ENTERED ON GIS

Name: Bushland Plant Survey – Guilderton Regional Park
Date: 12/05/2006
Capture Author: Thomas Leong

Comments:
Polygon
Created to match documented study area with acceptable level of accuracy

Accuracy Levels:

- High = Document contained visual and or described spatial references easily copied, resulting in little or no polygon boundary errors
- Acceptable = Document contained visual and or described spatial references with complex boundaries, resulting in minor boundary errors
- Low = Document contained little or no visual and or described spatial references, resulting in polygon boundary errors

Attributes
Report Info – Captured without problems
Custodial/Contact – Captured without problems
Content – Captured without problems

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON 'Reg PK' SITE NUMBER GUILD 01

DATE TRIP 12-10-95 RECORDERS BJK, BMH, NCT

DATE TRIP _____ RECORDERS _____

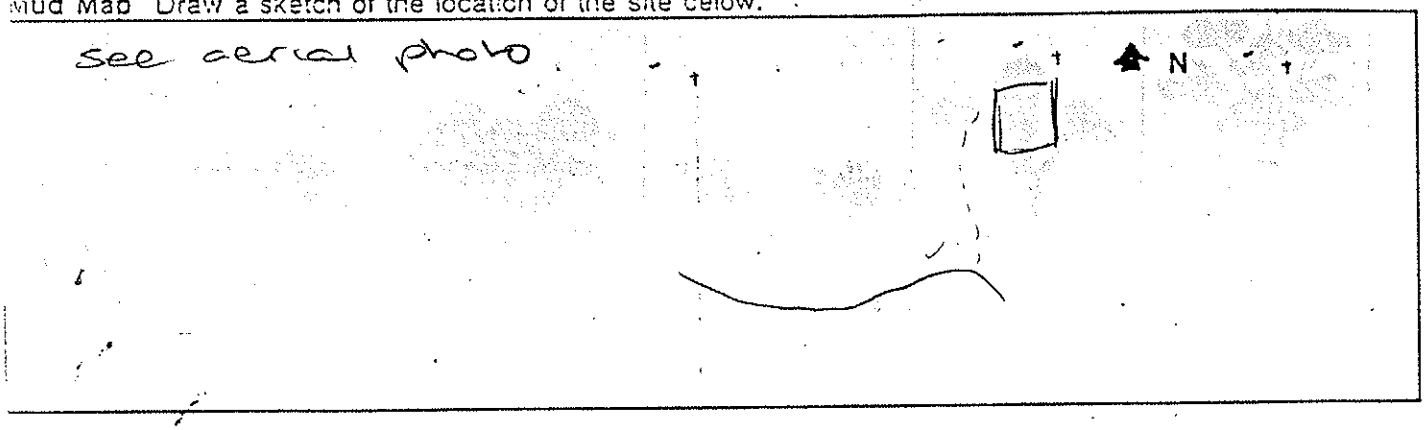
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 34 Nedlands WA 6008.

1. LOCATION of the QUADRAT

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



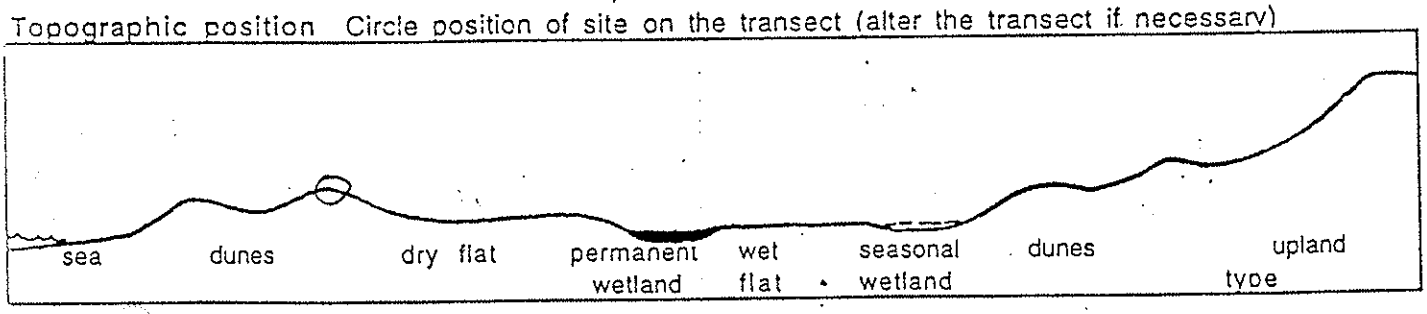
Re[illegible]cation

Geographic Location Latitude 31° 21.637' S Longitude 115° 31.679' E ~~Altitude~~ ± 39m

Reference Map of site 8 BMH.

Photograph Photographer's Name BJK (W to Guilderton) 10/7 Photo No BJK

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



2. SITE DATA Circle the correct response.

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

Surface Soil sand Colour pale brown

Exposed rock type % surface

Sub-surface Soil as above Colour

Rock type depth to rock

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

Litter	30–70 % cover	Bare Ground	2–10 %cover
Depth	1–3 cm		

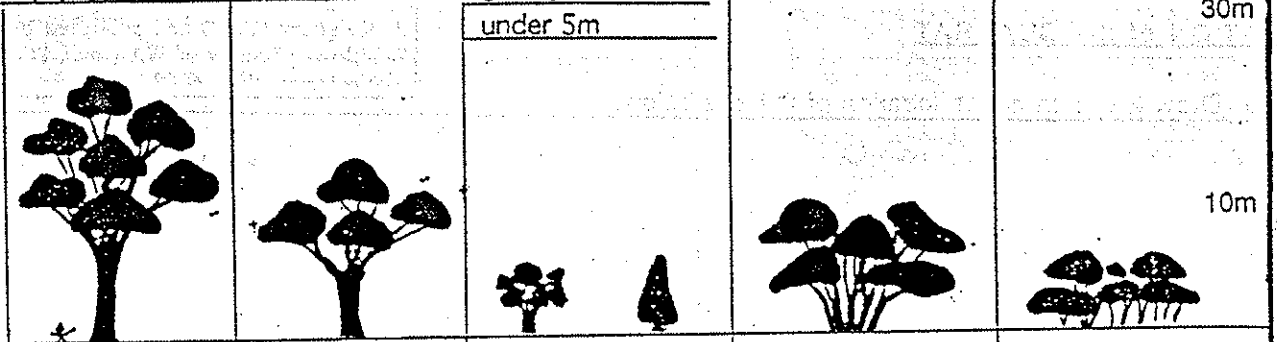
BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

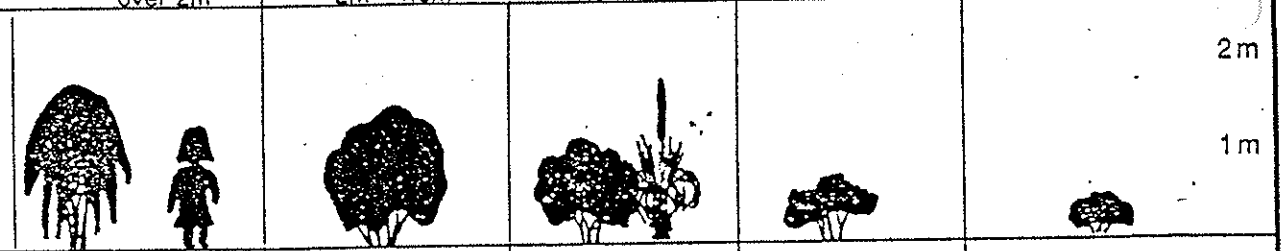
From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6009.

3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below) and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES			MALLEES	
	over 30m	15 - 30m	5 - 15m under 5m	over 8m	under 8m
LIFE FORM					
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS			SHRUBS	
	over 2m	2m - 1.5m	1.5 - 1m	1 -0.5m	under 0.5m
LIFE FORM					
COVER CLASS (%)				30-70	10-30
DOMINANT SPECIES				Cal. quad. Acac. lasio Mel. acerosa	Dry ind.

	GRASSES	HERBS	SEDGES over 0.5m	under 0.5m
LIFE FORM				
COVER CLASS (%)	2-10	10-30	30-70	
DOMINANT SPECIES	Stipa flav. Poa porph. Bromus rsp.	Cono. cand. Carp. vir(pink) Lom. mart.	Lax flex	

4. VEGETATION CONDITION

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

COMMENTS: Bromus (Grass glom pellets assoc tracks) alot of Helophyla pusilla. animal tracks numerous, weeds brought in by animals kangaroos ? emus (note adjacent dung pile looks like emu contains lupins, Alloxas cones, Red cap

BUSHLAND PLANT SURVEY RECORDING SHEET 3 – use pencil only

5. SPECIES PRESCENCE — Label each plant with plants number, site code, date and plant's name or working name if required

SITE No GUILD 01
Date 12/10/95

Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

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

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Calo. quad.			
Mel acerosa			
Acacia losio			
Hemiandra pung (purp/glab) and hairy			
Rhag. bacc.			
Dry lind.			
Spyrid. glob.			
Hard. Comp			
Cassytha flava	VSP		
Cryptandra	VSP		

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa flavescens			
Poa porphr.			
Bromus	VSP		
HERBS			
Cono cardicans			
*Dichisma small			
Lomandra maritima			
Lepto. scab.			
Trachy pilosa			
Calandrinia sp small Hs	VSP		
Calandrinia sp large Fs	VSP		
Carpob. virescens (pink-small)			
Stenopetalum	VSP		
Senecio lautus			
Daucus glochid			
Crassula h. colorata			
* Utricularia pusilla			

HERBS (cont.)	No	Fl	ID
Brachy. ibend	VSP		
Parat. debilis			
Podotheca angust			
*Cress glom			
Lobelia tenuior			
SEDGES			
Lax flax			
Schoen. grandi			
Lept angust			
Trichocin	VSP		
NOT Lupins in dune			

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA _____ SITE NUMBER GUILD Ø2

DATE TRIP 17/10/85 RECORDERS BJK, NJ, BH

DATE TRIP _____ RECORDERS _____

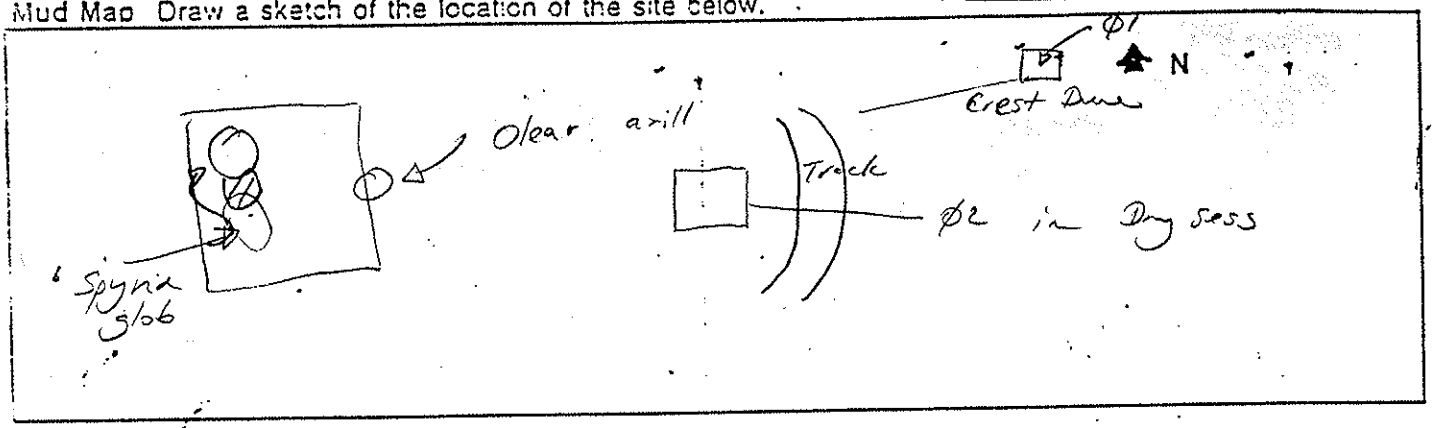
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 34 Nedlands WA 6008.

1. LOCATION of the QUADRAT

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



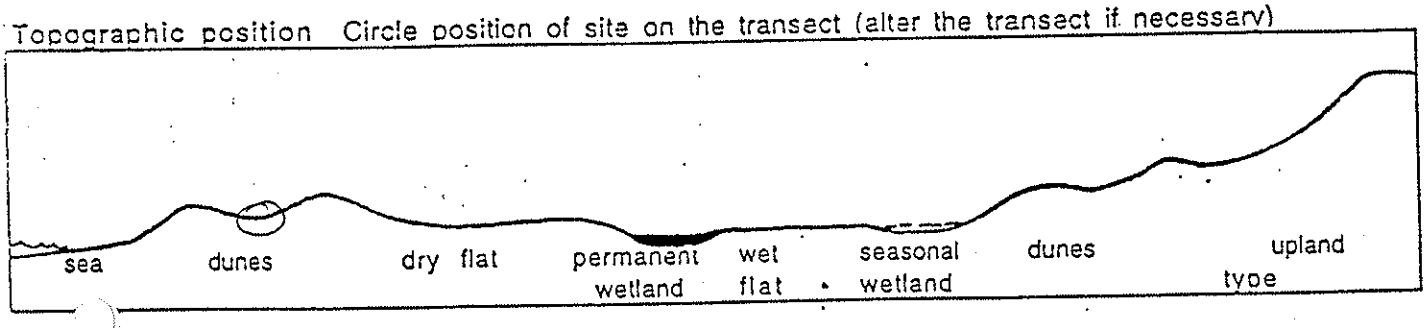
Tag Location

Geographic Location Latitude 31°21 665' S Longitude 115° 31·665 E ~~Altitude~~ ±36m

Reference Map

Photograph Photographer's Name BJK Photo No 19

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



2. SITE DATA Circle the correct response.

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

Surface Soil Sand Colour Sand

Exposed rock type % surface

Sub-surface Soil Sand Colour grey/cream

Rock type depth to rock

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

Litter 17·70 % cover

Depth up to 3 cm

Bare Ground 0 %cover

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON REG PK SITE NUMBER GUILD03

DATE TRIP 12-10-95 RECORDERS BJK, NCT, BMH

DATE TRIP _____ RECORDERS _____

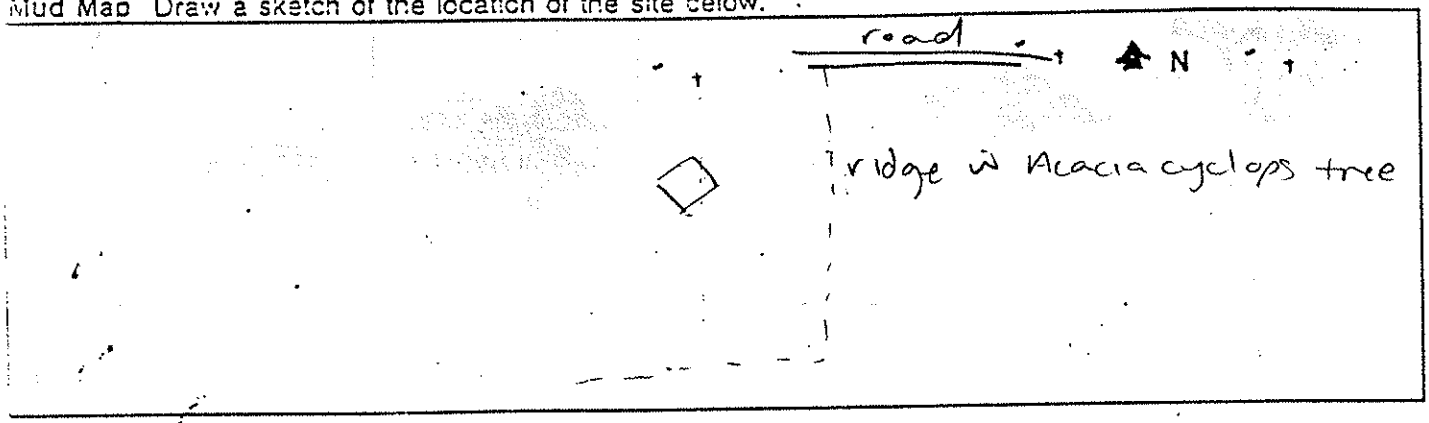
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 51 Nedlands WA 6008.

