 37997 and seeks to ensure appropriate environmental management for the Reserve and the proposed Adolescent and Child Support facility. The proponent has undertaken the following commitments to achieve an environmentally responsible development.

- ***Remnant Vegetation Protection***

A buffer of remnant vegetation shall be retained surrounding the proposed facility, to act as a visual screen. The retained remnant vegetation will allow protection of significant flora such as the Priority listed flora identified in Figure 5.

Disturbance to vegetation resulting from construction activities and building requirements shall be minimised. The proposed access road alignment, building footprint and construction area are shown in Figure 7 and are based upon minimum disturbance of significant flora.

- ***Weed Control***

The impact of weeds upon the surrounding remnant vegetation shall be minimised by providing hard edge borders to all lawned areas. The access road will also be utilised as a buffer to the main lawn area to minimise weed intrusion.

Grass and garden clipping shall be composted on site or disposed of off-site.

- ***Fire Management***

Two water hydrants will be installed at the commencement of development of the area to ensure fire control measures are in place for construction activities and to serve as ongoing fire protection.

- ***Construction Phase***

Construction activities and site works shall be restricted to those areas shown in Figure 7. Clearance of vegetation shall be limited to the above area and kept to an absolute minimum.

No weed infested soil material shall be imported to the area as fill.

All rubbish items resulting from the works shall be disposed of at the nearest waste disposal site or site approved by the Local Authority. No rubbish shall be burned or buried on site.

- ***Effluent Disposal***

Effluent disposal shall be via an on-site BIOMAX effluent disposal system or its equivalent.

Monitoring and management of the effluent disposal system shall be in accordance with the manufacturers specifications.

- ***Drainage***

Drainage from hard stand areas shall be disposed via on-site sumps.

6. CONCLUSION

The Department of Family and Children's Services proposes to construct an Adolescent and Child Support facility on Reserve 37997, Dundas Road Forrestfield. This centre will provide up to date crisis care and accommodation for up to 12 children resident in the Centre for varying lengths of time. The Centre and associated infrastructure will occupy 0.9ha or 15% of the 5.96ha reserve area.

State Cabinet has recognised the urgent need for such a facility and the benefits its implementation would bring to the State. Accordingly, Cabinet endorsed construction of the facility in April 1995. Possible sites for the facility were assessed based on a number of key criteria. As a result, the Forrestfield site was selected, having been the only location to satisfy all of the assessment criteria.

Reserve 37997 provides recognised environmental values including remnant vegetation associations once common on the Swan Coastal Plain. In particular the site retains several species of plants now uncommon and of priority significance.

Potential environmental impacts of the development will be minimised through;

- Location of the facility to cause minimal disturbance to significant vegetation;
- controls on the construction phase to minimise disturbance to vegetation and eliminate indiscriminate impact;
- and the implementation of management controls to avoid any ongoing environmental impacts.

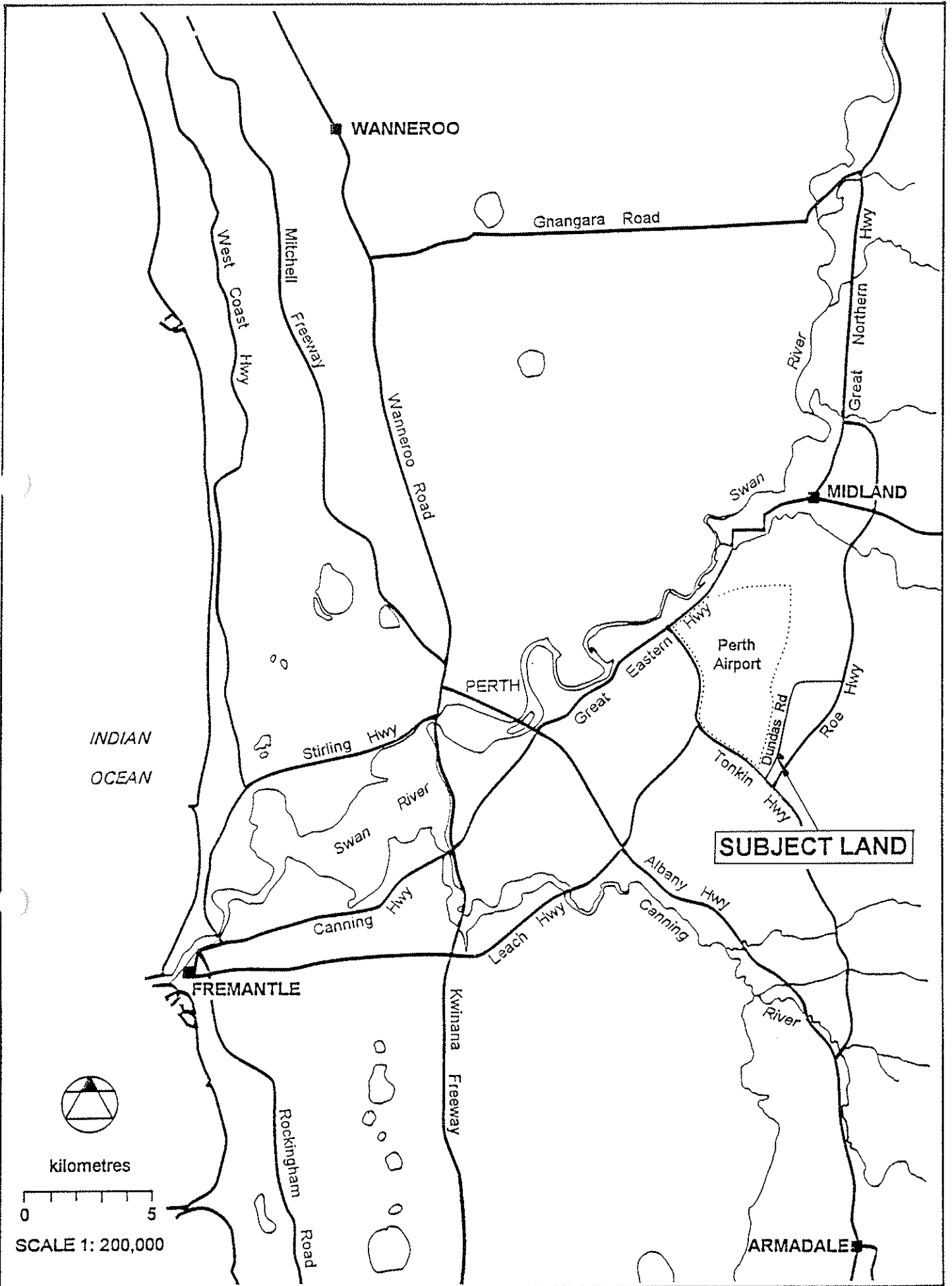
The site and associated proposal have been the subject of a detailed environmental review. Given the development and operating controls described in this document, it is considered that the proposal will result in minimal environmental impact and allow preservation of the site's significant natural values.

REFERENCES

- Department for Community Development (Undated) Adolescent and Child Support Service. Department for Community Development. East Perth Western Australia.
- Department of Conservation and Environmental (1983) The Darling System - System 6. Conservation reserves for Western Australia, Parts 1 and 2. Report 13. Department of Conservation and Environment, Western Australia, Perth.
- Environmental Protection Authority (1992) Environmental Protection (Swan Coastal Plain Lakes) Policy. Environmental Protection Authority, Perth, Western Australia.
- Environmental Protection Authority, Water Authority of Western Australia (1994) Wetlands of Map Sheet 2034 II SE Wetland Management and the Conservation Estate 1:25000 Map. Environmental Protection Authority and Water Authority of Western Australia.
- Geological Survey of Western Australia (1986) Perth Metropolitan Region 1:50,000 Environmental Geology Series Perth Sheet 2034 II and Part of 2043 III and 2134 III.
- Hedde, E.M., Loneragan, O.W. and Havel, J.J. (1980). Vegetation of the Darling System. In: Atlas of natural resources, Darling System, Western Australia. Department of Conservation and Land Management, Como, WA.
- Hill, A.L., A. Semeniuk C.A., Semeniuk, V. and Delmarco, A. (1996). Wetlands of Map Sheet. Wetlands of the Swan Coastal Plain Volume , Wetland Atlas. Water and Rivers Commission, Department of Environmental Protection.
- Hnatiuk, R.J. (1992). *Lambertia*, in, Flora of Australia Vol 16. CSIRO, Melbourne, Australia.
- Keighery, B. (1994). Department of Environmental Protection System 6 Update (1994- ongoing) Vegetation and Flora Report for the System 6.
- Keighery, B. and Trudgen, M. (1992). Remnant vegetation of the alluvial soils of the eastern side of the Swan Coastal Plain. Department of Conservation and Land Management, Como, WA.
- Kelly, A.E., Taylor, A., Langley, M.A., Spooner, A. and Coates D.J. (1993). Declared rare flora and other plants in need of special protection in the Metro area. **Wildlife management program No 10**. Department of Conservation and Land Management, Como, WA.
- Marchant, N.G., Wheeler, J.R., Rye, B.L., Bennett, E.M., Lander, N.S. and Macfarlane, T.D. (1987). Flora of the Perth Region. Department of Agriculture, Western Australia. Perth, WA.