1. LOCATION of the QUADRAT

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



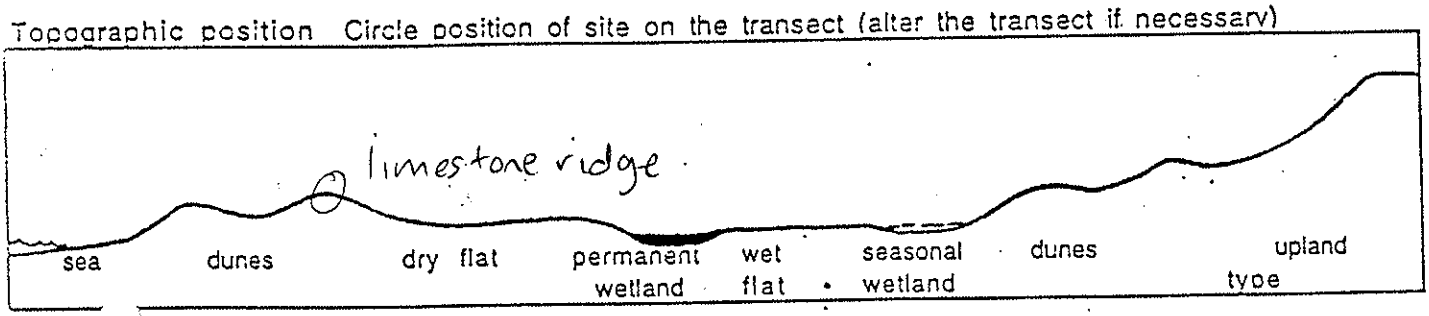
Field Location

Geographic Location Latitude 31°21.698 S Longitude 115°32.031 E Altitude EPE 67 mt.

Reference Map

Photograph Photographer's Name BMH Photo No 25

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



2. SITE DATA Circle the correct response.

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

Surface Soil sand Colour cream

Exposed rock type limestone % surface 30-70

Sub-surface Soil as above Colour

Rock type limestone depth to rock 0 - 70+

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

Litter 2 - 10 % cover Depth 0.5 to 1 cm

Bare Ground 30-70 %cover

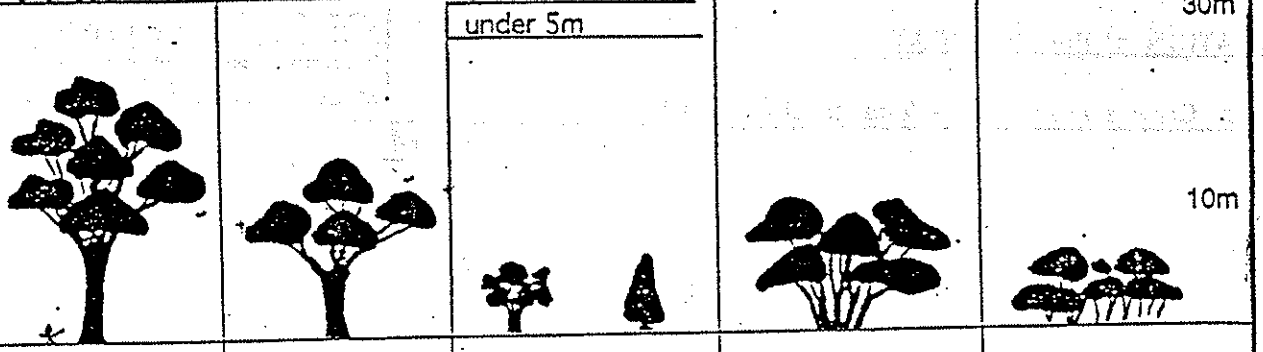
BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

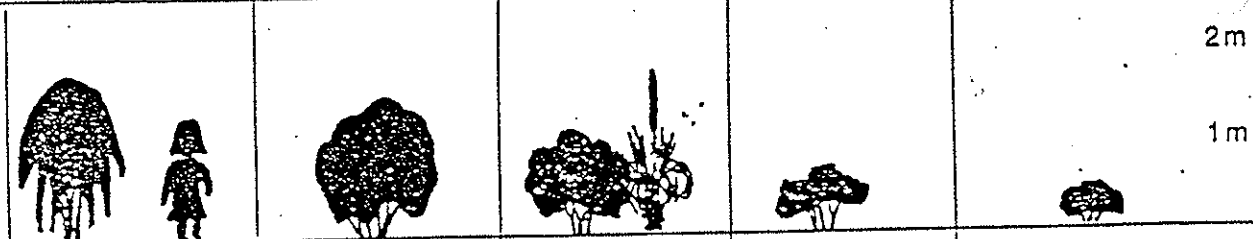
From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6009.

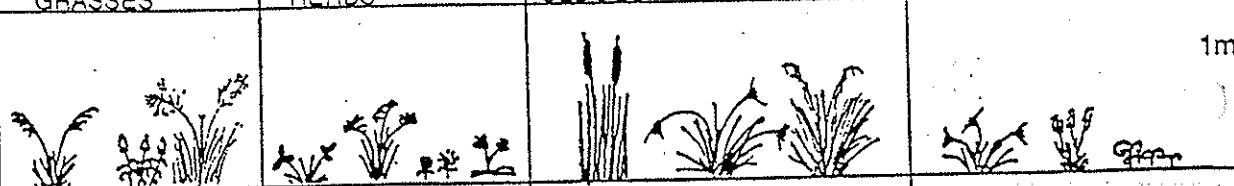
3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below),and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES			MALLEES	
	over 30m	15 - 30m	5 - 15m under 5m	over 8m	under 8m
LIFE FORM					
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS				SHRUBS
	over 2m	2m - 1.5m	1.5 - 1m	1 -0.5m	under 0.5m
LIFE FORM					
COVER CLASS (%)				10-30	10-30
DOMINANT SPECIES				Mel acer Pimelea Teuc parv	cryptandra Acacia lasio Tersoonia

	GRASSES	HERBS	SEDGES over 0.5m	under 0.5m
LIFE FORM				
COVER CLASS (%)	10-30	10-30		2-10
DOMINANT SPECIES	Vulpia Bromus Stipa	Conostylis Lomandra maritima Acanth pressii		Lox Clex

4. VEGETATION CONDITION

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

COMMENTS

BUSHLAND PLANT SURVEY RECORDING SHEET 3 use pencil only

5. SPECIES PRESCENCE

SITE No GUILD Ø3

Date 12/10/95

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 Identification check

From '*Bushland Plant Survey*' written by B. Keighery (19940 and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID

MALLEES	No	Fl	ID

SHRUBS	No	Fl	ID
Mel acerosa			
Cassytha racemosa			
Crypt	VSP		
Phyll. caly			
Leucop. ?racem	VSP		
Hard. comp.			
Kennod. prost			
Eremophila glabra (coast	(VSP)		
Acac. lasio.			
Leuco. parv.			
Rhag. baccata			
Tetragonia brev			
Hem pung (glab)			
Gomph tom			
Pimelea ? ferruginea			
Scaevola holo			

SHRUBS (cont.)	No	Fl	ID

GRASSES	No	Fl	ID
*Bromus	VSP		
*Vulpia	VSP		
Stipa flavescens			
Danthonia	VSP		
Poa porph.			

HERBS	No	Fl	ID
Acanth. preissii			
Cono. candicans			
Opar. vag.			
* Crass glom			
Lept scab.			
* Hel pusilla			
Pod angust			
Daucus glochid			
Lom. marit.			
* Dischisma small			
Calandrinia = GUILD Ø = only one here			
Stenopetalum = GUILD Ø1			
Crassula colorata			

HERBS (cont.)	No	Fl	ID
Waitzia citrina			
Podolepis grac.			
Trysan pat/menz (seed)			
Hyb. calyc.			
Orobanche			
Carpobrotus Hyb?			
* Sonch. oler.			
* Hyp glab			

SEDGES	No	Fl	ID
Lox flex			
Lepid ~~glad~~ ang.			
Limestone end sedge S. lanatus			
Triglochin			

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON REC PK SITE NUMBER GUILD 04

DATE TRIP 12-10-95 RECORDERS BJK BMH NCT

DATE TRIP _____ RECORDERS _____

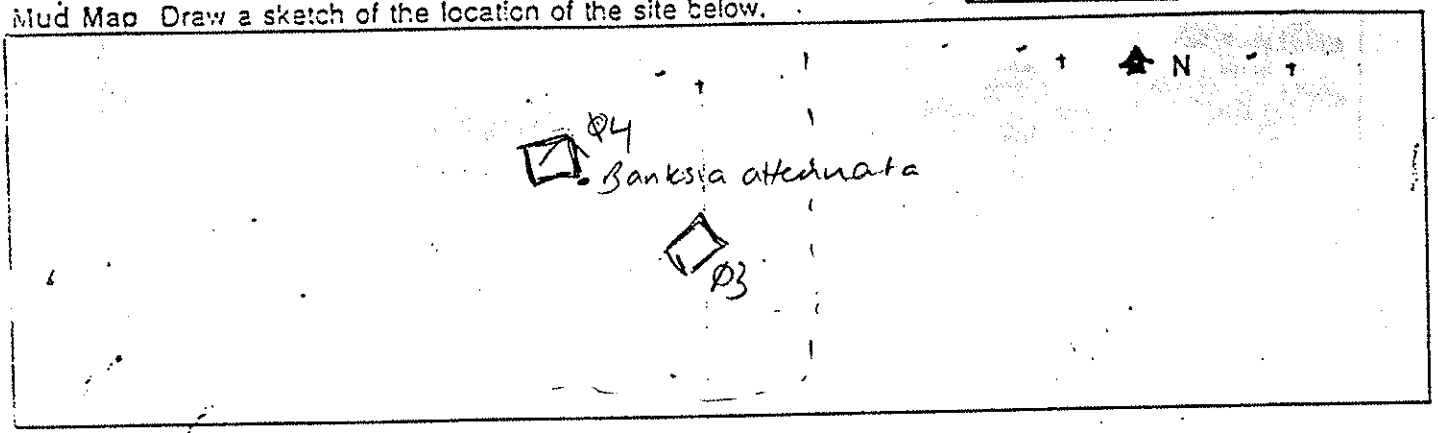
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 34 Nedlands WA 6008.

1. LOCATION of the QUADRAT

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



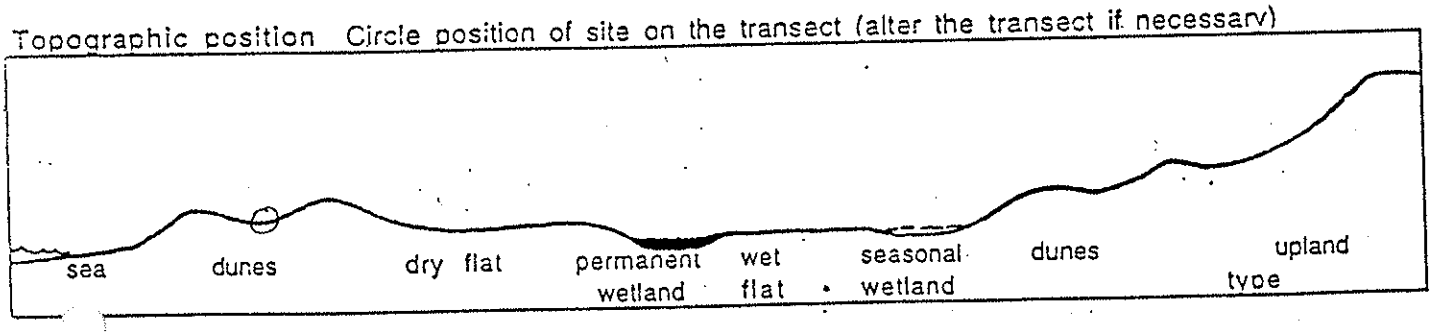
Local Location

Geographic Location Latitude 31°21 658 S Longitude 115°32 014 E Altitude EPE 72 mt

Reference Map

Photograph Photographer's Name BMH Photo No 26

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



2. SITE DATA Circle the correct response.

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

Surface Soil sand Colour pale brown

Exposed rock type % surface

Sub-surface Soil Sand Colour yellow

Rock type depth to rock

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

Litter 10-30 % cover Depth 1 leaf to 1 cm

Bare Ground <2- %cover

BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

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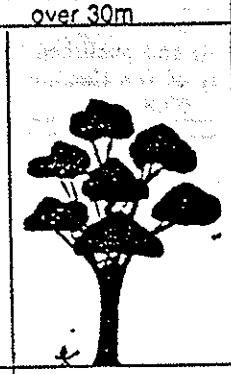
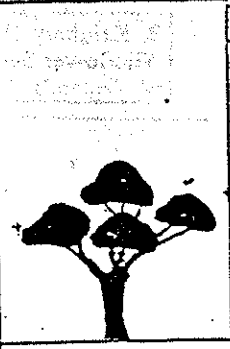
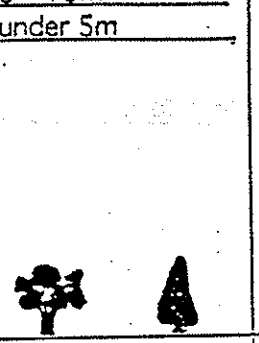
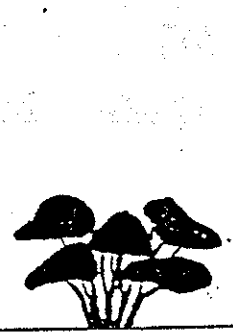
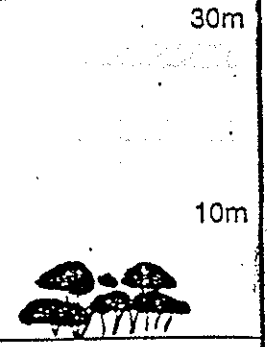
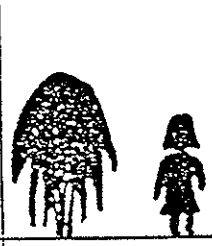
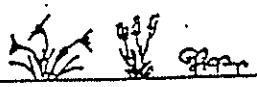
3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below),and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES over 30m	TREES 15 - 30m	TREES 5 - 15m / under 5m	MALLEES over 8m	MALLEES under 8m
LIFE FORM					 30m 10m
COVER CLASS (%)			2 & 10		
DOMINANT SPECIES			B attenuata		

	SHRUBS over 2m	SHRUBS 2m - 1.5m	SHRUBS 1.5 - 1m	SHRUBS 1 -0.5m	SHRUBS under 0.5m
LIFE FORM					 2m 1m
COVER CLASS (%)			30-70		
DOMINANT SPECIES			Enag barc Conosp? stoch mel. acer Dav. divar		

	GRASSES over 0.5m	HERBS	SEDGES over 0.5m	SEDGES under 0.5m
LIFE FORM				 1m
COVER CLASS (%)	2-10	30-70		2-10
DOMINANT SPECIES	Stipa flaves. Bromus	Conostylis Millotia Heliophylla pus Lomandra maritima		Lox flex Schoenus grand. Lepid aing

4. VEGETATION CONDITION

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

COMMENTS

Adj areas Lupins / Clover (legs) / Bromus / Heliophila
Lager from past grazing in swales

BUSHLAND PLANT SURVEY RECORDING SHEET 3 use pencil only

5. SPECIES PRESCENCE

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (19940 and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

SITE No GUILO Ø4

Date 12/10/95

TREES	No	Fl	ID
Bank att			
MALLEES			
SHRUBS			
Mel. acerosa			
Comph tom.			
Hard. comp			
Dav dichot			
Rhag. bacc.			
Cono ?stoech	VSP		
Kenned prost			
Acacia lasio			
Hibb racemosa			
Ice plant	VSP		
Helichry. cordatum			
Jacksonia ?ulicina			
Scaev....holo			
Cassytha (skeletine)			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa Has.			
Bromus			
* Danthonia			
HERBS			
Acanth. prei			
Millot ten			
Calandrin large VSP			
Cross col.			
Cras glom			
Daucus glochid			
Senecio lautus			
* Hel pusilla			
Trachy. pilosa			
*Orobanche			
Lobelia tenuior			
Lom. mont.			
* Dichisma small			

HERBS (cont.)	No	Fl	ID
Thys. arenarius			
Conost. candi			
* Petro vel.			
* Sonch. olear			
? Caladenia cf flava (dead)			
Parataria debilis			
Ptilotus drumm.			
→ very tall.			
SEDGES			
Schoenus grand.			
Lox flex.			
Triglochin ← = GUIL081			
Lepid angust.			
ADJ			
Hyp ins.			
ADJ Heath understorey			
Very similar			
One Tuart in Banksia			
Lupins, Clover etc in Swale			

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON REGPK SITE NUMBER GUILD 05

DATE TRIP 12-10-95 RECORDERS BJK, BMH, NCT

DATE TRIP _____ RECORDERS _____

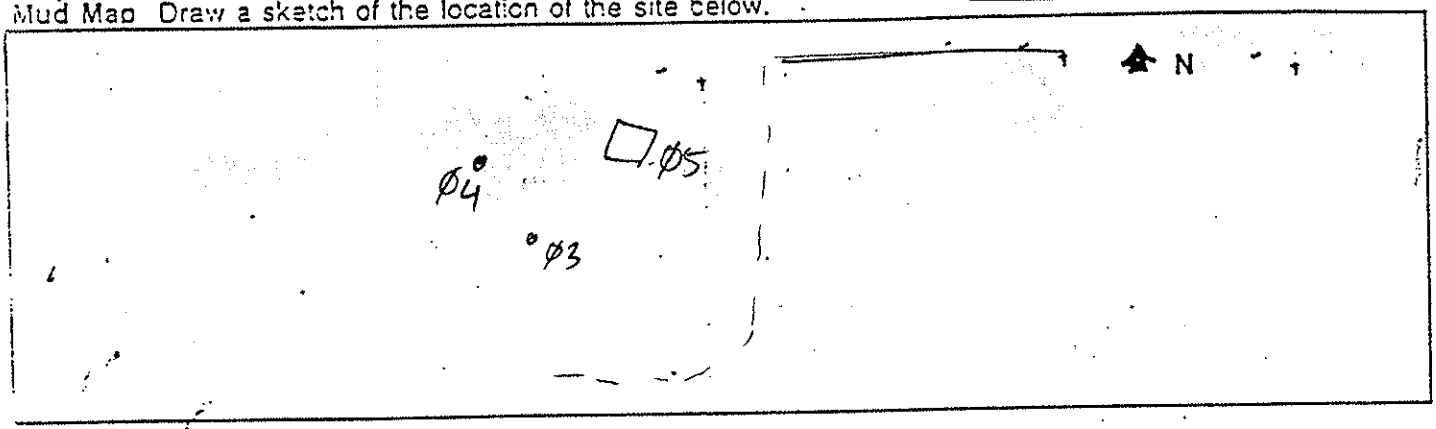
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 51 Nedlands WA 6009.

1. LOCATION of the QUADRAT

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



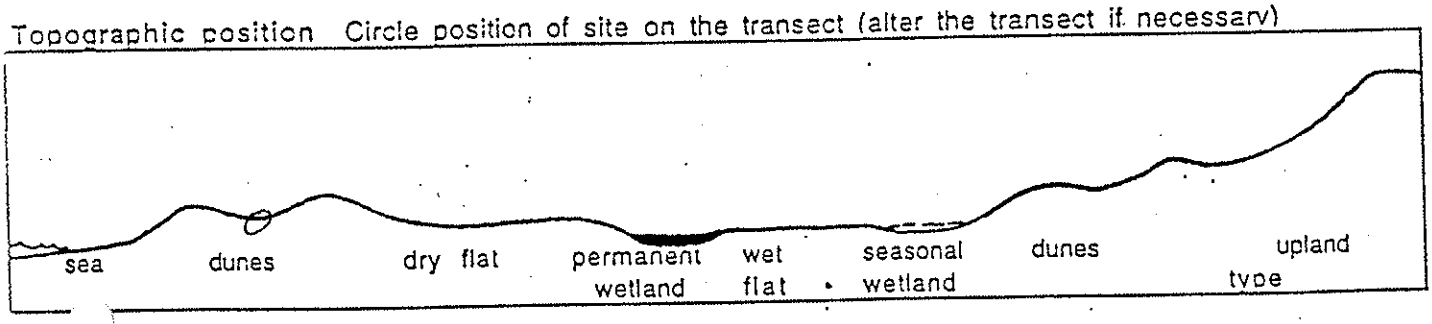
Road Location

Geographic Location Latitude 31·21·634S Longitude 115°31·990 E ~~Altitude~~ 111m

Reference Map

Photograph Photographer's Name BMH Photo No 28

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



2. SITE DATA Circle the correct response.

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

Surface Soil Sand Colour brown

Exposed rock type % surface

Sub-surface Soil Sand Colour yellow

Rock type depth to rock

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

Litter 30-70 % cover

Depth up to 2 cm

Bare Ground 2-10 %cover

BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

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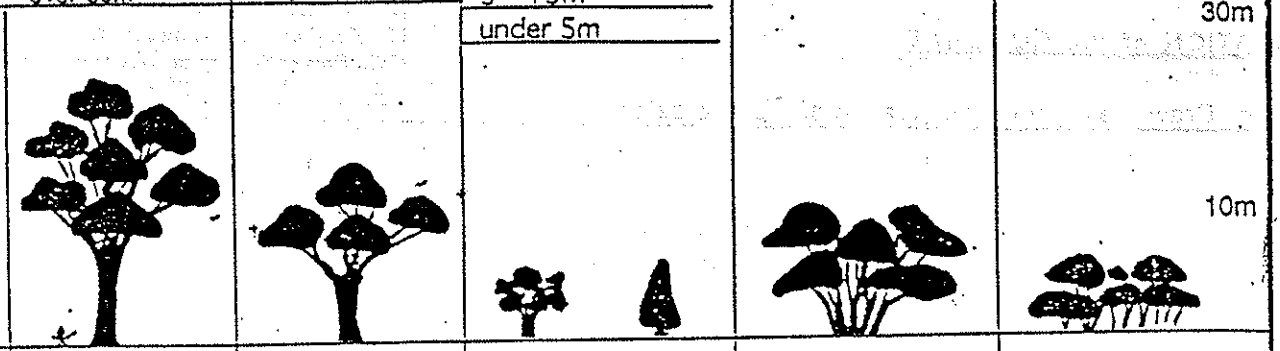
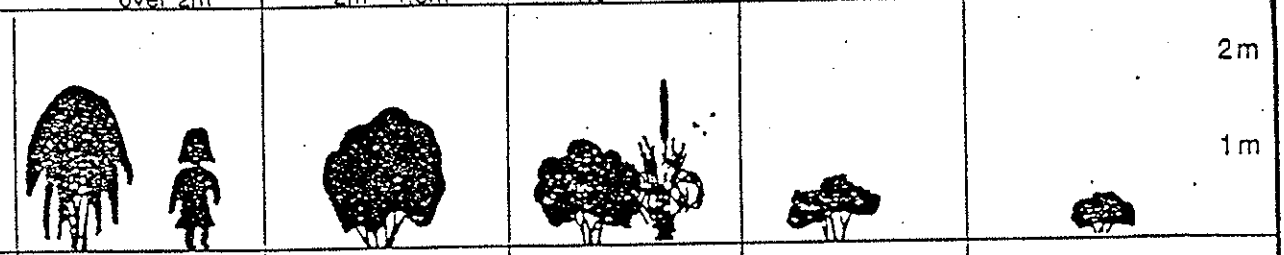
3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below) and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES over 30m	TREES 15 - 30m	TREES 5 - 15m / under 5m	MALLEES over 8m	MALLEES under 8m
LIFE FORM					
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS over 2m	SHRUBS 2m - 1.5m	SHRUBS 1.5 - 1m	SHRUBS 1 -0.5m	SHRUBS under 0.5m
LIFE FORM					
COVER CLASS (%)			70+		
DOMINANT SPECIES			Cono. ?sbe Calo. quad. Mel. acer.		

	GRASSES	HERBS	SEDGES over 0.5m	SEDGES under 0.5m
LIFE FORM				
COVER CLASS (%)	2-10	30 → 70		30-70
DOMINANT SPECIES	Stipa flav. Bromus.	Conostylis Millotia Lom mass.		Lox flex

4. VEGETATION CONDITION

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

COMMENTS

Open patches Hel. pusilla/ common (as in all sites except 62) Bromus

BUSHLAND PLANT SURVEY RECORDING SHEET 3 use pencil only

5. SPECIES PRESCENCE

SITE No GUILD Ø5
Date 12/10/95

Label each plant with plants number, site code, date and plant's name or working name if required
Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

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

TREES	No	Fl	ID	SHRUBS (cont.)	No	Fl	ID	HERBS (cont.)	No	Fl	ID
								Thys. arenarius			
								Thys. pat/many (Fruit)			
MALLEES											
				GRASSES							
				Stipa flav							
				Stipa compressa							
SHRUBS				Bromus							
Cono ?stoe.				Danthonia = Ø occid	VSP						
Cal. quad				Poa ~~porph~~ drum.				SEDGES			
Mel. acerosa				Poa porph.				Lox flex			
Hakea lisso.								Isolep marg			
Jacksonia ?ulicina								Lepid angust.			
Petrophile macro								Centro. drumm.			
Spyrid trid				HERBS				Schoenus grandi.			
Daviesia divaricata				Calandrinia lini (large pink)							
Cassytha = Ø4	VSP			Daucus glochid							
Hard comp.				Ptilotus drumm							
Scaevola holo				Millotia tenuifolia							
Persoonia brevi				Lobelia tenuior							
Hibb. racemosa				Cono candicans							
				* Hyp. glabra							
				* Poranth. microphylla							
				Prickly turnip							
				Gnaphalium green							
				Lom. merit							
				Drosera (climb glab sterile)							

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON REC PK SITE NUMBER CUILD 06

DATE TRIP 12/10/95 RECORDERS BJK, BMH, NCT

DATE TRIP _____ RECORDERS _____

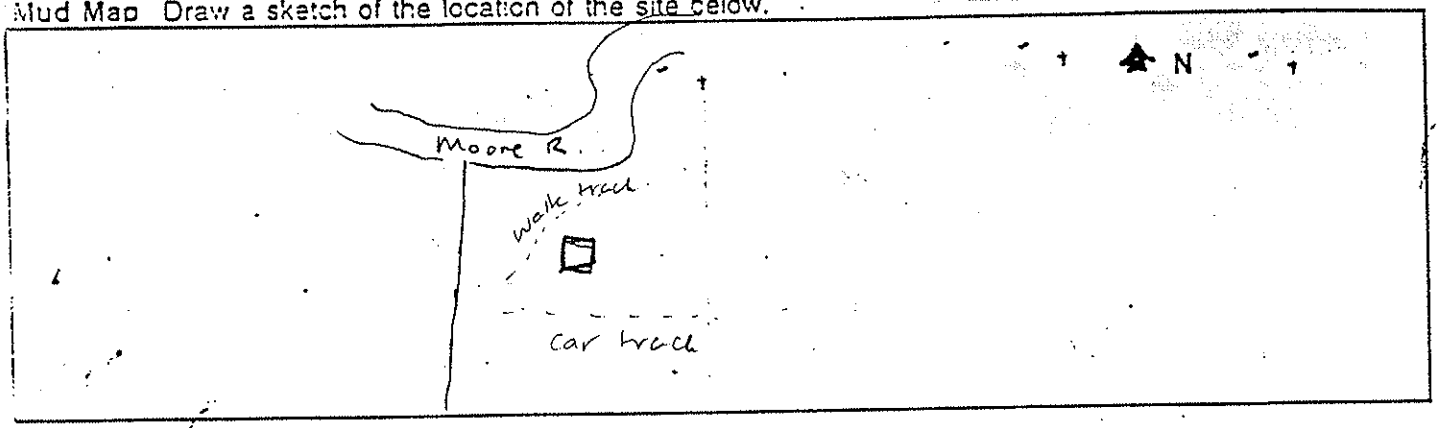
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 34 Nedlands WA 6009.