Muir, B.G, (1977). Biological survey of the Western Australian wheatbelt. Part 2: Vegetation and habitat of Bendering Reserve. **Records of the Western Australian Museum. Supplement No.3.** Western Australian Museum, Perth.

FIGURES



ALAN TINGAY & ASSOCIATES

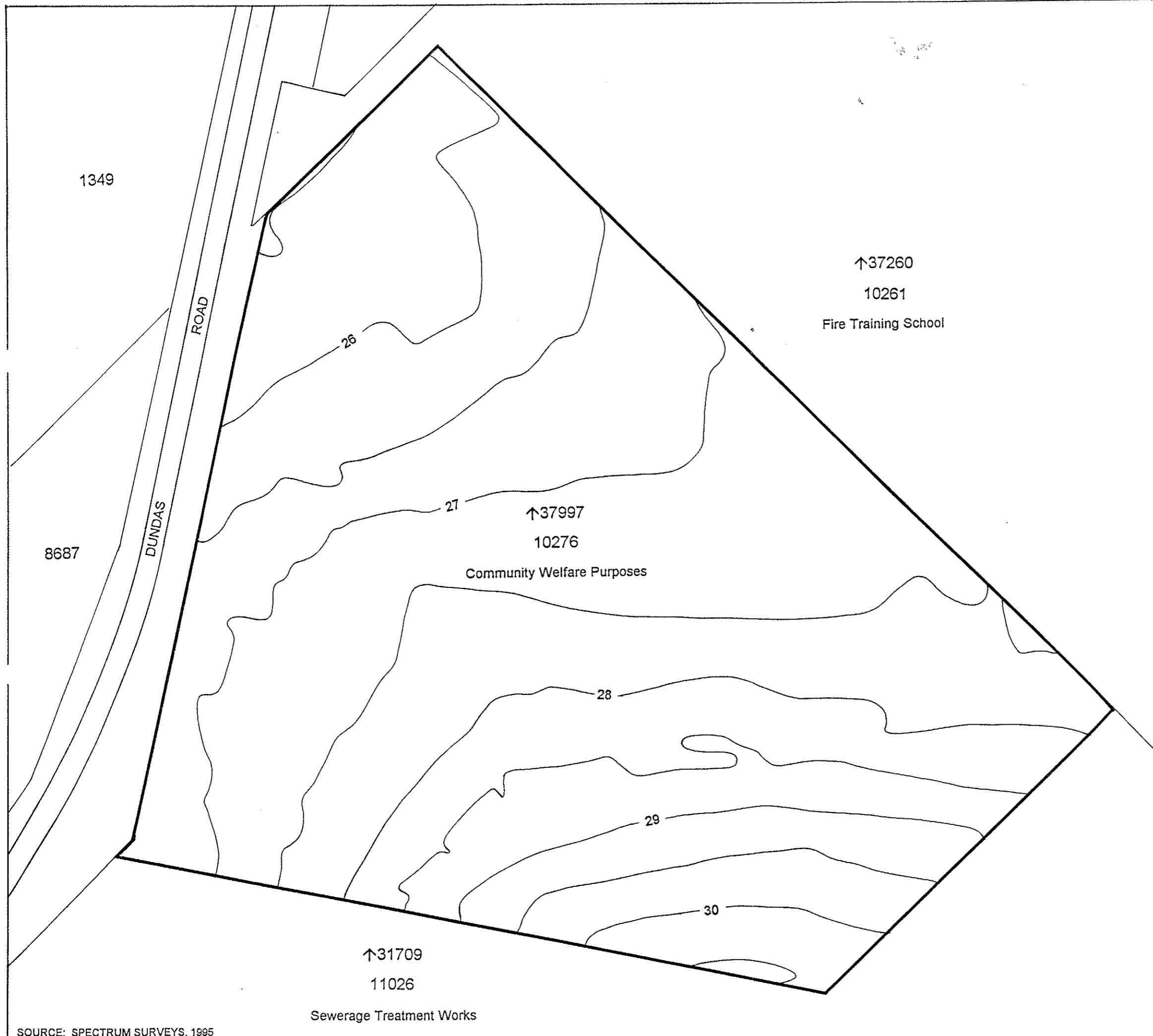
**RESERVE 37997 DUNDAS ROAD, FORREESTFIELD
REGIONAL LOCATION**

FIGURE 1

7996



metres
0 50
SCALE 1:1,250



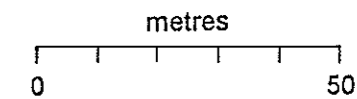
LEGEND

- Boundary of Subject Land
- Cadastral Boundaries
- 28 Topographic Contours at 0.5 metre intervals