1. LOCATION of the QUADRAT

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



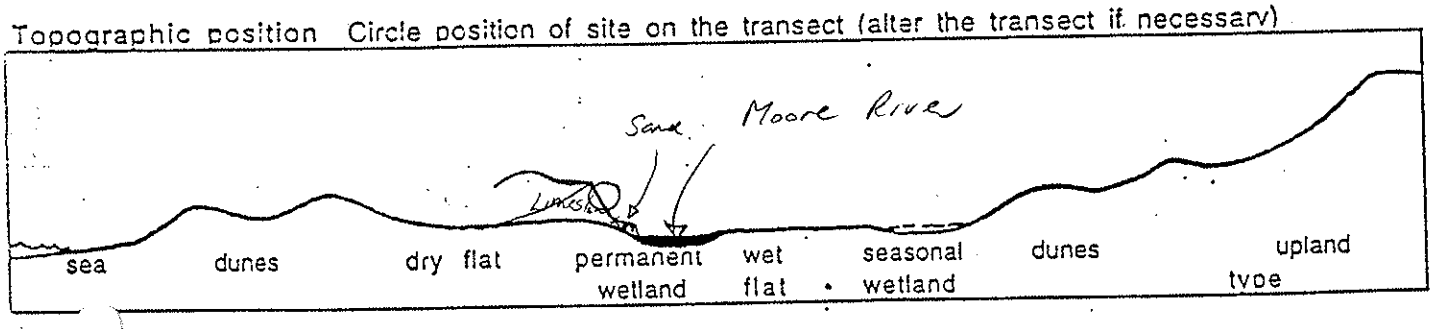
Road Location

Geographic Location Latitude 31°02'.156' S Longitude 115° 31.599' E Altitude ± 43m

Reference Map

Photograph Photographer's Name BMH Photo No 7

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



2. SITE DATA Circle the correct response.

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

Surface Soil Sand Colour pale brown

Exposed rock type limestone % surface 10-30

Sub-surface Soil as above Colour

Rock type limestone depth to rock

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

Litter 30-70 % cover

Depth up to 2 cm

Bare Ground 10-30 %cover

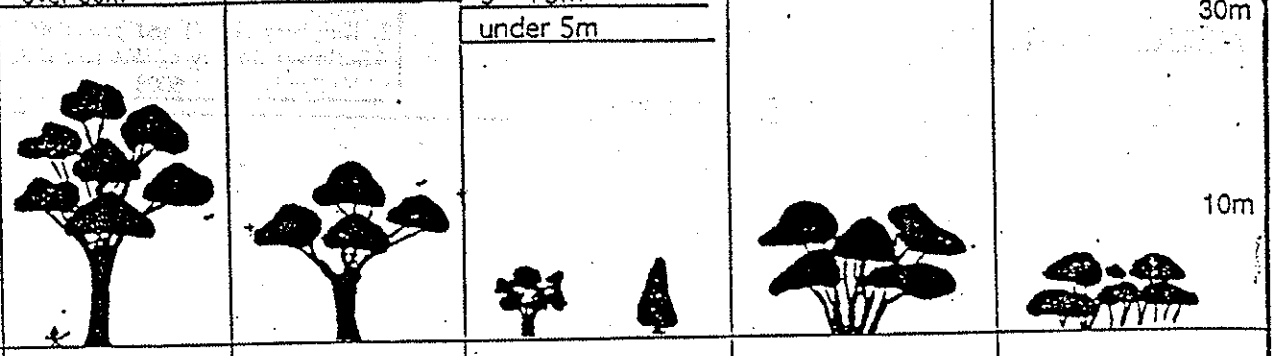
BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

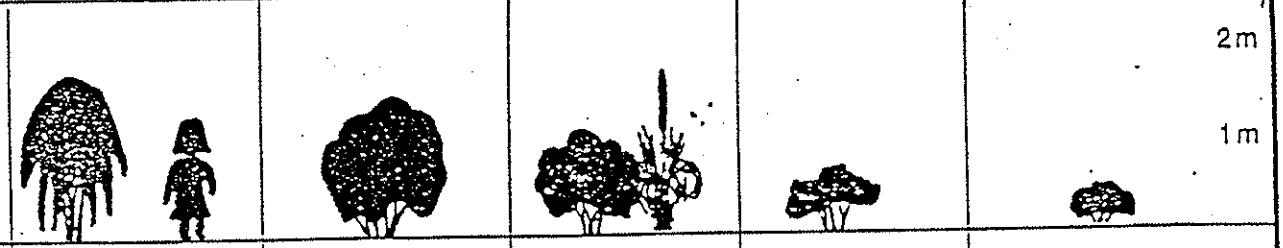
From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6009.

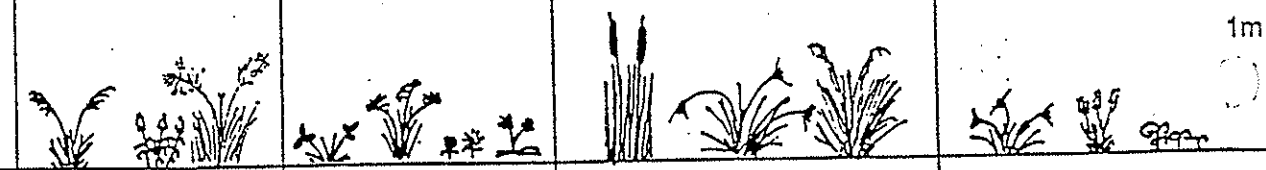
3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below),and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES over 30m	TREES 15 - 30m	TREES 5 - 15m / under 5m	MALLEES over 8m	MALLEES under 8m
LIFE FORM					
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS over 2m	SHRUBS 2m - 1.5m	SHRUBS 1.5 - 1m	SHRUBS 1 - 0.5m	SHRUBS under 0.5m
LIFE FORM					
COVER CLASS (%)			2 → 10	30 → 70	
DOMINANT SPECIES			Mel. hueg	Mel acer Hibb. spic.	

	GRASSES over 0.5m	HERBS	SEDGES over 0.5m	SEDGES under 0.5m
LIFE FORM				
COVER CLASS (%)	30-70.	30-70		2-10
DOMINANT SPECIES	Bromus	*Petrohagia velutina mixed *Anagalis Daucus gloch		Lox flex

4. VEGETATION CONDITION

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

COMMENTS

Slope has old track. source of weed principally Bromus

alot of mass - dried up now

alot of seedlings

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

Label each plant wit[h] plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

SITE No QUI40Ø6

Date 12/10/95

From 'Bushland Plant Survey' written by B. Keighery (19940 and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID	SHRUBS (cont.)	No	Fl	ID	HERBS (cont.)	No	Fl	ID
								Thysa pat / mens (Fruit)			
								Stellaria / me Thang chck			
								Podolepis gracilis			
								Acanth. preissii			
								Podoth. angust			
								*Crass glom.			
MALLEES								Opercul. Vag.			
				GRASSES							
				*Bromus diandrus							
				Stipa flav.							
SHRUBS				*Avena fatua							
Mel. hueg				*Ehrh. longi							
Temp. ret				Poa drum.				SEDGES			
Hibb spic. ssp lepto				*Vulpia				Lepid angust			
Grevillea preissii				Danthonia ?occid	VSP			Lox flex			
Hard. comp.				Danthonia ?pilosa	VSP						
Leuc ?racem = other QUIN											
? Beyeria	VSP			HERBS							
Mel. acerosa				Daucus glochid.							
Conespermum 'coast' ?inkg				* Anagalis aru.							
Cassytha flava = GUILD Ø1				* Pelbo kag. velutina							
Eremophila glabra (orange)	VSP			* Sonchus olearac.							
Rhag! baccata				* Lepto. scaber							
Trymalium albicans				Trachy caerulea							
Acacia lasio				Trachy pilosa ~~[illegible]~~							
Ice plant				Calandrinia = ~~[illegible]~~ Ø1							
Comp. tom				Homo homo							
Cal. quad.				Crassula colorata							
Cryptandra	VSP			* Dichisma small							
				Stylid ·mart							
				* Hel. pusilla							

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON REG PK SITE NUMBER GUILD 07

DATE TRIP 12/10/95 RECORDERS BJK BMH, NCT

DATE TRIP _____ RECORDERS _____

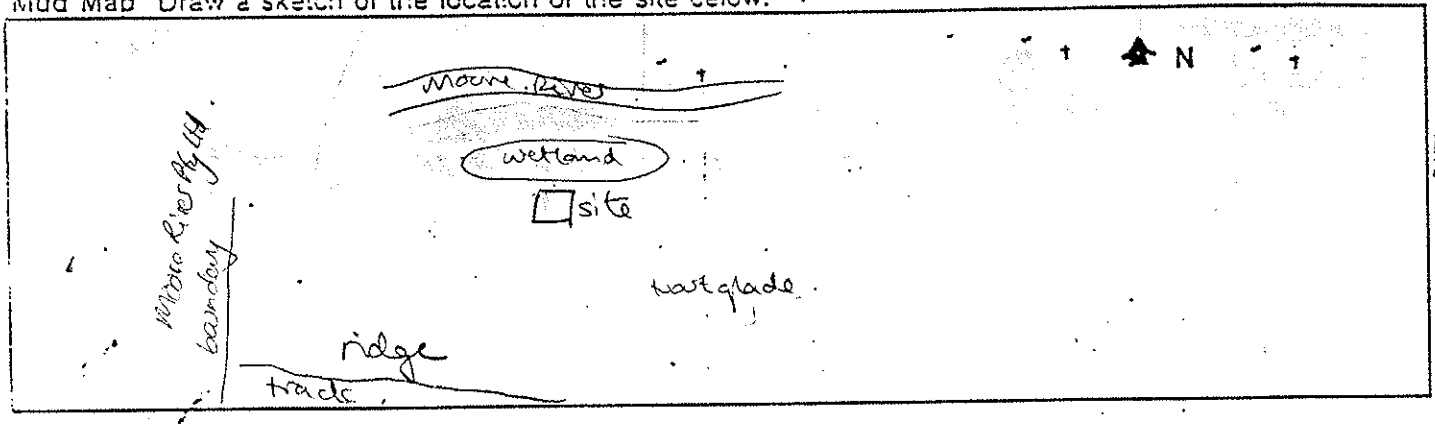
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 51 Nedlands WA 6008.

1. LOCATION of the QUADRAT

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



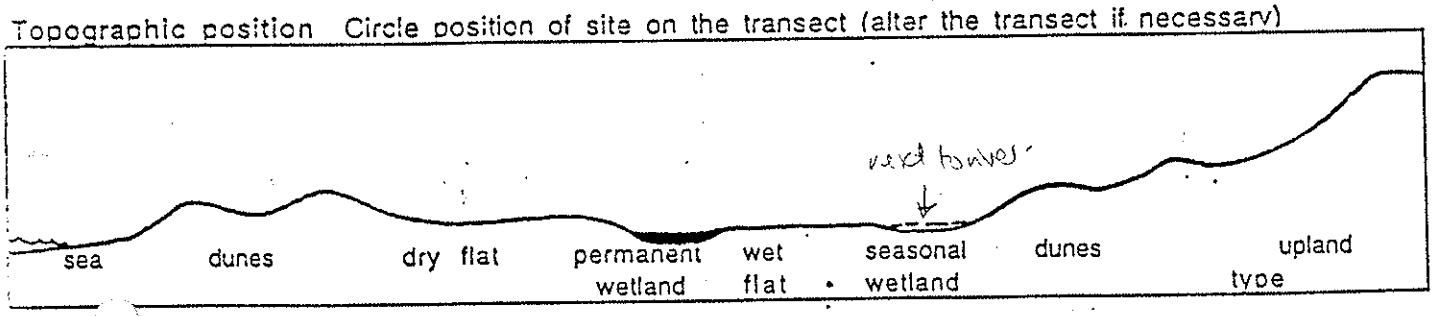
Land Location

Geographic Location Latitude 31° 29.003 S Longitude 115 31.660E ~~Altitude~~ ± 188m

Reference Map

Photograph Photographer's Name BJK Photo No 12

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



2. SITE DATA Circle the correct response.

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

Surface Soil Peat *Colour* dark brown

Exposed rock *type* % surface

Sub-surface Soil Peat *Colour* dark

Rock *type* depth to rock

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

Litter 10 - 30 % % cover *Bare Ground* < 2% %cover

Depth 1 leaf cm

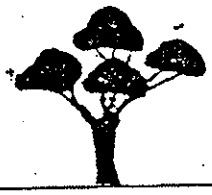
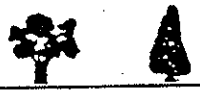
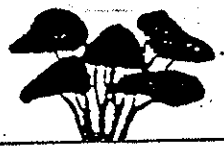
BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

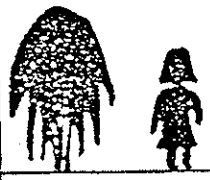
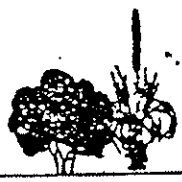
From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6009.

3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below) and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES			MALLEES	
	over 30m	15 - 30m	5 - 15m / under 5m	over 8m	under 8m
LIFE FORM					 30m 10m
COVER CLASS (%)			30 - 70%		
DOMINANT SPECIES			Mel raph.		

	SHRUBS				SHRUBS
	over 2m	2m - 1.5m	1.5 - 1m	1 -0.5m	under 0.5m
LIFE FORM					2m 1m 
COVER CLASS (%)					
DOMINANT SPECIES					

	GRASSES	HERBS	SEDGES	over 0.5m	under 0.5m
LIFE FORM					1m 
COVER CLASS (%)					30 - 70%
DOMINANT SPECIES					Lomea jun

4. VEGETATION CONDITION

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

COMMENTS

Kangaroo resting spot

BUSHLAND PLANT SURVEY RECORDING SHEET 3 use pencil only

5. SPECIES PRESCENCE

SITE No Ø GUILD Ø7
Date 12/10/95

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (19940 and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID	SHRUBS (cont.)	No	Fl	ID	HERBS (cont.)	No	Fl	ID
Mel rhaph											
Euc gomph											
MALLEES											
				GRASSES							
SHRUBS											
Hakea ruscifolia											
								SEDGES			
								Baum. juncea			
								Baumea ?arthro			
								Gahnia trifid.			
								Lepid long			
				HERBS							
				Samolus repens							
				Trigh procera							
								ADJ Baumea artic			

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON REG. PK SITE NUMBER GUILD 08

DATE TRIP 12-10-95 RECORDERS BJK, BMH, NCT

DATE TRIP _____ RECORDERS _____

DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 51 Nedlands WA 6009.

1. LOCATION of the QUADRAT

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

N

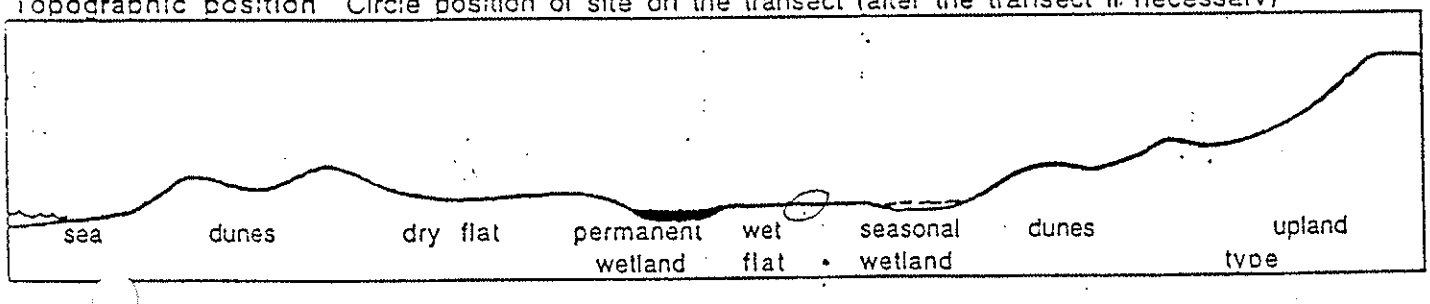
Road Location

Geographic Location Latitude 31° 20.960 S Longitude 115° 31.690 E Altitude

Reference Map EPE ± 40m

Photograph Photographer's Name BMH Photo No 13

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



2. SITE DATA Circle the correct response.

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

Surface Soil sandy clay *Colour* grey

Exposed rock *type* % surface

Sub-surface Soil A clay *Colour*

Rock *type* depth to rock

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

Litter 10-30 % cover

Depth 1 leaf to 2 cm

Bare Ground 2-10 %cover

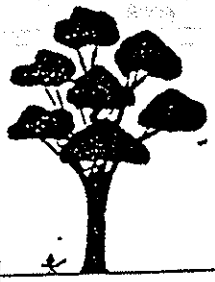
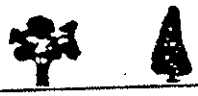
BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6009.

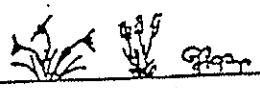
3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below),and dominant species in each layer.

Cover Class 2-10% 10-30% 30 - 70% over 70%

	TREES over 30m	TREES 15 - 30m	TREES 5 - 15m under 5m	MALLEES over 8m	MALLEES under 8m
LIFE FORM					 30m 10m
COVER CLASS (%)			10-30		
DOMINANT SPECIES			Nuytsia floribo Bank menz Bank attен		

	SHRUBS over 2m	SHRUBS 2m - 1.5m	SHRUBS 1.5 - 1m	SHRUBS 1 -0.5m	SHRUBS under 0.5m
LIFE FORM					 2m 1m
COVER CLASS (%)		2-10.	2-10	30-70.	
DOMINANT SPECIES		Acacia salaga Albas. humilis	Main. red Xanth.	Hibb hyp	

	GRASSES	HERBS	SEDGES over 0.5m	SEDGES under 0.5m
LIFE FORM				 1m
COVER CLASS (%)	2←10	10-30.		
DOMINANT SPECIES	Briza max	Brachyc. iber. Siloxerus Podol Ursinia Hypochaeris		

4. VEGETATION CONDITION

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

COMMENTS

alot of Banksia seedlings
Annual layer 50-50 Native/exotics
most cover from Urs anth. Hyp glab
Briza max. Appears to be seasonally wet.

BUSHLAND PLANT SURVEY RECORDING SHEET 3 - use pencil only

5. SPECIES PRESCENCE

SITE No	auILD 08
Date	12-10-95

Label each plant w[...] plants number, site code, date and plant's name or working name if required

Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From *'Bushland Plant Survey'* written by B. Keighery (19940 and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
Nuytsia floribunda			
Banksia menz			
Banksia atten			

MALLEES	No	Fl	ID

SHRUBS	No	Fl	ID
macrozamia riedlei			
Hibbertia hypericoides			
Acacia saligna			
Allocas humilis			
Spyrid glob			
Xanth preissii			

SHRUBS (cont.)	No	Fl	ID

GRASSES	No	Fl	ID
*Briza maxima			
* Aira cary			
Stipa compressa			
Microlaena stip			

CHECK BAC.

HERBS	No	Fl	ID
Brachy. iberd (white)	VSP		
Calandrinia small	VSP		
Levenh. pusi stip	VSP		
Podoth. gnaph	VSP		
Picrus	"		
Jilax humi	"		
* Hyp glab			
* Urs anthem			
* Anag. arv.			
Haem ? panic (lvs only)			
Operc vag			
Homo homo			
Trachy pilosa			

HERBS (cont.)	No	Fl	ID
Daucus glochid			
Sowar. laxi.			
* Hel. pusilla			
* Orobache			
Isotrop cuneifol.			
Clover lge yellow			
Drosera erythro			
* whity Frenchcatchfly			
* Dichis small			

SEDGES	No	Fl	ID
Cent. arist	VSP		
Cent. poly	"		
Cent. pilosa	"		
Trighlochin			
Meso pseudo			

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON REG PK SITE NUMBER GUILD 09

DATE TRIP 1/2/10/95 RECORDERS BJK BMH NCT

DATE TRIP _____ RECORDERS _____

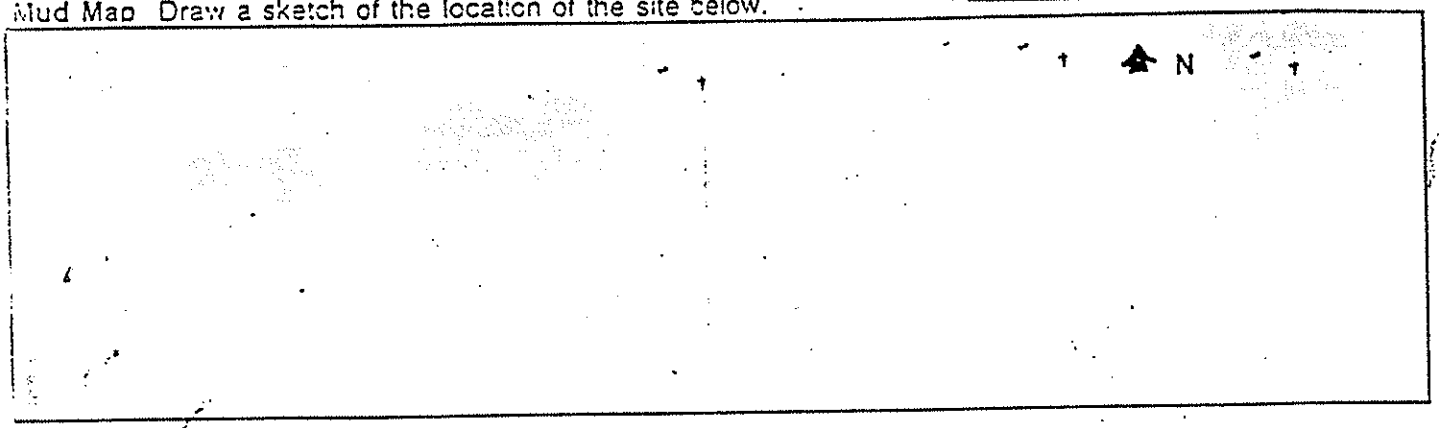
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 34 Nedlands WA 6008.

1. LOCATION of the QUADRAT

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



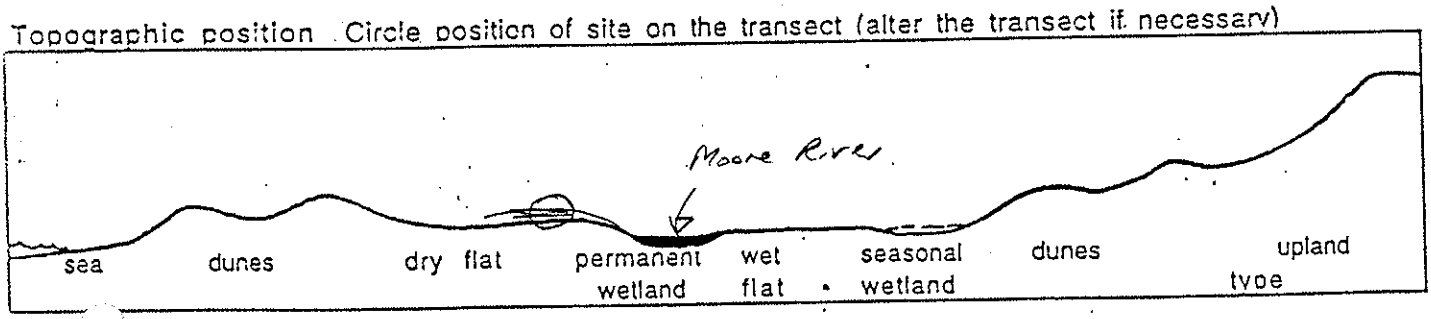
ad Location

Geographic Location Latitude 31 21.016 S Longitude 115°31.706 E ~~Altitude~~ ± 10m

Reference Map

Photograph Photographer's Name BMH Photo No 14

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



2. SITE DATA Circle the correct response.

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

Surface Soil Sand *Colour* grey

Exposed rock *type* % surface

Sub-surface Soil sand *Colour* yellow/cream

Rock *type* depth to rock

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

Litter 30-70 % cover Depth 2-3 cm

Bare Ground 2e50 %cover

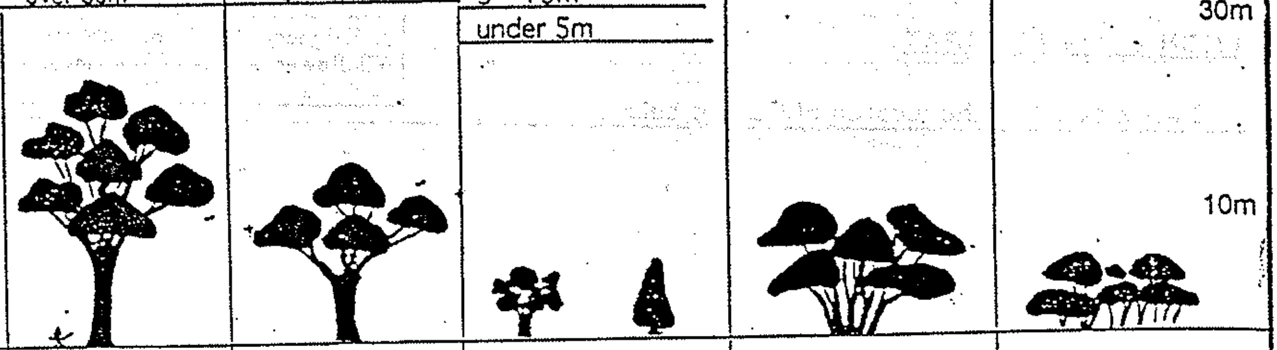
BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

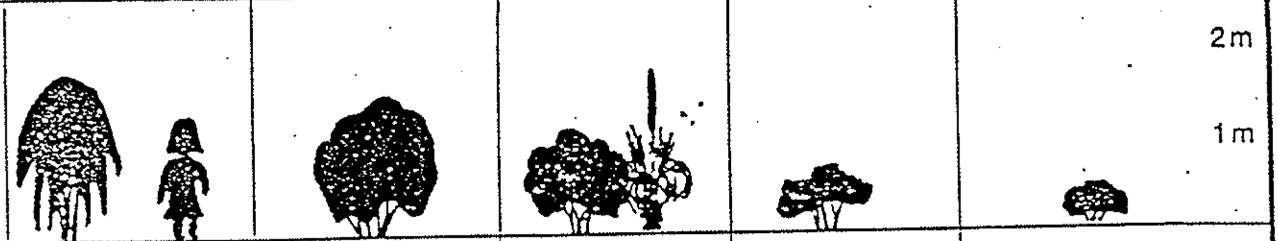
From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

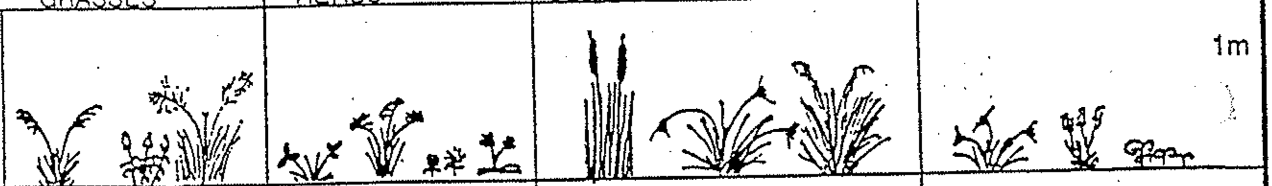
3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below) and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES over 30m	TREES 15 - 30m	TREES 5 - 15m / under 5m	MALLEES over 8m	MALLEES under 8m
LIFE FORM					
COVER CLASS (%)		10-30			
DOMINANT SPECIES		Euc. gompl			

	SHRUBS over 2m	2m - 1.5m	1.5 - 1m	1 -0.5m	SHRUBS under 0.5m
LIFE FORM					
COVER CLASS (%)	30-70			10-30	
DOMINANT SPECIES	Ac. coch			Hibb hyp.	
	Spynd glob.				