RESERVE 37997 DUNDAS ROAD
FORRESTFIELD
CADASTRAL BOUNDARIES
& TOPOGRAPHY
FIGURE 2

SOURCE: SPECTRUM SURVEYS, 1995

ALAN TINGAY & ASSOCIATES



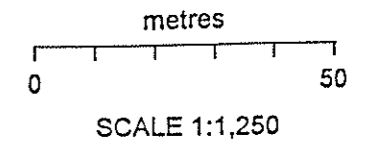
SCALE 1:1,250



LEGEND

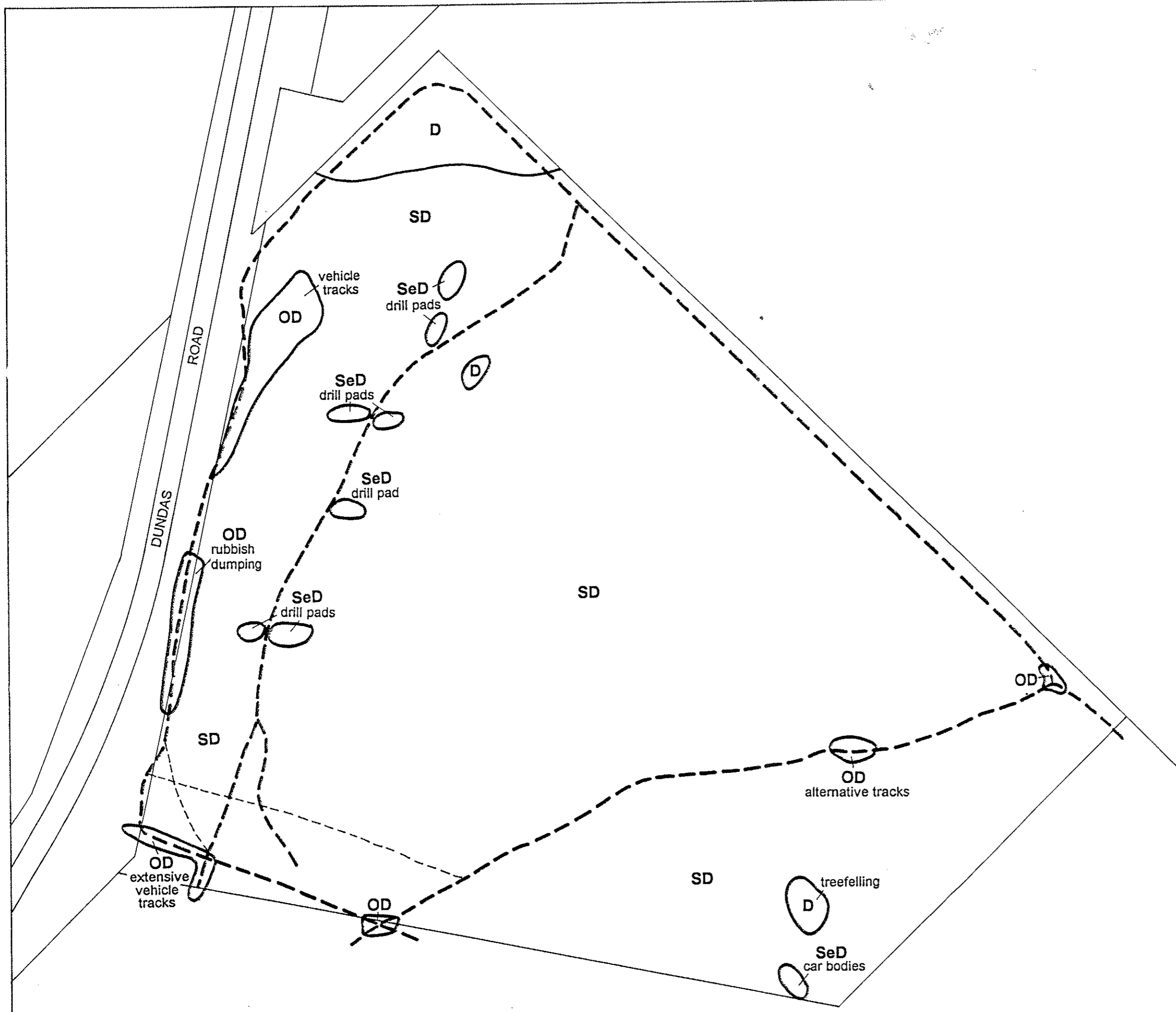
- AREA 1 Open Woodland of *Eucalyptus marginata* with *Allocasuarina fraseriana* & *Banksia menziesii*
- AREA 2 Woodland of *Eucalyptus marginata* with *Allocasuarina fraseriana*, *Banksia menziesii* & *B. attenuata* (recently burnt)
- AREA 3 Woodland of *Eucalyptus marginata* with *Allocasuarina fraseriana* & *Banksia menziesii* & *B. attenuata* (unburnt)
- AREA 4 Woodland of *Banksia menziesii* with *Allocasuarina fraseriana* & *Eucalyptus marginata*