	GRASSES	HERBS	SEDGES over 0.5m	under 0.5m
LIFE FORM				
COVER CLASS (%)	2-10	30-70		2-10
DOMINANT SPECIES	Bromus	Acanth priessii		meson pseudo
	Microlaena stip	Clover		
	[illegible]	Picris		

Daucus gloch

4. VEGETATION CONDITION

1 'PRISTINE'		COMMENTS
2 EXCELLENT		Very Good if 'Picris' native
3 VERY GOOD	✓	Hel pusilla / Bromus again!!
4 GOOD		
5 DEGRADED		

BUSHLAND PLANT SURVEY RECORDING SHEET 3

use pencil only

5. SPECIES PRESCENCE

SITE No GUILD 09
Date 12/10/95

Label each plant with plants number, site code, date and plant's name or working name if required

Record on Sheet

- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

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

TREES	No	Fl	ID
Euc gomph			
MALLEES			
SHRUBS			
Spyrid globo			
Arac. cochl			
Hibb hyp.			
Rhag. baccata			
Melal. nodlii			
Dry. sessilis			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
*Bromus = 07			
Microlaena stip			
*Vulpia			
*Avra cary			
HERBS			
Acanth pressii			
"Picris" = 08			
Daucus glochid			
Galium	VSP		
Trachy glosc			
*Hairy chick			
*Hyp glob			
*Large yell Clover			
Lobelia tenuior			
*Sonchus olerac			
* weed	VSP		
Podol. graph			

HERBS (cont.)	No	Fl	ID
Sowerb. lax			
Leg. hueg			
Wahl. preissii			
Opere. vaginata			
* Hel. pusilla			
* Melilotus indica			
Millotia tenuif.			
Petrohag. velutina			
Brachy. iberid			
* Urs. anthemoides			
Dichisma small			
SEDGES			
Meso pseudo			
Lax. flex.			
Neil's Sedge check			

BUSHLAND PLANT SURVEY RECORDING SHEET 1- use pencil only

BUSHLAND AREA GUILDERTON RES PK SITE NUMBER GUILD 10

DATE TRIP 12-10-95 RECORDERS BJK, BMH, NCT

DATE TRIP _____ RECORDERS _____

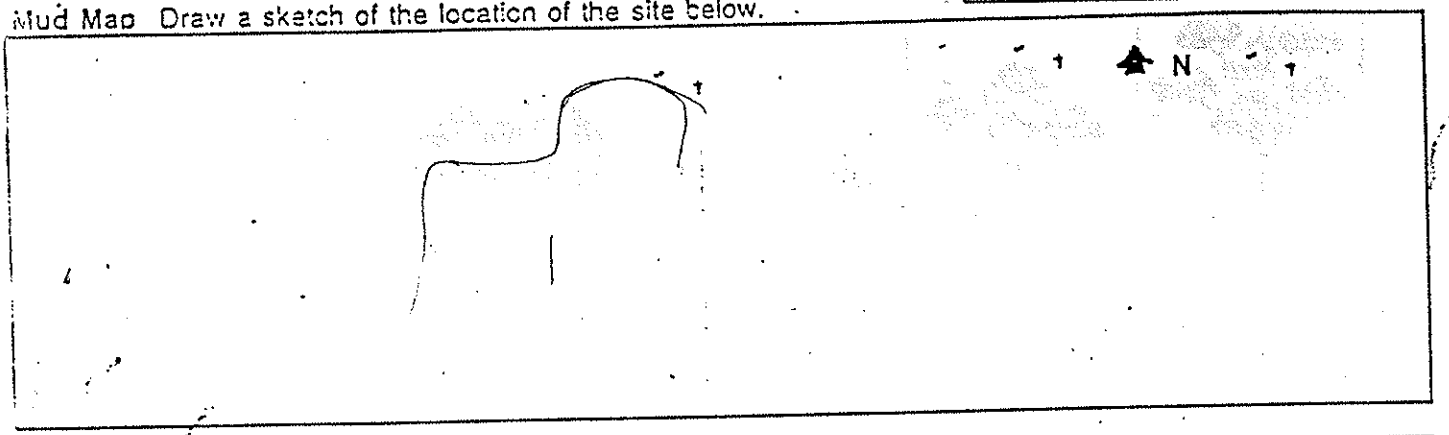
DATE TRIP _____ RECORDERS _____

BOTANIST _____

From *'Bushland Plant Survey'* written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 51 Nedlands WA 6008.

1. LOCATION of the QUADRAT

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



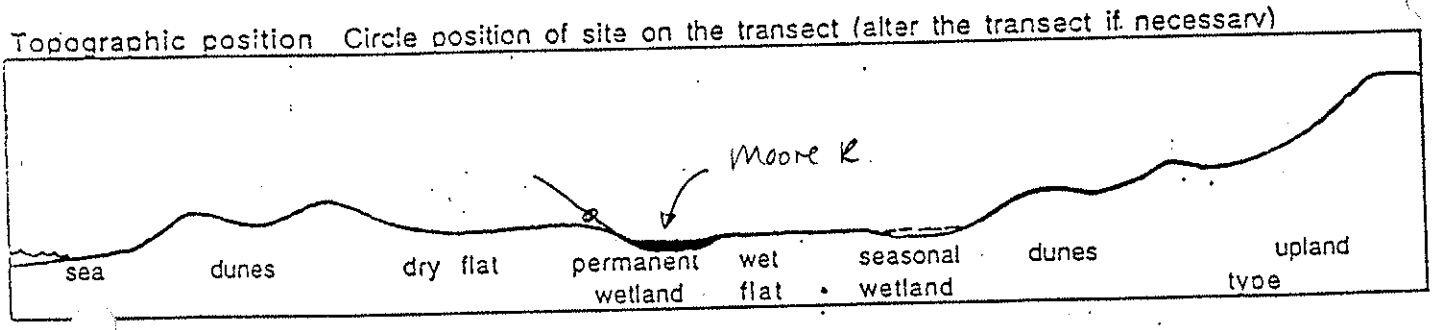
Road Location

Geographic Location Latitude 31° 21.168' S Longitude 115° 31.600' E Altitude 15 ± 39 mt

Reference Map

Photograph Photographer's Name BMH. Photo No

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



2. SITE DATA Circle the correct response.

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

Surface Soil Sand Colour brown

Exposed rock type % surface

Sub-surface Soil ? as above Colour

Rock type depth to rock

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

Litter 70+ % cover

Depth 3 cm

Bare Ground zero %cover

BUSHLAND PLANT SURVEY RECORDING SHEET 2 (Muir)- use pencil only

From '*Bushland Plant Survey*' written by B. Keighery (1994) and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6009.

3. VEGETATION STRUCTURE AND COVER

For each layer record - appropriate life form, cover class (see below),and dominant species in each layer.

Cover Class	2-10%	10-30%	30 - 70%	over 70%

	TREES			MALLEES	
	over 30m	15 - 30m	5 - 15m under 5m	over 8m	under 8m
LIFE FORM					 30m 10m
COVER CLASS (%)					
DOMINANT SPECIES					

	SHRUBS				SHRUBS
	over 2m	2m - 1.5m	1.5 - 1m	1 -0.5m	under 0.5m
LIFE FORM					 2m 1m
COVER CLASS (%)	70+				
DOMINANT SPECIES	Allocas. Chaemel				

	GRASSES	HERBS	SEDGES over 0.5m	under 0.5m
LIFE FORM				 1m
COVER CLASS (%)		10 - 30		
DOMINANT SPECIES		Caleandrinia Acanth preissi		

4. VEGETATION CONDITION

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

COMMENTS
alot of seedlings

BUSHLAND PLANT SURVEY RECORDING SHEET 3

use pencil only

5. SPECIES PRESCENCE — Label each plant with plants number, site code, date and plant's name or working name if required

SITE No GUILDERTON 10
Date 12 – 10 – 1995

Record on Sheet
- Column 1 plant name
- Column 2 plant number
- Column 3 flowering time- TICK if species flowering
- Column 4 identification check

From '*Bushland Plant Survey*' written by B. Keighery (1994-0 and published by the Wildflower Society of WA (Inc.), PO Box 64 Nedlands WA 6008.

TREES	No	Fl	ID
MALLEES			
SHRUBS			
Cassytha racemosa			
Acanth prissii			
Chamelauc uncinat			
Allocas lehmann			
Acacia lasioc lasioc			
Spyrid globul			
Olearia axillaris			
Melaleuca acerosa			
Anthocerис illicifolia			
Diplolaena angustifol			
Rhagodia baccata			
Leucopogon parvifol			

SHRUBS (cont.)	No	Fl	ID
GRASSES			
Stipa flavescens			
Bromus arenarius			
HERBS			
Calandrinia corrigioloides			
Podotheca angustifolia			
Trachym pilosa			
Dischisma arenaria			
Crassula color			
Lomandra maritima			
Conostylis candicans			
Trifolium campestre			
Tetragonia tetragonioides			
Sisymbrium orientale			
Hydrocotyle rugulosa			
Daucus glochid			
Lobelia tenuior			

HERBS (cont.)	No	Fl	ID
SEDGES			
Loxocarya flexuosa			
Lepidosp angust			

(24) GUILDERTON REGIONAL PARK

GUILD 01-10

4-2

Department of Environmental Protection

Head Office:
8th Floor, Westralia Square
141 St Georges Terrace
Perth, Western Australia 6000
Tel (09) 222 7000 Fax (09) 322 1598

Waste Management Division:
Ground Floor, 32 St Georges Terrace
Perth, Western Australia 6000
Tel (09) 222 0422 Fax (09) 222 0455
or PO Box Y3030, East, St Georges Terrace
Perth, Western Australia 6832

Regional Offices:
Bunbury • Karratha • Kalgoorlie • Kwinana

Mr Frank Roberts
34 Kingsway
NEDLANDS WA 6009

Your Ref
Our Ref 67/91
Enquiries N Thorning

Dear Mr Roberts

SYSTEM 6 FLORA SURVEY - LOCATION 2481 GUILDERTON

Following the discussion between yourself and Miss Natalie Thorning of this Department on 20 November 1995, I would like to confirm the points raised in your letter dated 16 November 1995 and consequential telephone conversation. I apologise for the delay in this written reply.

The bushland on your poperty is very diverse and as a result ten quadrats were required to adequately survey each of the different vegetation associations.

Our quadrats are usually revisited in the same season, however, the work load this season has prevented us from returning. With your permission, we would like to postpone the revisiting of these quadrats until spring 1996, after which we will remove the fence droppers. We will contact you prior to our return to make the appropriate arrangements. If this is inconvenient please contact us and we will remove the fence droppers this summer.

Thank you very much for your assistance with and interest in the System Six update programme.

Yours sincerely

C C Sanders
DIRECTOR
POLICY CO-ORDINATION DIVISION

29 December 1995

Department of Environmental Protection

Head Office:
8th Floor, Westralia Square
141 St Georges Terrace
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Mr Frank Roberts
34 Kingsway
NEDLANDS WA 6009

Your Ref
Our Ref 67/91
Enquiries N Thorning

Dear Mr Roberts

SYSTEM SIX UPDATE PROGRAMME - FLORA SURVEY INFORMATION

Thank you for providing permission for our botanical team to survey the bushland on your property. As arranged between yourself and Miss Natalie Thorning of this Department, the bushland on Lot 2481, Guilderton was visited on 12 October 1995.

The botanical survey provides us with information on the natural plant communities found in the area, and their condition. This information is needed to assist the Department of Environmental Protection in its programme to update the conservation recommendations for System 6 and the coastal plain portion of System 1. The main objective of the programme is to ensure that the proposed conservation estate is representative of the ecological communities extant in the region.

As part of this programme the Department has advertised for the public to submit areas of bushland that they consider to be of regional significance. Our botanical team is surveying these submitted areas as well as those it considers may be important based on other factors such as their location and soil type etc. The botanical survey provides us with information on the natural plant communities found in the area, and their condition. Please note that the area is one of many sites that we have surveyed. The fact that we visited and surveyed the site does not indicate that it will necessarily be included in the updated System Six Recommendations.

The update programme has employed the botanical survey methodology used in Gibson et al. (1994), 'A Floristic Survey of the Southern Swan Coastal Plain', to provide the main information base upon which to review the adequacy of the existing System recommendations and to assess other bushland areas.

Ten survey sites were located on the property and metal fence droppers were left in each corner of the 10 metres by 10 metres square survey sites. We may wish to revisit these sites at a later date, if so, we will contact you prior to our visit. A general description of the vegetation and an assessment of its condition was also completed.

The information collected during the visits will be used to assess the relative conservation values of the bushland areas. The final selections for inclusion in the updated System Six Recommendations will be the best possible examples of bushland containing plant community types that are either unrepresented or poorly represented in the current and proposed conservation system.

If you are interested in the information we have collected or any other additional information on the System Six Update Programme please don't hesitate to contact Miss Natalie Thorning (222 7051) or Mr Kevin McAlpine (222 7055).

Once again, thank you very much for your support for this programme.

Yours sincerely

Colin Sanders
DIRECTOR
POLICY AND STRATEGIC STUDIES

14 November 1995

Department of Environmental Protection

Head Office:
8th Floor, Westralia Square
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or PO Box Y3030, East, St Georges Terrace
Perth, Western Australia 6832

Regional Offices:
Bunbury • Karratha • Kalgoorlie • Kwinana

The Director
Moore River Proprietary Limited
PO Box 481
WEST PERTH WA 6008

Your Ref
Our Ref 67/91
Enquiries N Thorning

Dear Sir/Madam

SYSTEM SIX UPDATE PROGRAMME - FLORA SURVEY INFORMATION

As a result of telephone discussions between Mr Richard Pawluk and Miss Natalie Thorning of this Department I am writing to outline the details of the above Survey and to formally request permission to survey the lots 2802, 2424, 8185, and 2914, in your ownership at Guilderton, and to use the access road through your land to the Crown Reserve 17949. These requests were informally refused at the time of the above mentioned telephone call.

As you may be aware, the Department of Environmental Protection is coordinating a programme to update the conservation recommendations for System 6 and the coastal plain portion of System 1. The main objective of the programme is to ensure that the proposed conservation estate is representative of the ecological communities extant in the region.

As part of this programme the Department has advertised for the public to submit areas of bushland that they consider to be of regional significance. The above mentioned area has been submitted and we are now interested in gathering information on the natural plant communities found on these lots and their condition. Please note that the area is one of many submissions we have recieved. The fact that it has been submitted and that we wish to visit the site does not indicate that it will necessarily be included in the updated System Six Recommendations.

The update programme has employed the botanical survey methodology used in Gibson et al. (1994), 'A Floristic Survey of the Southern Swan Coastal Plain', to provide the main information base upon which to review the adequacy of the existing System recommendations and to assess other bushland areas.

Survey sites are located after visiting the bushland areas. Each survey site is 10 metres by 10 metres square and, if you are agreeable, is marked by four steel posts which remain in place so that the site may be resampled at least once. Our sampling is non-destructive and small samples of plants are only collected when we are unsure of the plants identity.

The information collected during the visits will be used to assess the relative conservation values of the submitted bushland areas. The final selections for inclusion in the updated System Six Recommendations will be the best possible examples representative of plant community types either unrepresented or poorly represented in the current and proposed conservation system.

If our formal request for permission to survey the specified area is denied it will be necessary to judge the conservation value of the bushland by extrapolating from our survey work on adjacent lands. We would prefer to make a more accurate assessment of the area and therefore ask that you reconsider our request. Alternatively you may already have floristic information for the specified lots that is compatible with our survey methodology and which you may wish to make available.

It would be appreciated if you could reply as soon as possible since our field programme is restricted to the spring flowering season. For further information please don't hesitate to contact Miss Natalie Thorning (222 7051) or Mr Kevin McAlpine (222 7055).

Thank you in anticipation of your support.

Yours sincerely

Colin Sanders
DIRECTOR
POLICY AND STRATEGIC STUDIES

30 October 1995

Facsimile Message

Department of Environmental Protection

ATTENTION: PETER CHAPMAN

FROM: NATALIE THORNING

TELEPHONE: (09) 222 7051 **No. of sheets following** 2

DATE: 9-10-95

MESSAGE Here is the letter you requested, original is in the mail. Please could you get back to me ASAP, we will be going to Cauldertan on Wed or Thurs this week. Thankyou, Natalie

Westralia Square, 141 St Georges Tce Perth, WA 6000. Fax: (09) 321 5184 Tel: (09) 222 7000

Department of Environmental Protection

Head Office:
8th Floor, Westralia Square
141 St Georges Terrace
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or PO Box Y3030, East, St Georges Terrace
Perth, Western Australia 6832

Regional Offices:
Bunbury • Karratha • Kalgoorlie • Kwinana

Peter Chapman
Senior Reserves Officer
Department of Land Administration
Midland Square
MIDLAND WA 6056

Your Ref
Our Ref 67/91
Enquiries N Thorning

Dear Peter

SYSTEM SIX UPDATE PROGRAM - FLORA SURVEY INFORMATION

As a result of telephone discussions between yourself and Miss Natalie Thorning of this Department I am writing to outline the details of the above Survey and to confirm our request for access to the area of vacant crown land just south-east of Guilderton (as outlined on map sent Friday 6 October).

As you may be aware, the Department of Environmental Protection is coordinating a program to update the conservation recommendations for System 6 and the coastal plain portion of System 1. Your department is closely involved with the program by representation on the System Six Steering Committee and the System Six Technical Working Group. The main objective of the program is to ensure that the proposed conservation estate is representative of the ecological comunities extant in the region.

As part of this program the Department has advertised for the public to submit areas of bushland that they consider to be of regional significance. The above mentioned area has been submitted as part of the proposed Guilderton Regional Park.

The update program has employed the botanical survey methodology used in Gibson et al. (1994), 'A Floristic Survey of the Southern Swan Coastal Plain', to provide the main information base upon which to review the adequacy of the existing System recommendations and to assess other bushland areas. Survey sites are located after visiting the bushland areas. Each study site is 100 square metres and is marked by four steel posts which remain in place so that the site may be resampled at least once. Sites on CALM lands will remain as monitoring sites and you may wish to retain the sites on your lands for the same purpose. Our sampling is non-destructive and small samples of plants are only collected when we are unsure of the plants identity.

If you are interested in the information collected or have any further queries please contact Miss Natalie Thorning (222 7051) or Mr Kevin McAlpine (222 7055).

Thank you for your support.

Yours sincerely

Colin Sanders
DIRECTOR
POLICY AND STRATEGIC STUDIES

9 October 1995

lot 2481 Frank Roberts 34 Kingsway, Nedlands
ph: 386 6666
permission granted. 6/10
*would like us to mark sites on copy of aerial photo & send to him so he knows where sites are *

Directions: thru Woodridge main rd, turn S on rd to Water, bitumen, soon turns W then caraban Rd, hits bank of river. just before bank, track heading S, double gate, private property signs. Take unlocked gate into road reserve follows, enters boundary of Dewar's to Roberts gate, also unlocked.

lot 2149 AN Dewar ⇒ Arthur Dewar, Gingin 575 404
permission granted, sites OK. 6/10
gate is locked but can walk in

crown Reserve 17949 & 39736 (08) 9575 2211 (20/10/97)
Shire of Gingin, Shire clerk - ~~Alan Horton~~
David Burt (Deputy S.C.) ~~018 908 967~~ Simon Fraser.
OK 10-10-95
access via moore River Pty Ltd land.
denied.
∴ access over river !!
20/10/97 Ranger help with access
Left message to notify Simon Fraser (CEO) Senior Reserves officer
Vacant crown Land DOLA Peter Chapman
ph 273 7373 Fax 273 7249

Assunta Dinardo OKed 10/10/95
sites OK too.

MOORE RIVER PTY LTD

~~321 2282~~ 381 5577.

Richard ~~Pawluck~~ Pawluck & Ass.

10/10/95 denied permission to go onto land.

PO Box 77
Subiaco 6008.

The Director

Lot 2481 Frank Roberts

rang to get permission to go through his land
for 21, 22 & 23 October 1997.
Permission granted 20 October '97.

5/10 Colin doesn't deal with Guilderton try Ron Lindon not sure of best way to will speak to Teri

GUILDERTON REGIONAL PARK

Crown Reserve 17949 Shire of Gingin

2802

2424

2481 Frank Roberts 34 Kingsway, Nedlands
386 6666

2149 ~~Dewar AN (Estate) POBox 2, Gingin 6503~~ Yes

9114

2593 DOLA Regional manager Guilderton
Barry Diamond
273 7249

3099 Peter Chapman Government property Senior Reserves officers

3156

8185

Crown reserve above 8185 next to 3099 E of

DOLA SOIS

Vacant Crown Land under 8185

lot W of next to Rch 670.3415 ha.

Shire of Gingin 5752211
Fax 575 2121 Attention Kylie

Plunkett homes 362 5555
Tony manager calling back

Ray Dusall
321 2283
Director Plunkett family

CUS
Mark Plunkett
Richard Paulluck
} one will call back

refused
denied permission to go onto their land 10-10-95

Denied Wake
305 '95

COLMA

NHT Workshop 16/10/97

Working all November with Canberra.

4.10 Anne Guerin

4.22 PM Sarah

SHIRE
GINGIN

Fax from (09) 575 2121

7 Brockman Street, Gingin, Western Australia 6503
Telephone (09) 575 2211 Facsimile (09) 575 2121
Office hours Monday to Friday 9.00am to 4.30pm

Fax for the attention of: Natalie Trowing Fax from: Kylie - Shire

Fax number: ~~2227051~~ Date: 3.10.95

Subject: 3215184 Number of pages including this one: 1

LOT 2802
2424
2593
3099
8185
3156
2914

} Moore River Pty Ltd.
PO Box 481
WEST PERTH 6005

2481 - Frank Roberts - 34 Kingsway
Nedlands 6009

2149 - Dewar An (Estate) - P O Box 2
Gingin 6503

17949 - Crown Land

23919 - Not found

CULCAIRTON 14/10/97

- N.b to itemise detail of study
- (*) 20 sites/plots = 80 pegs
- minimum of 2 days (one day not adequate for clean determinations)
- target area to west of blow-out and compare this with other areas
- (*) photos to get stereo pairs
- * scan Alan Tingay maps.

Wayne Van Lieven [redacted] 2/10/97

- Upgrading firebreaks
- maintenance ideal time to look at location
- 1st week November
- ~~before~~ 1st week
- arrange on 22/10 - John Arnold, Heather Bola

Jane Blake – National Trust: 9321 6088
2-4pm
– Personal

Guilderton Caravan
9577 1021

Ranger: 9577 1280
Mike O'

LAST CHANCE FOR GUILDERTON ?

PRODUCED BY THE GUILDERTON COMMUNITY ASSOCIATION *OCTOBER 1996*

BACKGROUND

The Moore River Company (Plunkett's) wants to develop bush land at the mouth of the Moore River 80 kms north of Perth. A town the size of Kwinana is planned for the southern foreshore of the Moore River. It will cover 557 hectares and follow the river foreshore for 1.8 kms and the beach front for 3.3 kms. The company owns an additional 2100 hectares which takes in another 3 kms of ocean front and stretches across towards Wanneroo Road.

GUILDERTON

Guilderton is a small coastal community situated on the north shore of the Moore River. It has a tranquil atmosphere and is popular among retirees and family holiday makers. The major attractions of the area are the river and its relatively untouched southern foreshore.

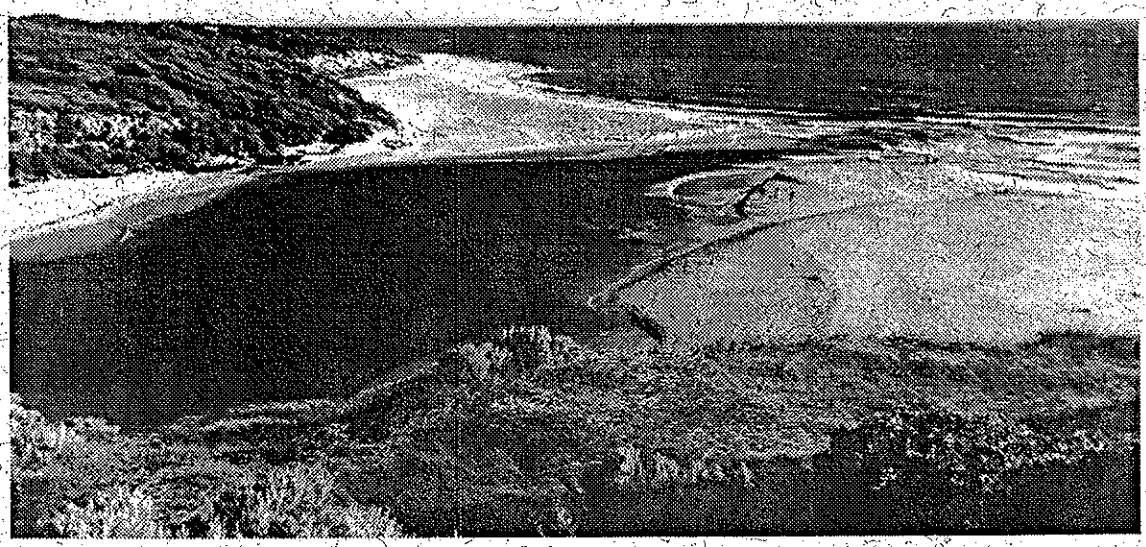
The Guilderton Community Association is a group of permanent residents and regular visitors concerned about the future of the Guilderton area and its river. The development will forever change the essence of our small community, increasing its size twelvefold. It will also increase the river's pollution problems. The river already has a high nitrogen content and suffers algal blooms in late summer.

THE PLAN

Moore River Company plans to develop a community for 13 500 people. They plan to site tourist resorts and residential blocks only 50 metres from the river and coastal foreshores.

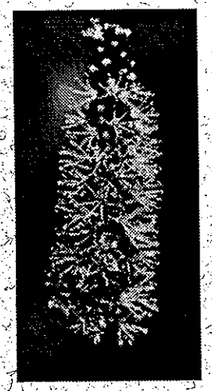
THE ESTUARY

The sandbar at the river mouth is broken by both winter rains, and summer groundwater build-up which comes from Silver Creek (an estuary wetland) and underground flow.



The unspoilt beauty of the Moore River

Placing such a large development only 50 metres from the sea and river's edge will destroy the natural beauty people come to enjoy.

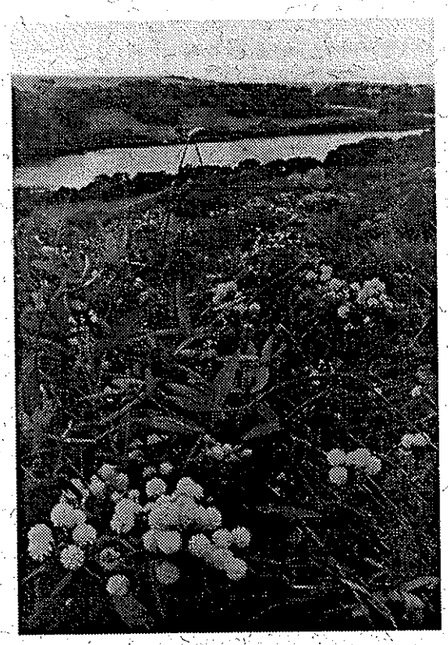


Degradation or salvation - your decision

THE PROBLEM

The Moore River South Development will have devastating effects on the local environment and the community of Guilderton. It will destroy the natural beauty people come to enjoy.

Our major concern is for the environment. Such a large residential development will affect the estuarine environs, including the water quality, foreshore vegetation and local fauna. The developer's studies have not fully assessed these areas.



The development plan suggests that sand and limestone will effectively filter nitrogen. CSIRO researchers advise that sand and limestone do not filter nutrients.

Vegetation experts tell us that Moore River vegetation is of a very high quality, making it relatively untouched compared to other South West rivers. A 50 metre setback is insufficient to retain even a small part of this. The plan mainly focuses on the coastal vegetation, making little mention of riverine growth.

The plan proposes to retain the tuart trees. This is practical from many perspectives but there will be insufficient scrub habitat for the fairy wrens. The plan does not include a fauna study.

The proposed development site contains a dune system, locally called 'the desert,' that will make way for housing. The desert is highly valued by locals and holiday makers.

Other concerns we have include the use of sewerage ponds, the lack of hinterland employment and future urban development. There is evidence that the type of sewerage ponds proposed still allow nutrients to flow to the ocean and will impact on reef environs, as is occurring at Coral Bay.

There are too few jobs in the area for the existing population. Projected job opportunities are slender, at least until the much mooted Breton Bay industrial area goes ahead.

A further concern relates to future urban development. There are other parcels of land along the river that are being considered for development. Moore River Company's proposal will be used as a template for future development. Thus, in the foreseeable future both sides of the river will be developed to within 50 metres of the high water mark.

THE SOLUTIONS

Ideally, the Guilderton Community Association would like the area to be gazetted as the Wilbinga/Guilderton Regional Park. This would provide protection for the river and also act as a natural break to the urban sprawl. Such a park was suggested in the System Six Report. However, if the development does go ahead, adequate provisions should be made to protect the river and its surrounds.