RESERVE 37997 DUNDAS ROAD
FORRESTFIELD
VEGETATION MAP
FIGURE 3



LEGEND

- Major Track
- - - Minor Track
- SD** Slightly Disturbed
- D** Disturbed
- OD** Obviously Disturbed
- SeD** Severely Disturbed







RESERVE 37997 DUNDAS ROAD
FORRESTFIELD
VEGETATION QUALITY
FIGURE 4

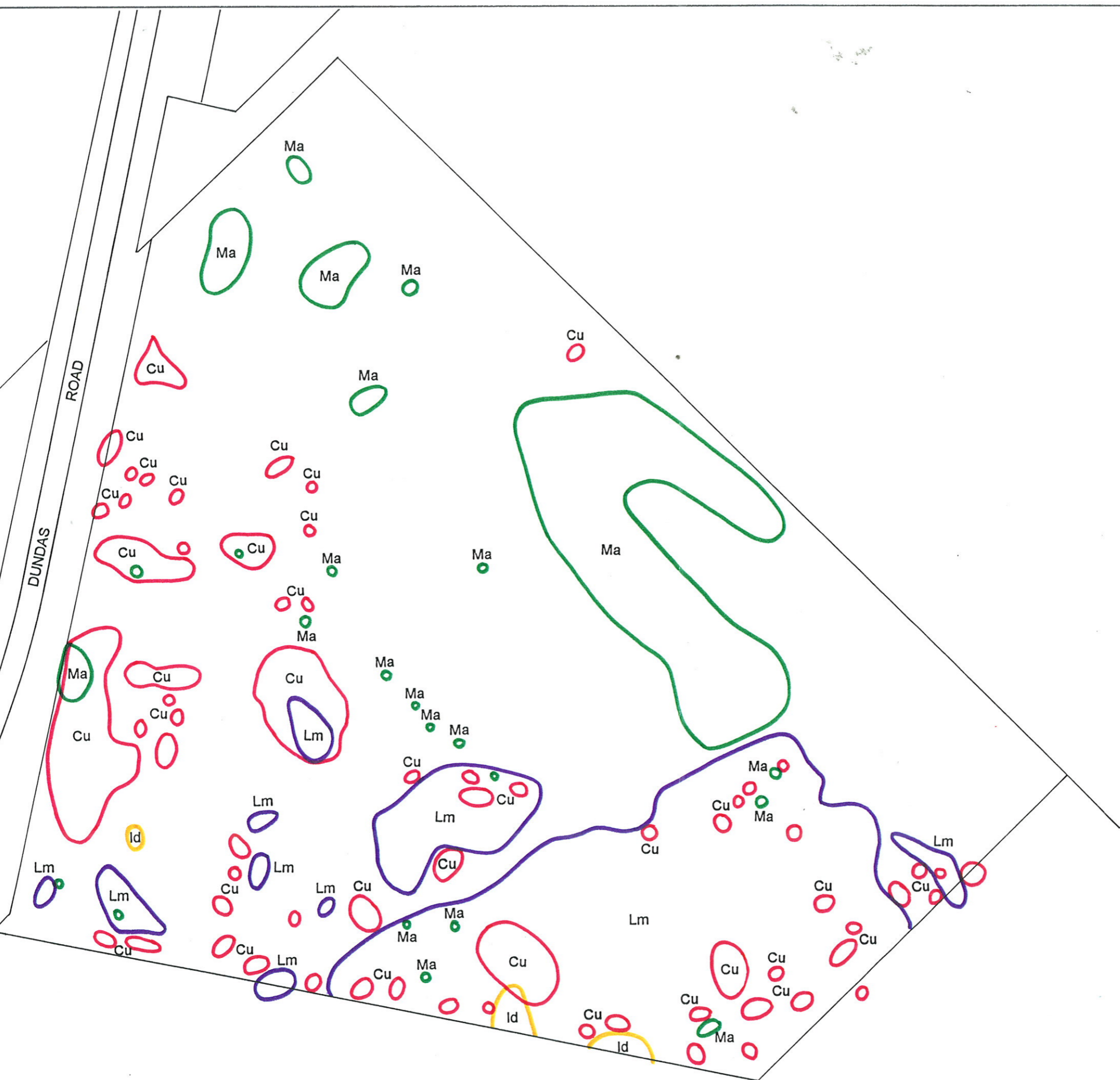


metres
0 50

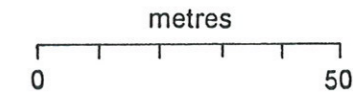
SCALE 1:1,250

LEGEND

-  (Cu) *Conospermum undulatum*
-  (Lm) *Lambertia multiflora* var. *darlingensis*
-  (Id) *Isopogon drummondii*
-  (Ma) *Macarthuria* sp. Mullering



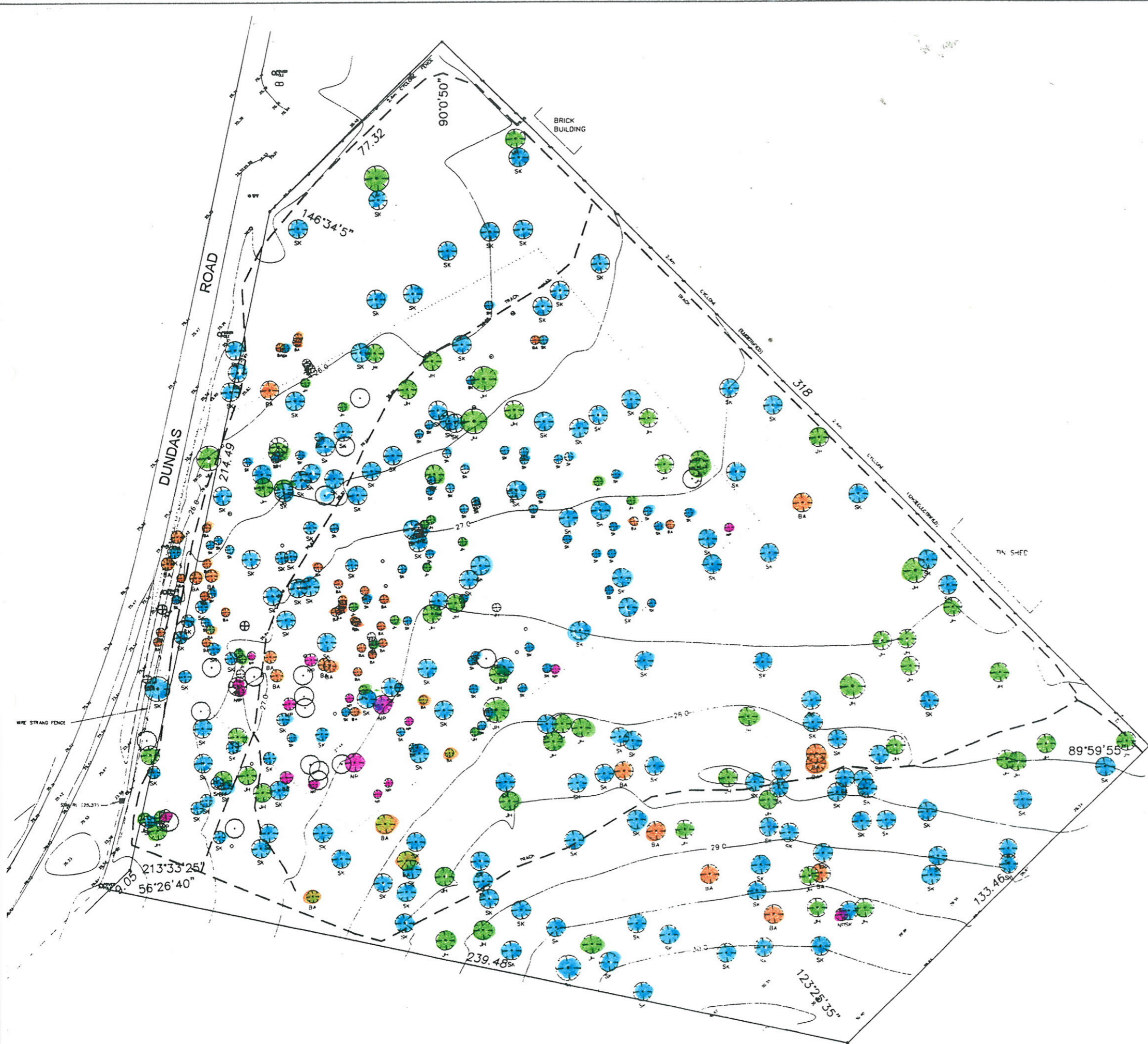
RESERVE 37997 DUNDAS ROAD
FORRESTFIELD
DISTRIBUTION OF
SIGNIFICANT FLORA
FIGURE 5



SCALE 1:1,250

LEGEND

- Jarrah (*Eucalyptus marginata*)
- Banksia (*Banksia menziesii* & *B. attenuata*)
- Sheoak (*Allocasuarina fraseriana*)
- Woody Pear (*Zylomelum occidentale*)









RESERVE 37997 DUNDAS ROAD
FORRESTFIELD
SURVEYED LOCATION OF TREES
FIGURE 6



metres
0 50
SCALE 1:1,250

LEGEND

-  (Cu) *Conospermum undulatum*
-  (Lm) *Lambertia multiflora* var. *darlingensis*
-  (Id) *Isopogon drummondii*
-  (Ma) *Macarthuria* sp. Mullering
-  Proposed Building
-  Extent of Works



RESERVE 37997 DUNDAS ROAD
FORRESTFIELD
SIGNIFICANT FLORA & WORKS AREA
FIGURE 7

PHOTOGRAPHS



PHOTO 1 North western corner of Reserve 37997, Dundas Road.



ALAN TINGAY & ASSOCIATES

PHOTO 2 Firebreak adjacent to western boundary, near Dundas Road.



PHOTO 3 Midway along southern boundary, looking towards Dundas Road.



ALAN TINGAY & ASSOCIATES

PHOTO 4 Banksia woodland in south eastern corner of Reserve 37997.



PHOTO 5 Recent tree felling, south eastern corner of Reserve 37997.



ALAN TINGAY & ASSOCIATES

PHOTO 6 Midway along north eastern boundary, looking towards the WA Bush Fires Board Training Academy.

APPENDIX 1

APPENDIX 1

Species recorded during the July 1996 field inspection. Priority species are shown with the level of Priority or if proposed for DRF listing in the Status column. Introduced species are indicated by '**' in the Status column.

Species	Status	Area 1	Area 2	Area 3	Area 4
<i>Acacia applanta</i>		x	x	x	x
<i>Acacia pulchella</i>			x		
<i>Acacia sessilis</i>		x			
<i>Adenanthos cygnorum</i>		x	x		x
<i>Alexgeorgia nitens</i>		x			x
<i>Allocasuarina fraseriana</i>		x	x	x	x
<i>Allocasuarina humilis</i>			x	x	
<i>Anigozanthos bicolor</i>		x			
<i>Anigozanthos manglesii</i>		x	x	x	x
<i>Arctotheca calendula</i>	*	x		x	
<i>Asteraceae sp.</i>	*	x	x		x
<i>Astroloma stomarrhena</i>		x	x	x	x
<i>Banksia attenuata</i>		x	x		x
<i>Banksia grandis</i>			x	x	x
<i>Banksia menziesii</i>		x	x	x	x
<i>Boronia ramosa</i>			x	x	x
<i>Bossiaea eriocarpa</i>		x	x		x
<i>Briza maxima</i>	*	x		x	
<i>Burchardia umbellata</i>		x	x		x
<i>Burnettia nigricans</i>			x		
<i>Caladenia flava</i>			x		x
<i>Calectasia cyanea</i>		x			x
<i>Cannabis sativa</i>	*				
<i>Caustis dioica</i>		x			x
<i>Chamaescilla corymbosa</i>		x	x		
<i>Conospermum undulatum</i>	P4/DRF	x	x	x	x
<i>Conostephium pendulum</i>			x	x	x
<i>Conyza sp.</i>	*	x	x	x	
<i>Cyathochaeta clandestina</i>		x	x	x	x
<i>Dampiera linearis</i>		x	x	x	x
<i>Dasypogon bromelliifolius</i>		x	x	x	x
<i>Dasypogon obliquifolius</i>		x	x		x
<i>Daviesia decurrens</i>		x	x		x
<i>Daviesia divaricata</i>		x	x	x	
<i>Daviesia nudiflora</i>			x		x
<i>Daviesia restioides</i>		x	x		
<i>Daviesia triflora</i>		x	x		x
<i>Drosera erythrorhiza</i>		x	x	x	x
<i>Drosera sp. (climber)</i>		x	x	x	x
<i>Dryandra nivea</i>		x	x	x	x

Species	Status	Area 1	Area 2	Area 3	Area 4
<i>Ehrharta calycina</i>	*	x	x		
<i>Eragrostis curvula</i>	*			x	
<i>Eriostemon spicatus</i>		x	x	x	x
<i>Eucalyptus marginata</i>		x	x	x	x
<i>Gladiolus caryophyllaceus</i>	*	x	x	x	x
<i>Gompholobium confirta</i>		x	x	x	x
<i>Gompholobium tomentosum</i>		x			x
<i>Haemodorum laxum</i>		x	x	x	x
<i>Haemodorum spicatum</i>		x	x		x
<i>Hakea ruscifolia</i>		x	x	x	x
<i>Hemiantra linearis</i>		x	x	x	x
<i>Hibbertia huegellii</i>			x		x
<i>Hibbertia hypericoides</i>		x	x	x	x
<i>Hovea trisperma</i>			x	x	
<i>Hybanthus calycinus</i>			x	x	
<i>Hypochaeris glabra</i>	*	x		x	x
<i>Isopogon drummondii</i>	P3		x		x
<i>Jacksonia decumbens</i>			x	x	x
<i>Jacksonia restioides</i>		x		x	
<i>Kennedia prostrata</i>		x	x		
<i>Kingia australis</i>		x	x		
<i>Labiichea punctata</i>			x	x	x
<i>Lambertia multiflora</i> var. <i>darlingensis</i>	P3		x	x	x
<i>Laxmannia sessiliflora</i>		x			x
<i>Lepidosperma costale</i>		x	x		x
<i>Leporella fimbriata</i>			x	x	x
<i>Leucopogon conostephioides</i>		x	x		x
<i>Lomandra nigricans</i>		x	x		x
<i>Lomandra preissii</i>			x		x
<i>Loxocarya fascicularis</i>		x	x		x
<i>Lupinus</i> sp.	*	x		x	x
<i>Macarthuria</i> sp. Mullering (B.J. Keighery 517)	P1/DRF	x	x		x
<i>Mesomelaena pseudostygia</i>		x	x	x	x
<i>Mesomelaena tetragona</i>		x	x		x
<i>Monotaxis grandiflora</i>			x		x
<i>Nuytsia floribunda</i>		x	x		x
<i>Olax benthamiana</i>			x		x
<i>Patersonia occidentalis</i>		x	x	x	x
<i>Persoonia elliptica</i>			x		
<i>Persoonia angustifolia</i>			x	x	
<i>Petrophila elliptica</i>		x	x	x	x
<i>Pimelea</i> sp.			x	x	
<i>Pityrodia bartlingii</i>		x	x	x	x
<i>Pronaya fraseri</i>		x	x	x	x

Species	Status	Area 1	Area 2	Area 3	Area 4
<i>Pterostylis sanguinea</i>			X		X
<i>Scaevola paludosa</i>		X	X		X
<i>Schoenus curvifolius</i>		X	X		X
<i>Solanum nigrum</i>	*	X	X		X
<i>Sonchus</i> sp.	*				X
<i>Stachystemon vermicularis</i>			X		X
<i>Stirlingia latifolia</i>		X	X	X	X
<i>Stylidium repens</i>			X		X
<i>Stylidium</i> sp. (rosette)			X		X
<i>Styphella tenuifolia</i>		X	X		
<i>Synaphea spinulosa</i>		X	X	X	X
<i>Thysanotus ? multiflora</i>		X	X		
<i>Thysanotus sparteus</i>			X	X	X
<i>Trifolium</i> sp.	*			X	
<i>Ursinia anthemoides</i>	*	X	X	X	X
<i>Xanthorrhoea prelessii</i>		X	X	X	X
<i>Xanthosia huegellii</i>		X	X	X	X
<i>Xylomelum occidentale</i>		X	X		X

M53

Metropolitan Region Scheme Amendment No. 925/33 — The Foothills

A submission by the Environmental Protection Authority on the
document released for review by the State Planning
Commission

**Full document
available
on request**

Environmental Protection Authority
Perth, Western Australia
Bulletin 708
October 1993




M53- 06

Xanthorrhoea
near M53-02



Bybylis
gigantea



TRAINING ACADEMY
OF THE
W.A. FIRE BRIGADES BOARD



M53 - Ø2



M53 - Ø3



M53 - Ø4



M53 - Ø5



M53 - Ø5



M53 - Ø5