The Guilderton Community Association therefore suggests that the current development plan be altered to allow for substantial river and coastal setbacks, of some 500 plus metres. Moore River Company' bstantia' d holdings allow for this. There is some suggestion within the plan and accompanying studies that the coastal land will, in future, be urban.

Our proposed solution is in line with the Gingin Rural Strategy which proposed a landscape protection area along the river for its lower 100 kms or so. However, the Ministry of Planning wrote to the council stating it would not support the application of such an area on the river mouth and its environs. The landscape protection area is in place for the remaining 98 kms or so.

THE PROCESS TO DATE

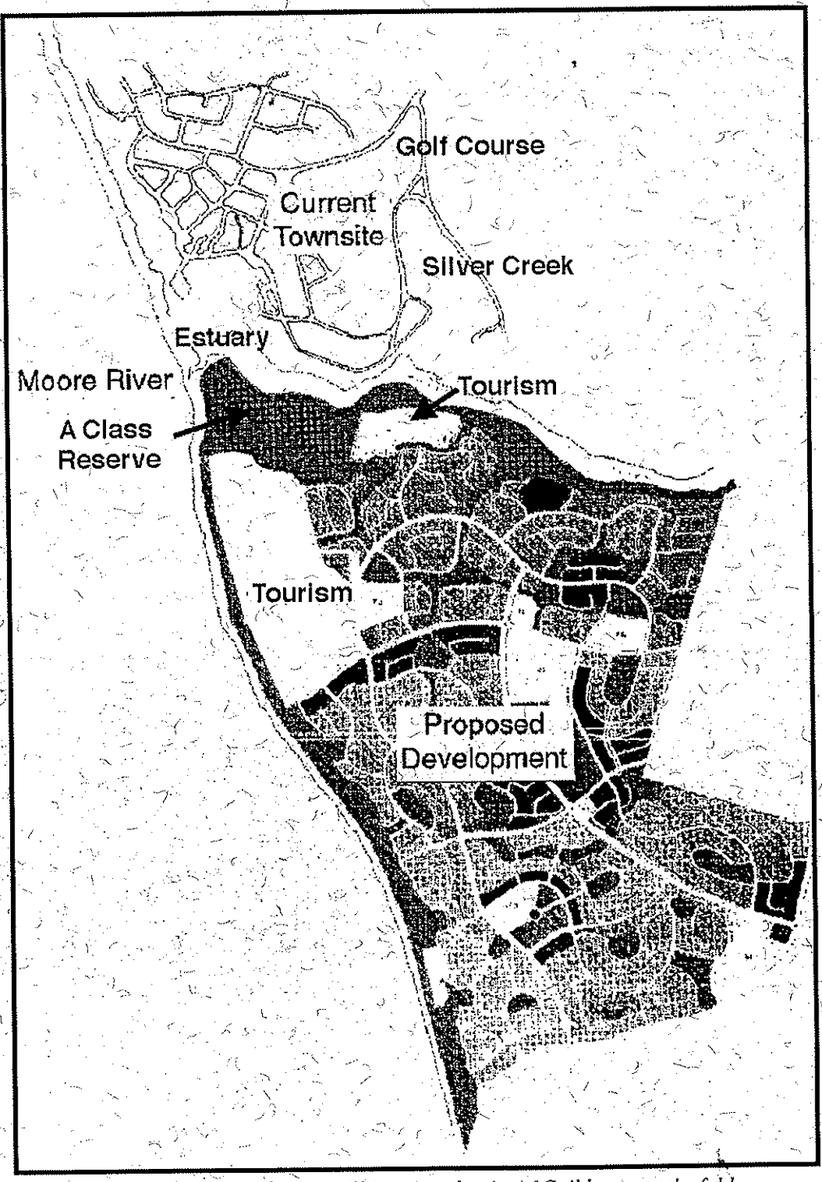
Planning Minister Richard Lewis amended Gingin Shire's Town Planning Amendment 22 to include a process for community consultation, and also specified the steps required between the council and developer before the developer could appeal to the Minister. Community workshops to devise a set of principles and guidelines were to provide a basis for the plan. The developer has paid scant attention to these principles and guidelines and has certainly ignored the majority view in regard to setbacks.

The developer can appeal to the Minister after the council knocks back the proposal 3 times, or after the expiry of 6 months from the council receiving the plan. The council has refused the proposal twice and the 6 month period ends on 6 November, 1996. Negotations between the developer and the council continue. The council's major concerns are related to infrastructure and revenue. The developer is not keen to provide a boat ramp to the ocean or to contribute to other facilities including a road into the development or a future bridge.

The Association feels that without a boat ramp the pressure on the river for water-based recreation will be extreme, compounding the pressure on estuarine quality.

WHAT WE ARE SEEKING

- The Planning Minister ensures that any approved plan is in accordance with those principles and guidelines set out in the workshop proceedings.
- Minimum guidelines for foreshore reserves be revised and substantially increased in the light of current knowledge of river pollution.
- You visit the area and enjoy its safe and peaceful surroundings.

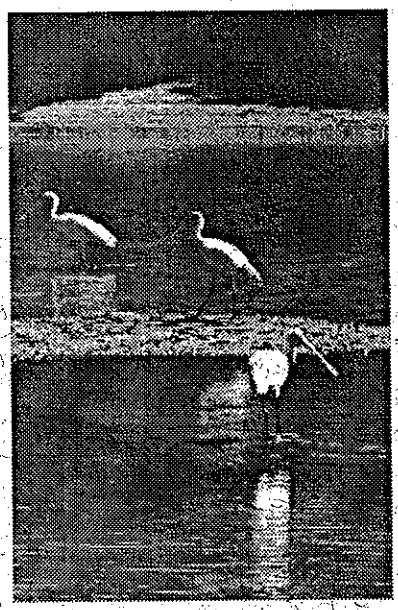


The proposed development will increase the size of Guilderton twelvefold

Some thoughts on Guilderton

The thing about our land and rivers is, God isn't making any more !!!
Maartje Ferronato, Guilderton

I'm too much a cynic, I know our planners well,
Persuaded by the dollar, on a one way trip to hell,
For hell to me is where I'll be when my spirit doesn't soar,
When there's no longer beauty when I look out the door.
Brian Langley, Guilderton



It's a beautiful, unspoilt spot. There's no other estuary like it so close to Perth. Peter Fry, Mt Lawley

Moore River is the perfect haven for teenagers. The ocean, river, sand dunes and bushland offer activities that are challenging, safe, and exciting.
Paul Roberts, Blackwatch Venturers

We've been going there for 42 years - before the road and the camping area. It's a beautiful rustic spot. I'd hate it to turn into something like the Queensland coast. Developers destroy what brings people to the area - the natural beauty.
Myrtle Tapscott, Guilderton

I've been going to Guilderton since before I was born and 'the desert' has a special significance to me - it's the place I go to become whole again.
Oleh Kay, Guilderton

As the canoe glided quietly we were filled with a sense of wonder by the thick bushes and tall trees covering the steep river banks. The silence broken only by the birds. Suddenly, a horrible thought struck - for how long will our children and grandchildren be able to experience and enjoy this unspoilt place?
Frank Ferronato, Guilderton

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GUILDERTON COMMUNITY ASSOCIATION

c/- P.O. Guilderton 6041

To: Departments of Planning; Environmental Protection, and Board; Waters and Rivers; Main Roads; Education; Health; Water Corporation

To update you on the Moore River South proposed development at Guilderton: the council of the Shire of Gingin has now knocked back the proposal from the developer (Moore River Co, Plunket's) for the third time and the developer may now take his proposal to the Minister for Planning, Richard Lewis.

It must now be clear to all concerned that the developer's proposal does not meet the minimum standards of all the parties it affects in the Gingin Shire. The issues can be summarized as follows:

Guilderton Community Association

The setbacks are totally inadequate. Coastal setbacks are not as large as for Guilderton, or for that matter City Beach. River setbacks do not take topography into account (e.g 1/3 up a vegetated sandhill), and if they remain, would result in degradation on the existing shoreline. Little notice is taken of remnant vegetation. The same developers have proposed, for the Point Grey area in the Shire of Murray, to retain nearly all existing vegetation.

Woodridge Community

The road in to the development is still a major issue for Woodridge residents. They have requested to join with us in efforts to influence decision-makers to produce a plan that is acceptable to all parties.

Gingin Council

In the six months of negotiations so far, the developer has barely shifted ground. The access road, details of contribution to the bridge (which was requested of the developer by Richard Lewis) and boat ramp are sketchy, and there is no contribution to community facilities.

Friends of Moore River Estuary and Bushland

This group is seeking a regional park, as mooted in the System 6 Report. The developers have refused System 6 reviewers access to their land in the current review.

A meeting of the Shire Advisory Committee, together with the Community Liasion Committee, Richard Pawluk (planner for the developer), and Alan Tingay (environmental consultant for the developer) met at Guilderton on 1 November, and viewed the river setback from key vantage points. As a result of this inspection, several councillors became aware of the inadequacy on the setbacks, particularly in relation to topography, land stability, and remnant vegetation. At a shire meeting following this inspection, concerns raised were:

* the proposal for urban development on the N.E. corner of the land was not appropriate
* there needed to be some environmental constraints on the land designated tourist use
* setbacks east of the desert are inadequate given the topography.

Our meeting with Allan Mappin, planner for the Gingin Shire, on 2 November indicated just how little had been achieved by the council in negotiations with the developer. We can only speculate why the same developer in the form of T.S.Plunket Pty Ltd produced a weighty outline development plan for the Point Grey area for land that is still zoned rural. The Shire of Murray have indicated they want a high level of detail and commitment before they will consider rezoning the land.

We are asking politicians to ensure that the developer's plan is not accepted in its current form, and that our concerns are reflected in any plan for the area. This plan will be used as a template for further land developments along the river and coast.

If you have any matters you wish to raise with me, please contact me as per below.

Elizabeth Eaton
Guilderton Community Association
17 Lifford Rd
Floreat 6014
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Overview of the Conservation Values of the Vegetated areas within the Proposed Development

System 6 Update

Public Submission to the System 6 Update

The area of the proposed development is contained within the area of a public submission to the System 6 Update. Twenty separate submissions were received by the Department for the Guilderton area supporting a 'Guilderton Regional Park'. This was the largest number of submissions received for any area.

System 6/1 Update Survey

As much of the area of the proposed 'Guilderton Regional Park' was vegetated and the Moore River was subject to a System 6 recommendation (Department of Conservation and Environment 1983) this area was considered important to be surveyed. However much of the 'Guilderton Regional Park' submission was in private hands. A standard procedure was followed to seek permission to survey on private land. This included initial telephone contact be a Department officer whenever possible or when telephone contact could not be made contact was initiated by letter. If permission was received for the survey work a letter detailing this work was sent after the survey. Permission was obtained from DOLA and two of the private land holders in the Guilderton area. **The owner of the most substantial land area, part of which is the area proposed for development (the study area), would not allow access to the land either for survey work or to allow access to crown land surrounded by this land. This refusal to allow access to do comparable survey was reiterated verbally in 1997 (W. Horwood pers. comm.).**

The DEP survey work (DEP 1996) was from one lot where a total of ten sites were located on a transect from the Moore River to the south to sample the principal units of vegetation related to soils and mapped structural units (Appendix 1, Alan Tingay and Associates 1993). Difficulty of access to the Reserve (as permission was refused to cross the Moore River Company Pty Ltd land this had to be by water from Guilderton) did not allow us to sample this area in 1995. Survey of the area is still planned.

Vegetation and Flora of the Study Area

The vegetation of the study area has been mapped by Alan Tingay and Associates (1993). A "wide range of vegetation associations and types" were described in the study area and adjacent lands. However this document does not address the nature or values of the riverine vegetation. It is uncertain as to how much fringing wetland vegetation is in the area.

Floristic Community types in the study area - Comparison with other Bushland areas in System 6/1 after Gibson *et al.* (1994) and DEP (1996)

The Guilderton area sites were analysed as part of a set of 1122 sites from across the Plain from Moore River south to Dunsborough. This analysis placed the sampled area in a regional context according to Gibson *et al.* 1994. This analysis dealt with areas of the Plain not sampled by Gibson *et al.* and some additional groups were identified.

Gibson *et al.* identified four floristic supergroups on the Swan Coastal Plain. Three of the groups were related to broad geomorphological units on the Plain and the fourth was a wetland group. As would be expected from the soils the sites in the Guilderton area were placed with floristic community types centred on the Spearwood and Quindalup systems (supergroup 4) and the wetland group (supergroup 2).

The detail in the South Guilderton environmental document (Alan Tingay and Associates 1993) is not sufficient to be able to confidently infer or definitely determine the floristic groupings present in the development area. As a consequence of this refusal to allow access studies on adjacent areas (DEP 1996, Griffin 1994, Keighery *et al.* 1997 and Trudgen *et al.* 1992) floristic community types were inferred.

Floristic Community type of the seasonal wetlands

The 'Guilderton Regional Park' wetland site was identified as being in floristic community type 17. Of the seventeen floristic community types identified in this group three are restricted to the Spearwood, Quindalup and Vasse land systems close to the coast. Community type 17 has been principally recorded from swales in Quindalup and Spearwood dunes or at interfaces with other systems. *Melaleuca rhaphiophylla* is always present in these wetlands and is generally the dominant species. The understorey is composed of sedge species. Species diversity in these wetlands is naturally low (mean 13.6 species / site). The System 6 update identified the Guilderton location of this wetland type as the most northerly location of this community type. The community type extends as far south as Rockingham (Map 1, Appendix 2). It is expected that this community type will occur in other wet patches along the River where *Melaleuca rhaphiophylla* occurs. The extent in the study area could not be determined from the vegetation map (Alan Tingay and Associates 1993).

Floristic Community types centred on the Spearwood and Quindalup systems

This major grouping contains fifteen floristic community types (DEP 1996), types 24 to 28 are largely restricted to the Spearwood system while types 29, 30 and S11 to 14 occur on the Quindalup system. Three of these floristic community types, types 26b, 28 and 29b, were identified in the Guilderton area and would be expected to occur in the study area. Floristic community types 29a, S11, S13 and S14 would also be expected to occur in the study area on the coastal and near coastal dunes.

Floristic community type 26 is restricted to the large limestone ridges north of Perth and those in the Yalgorup area (Map 2, Appendix 6). The two distinct subgroups are related to degree of soil development. On the skeletal soil on ridge slopes and ridge tops heaths dominated by *Melaleuca huegelii, M. acerosa, M.* aff. *acerosa* or *Dryandra sessilis* are found (type 26a). While it is unlikely that this community type occurs in the study area as it was not identified in Seabird to the north (Keighery *et al.* 1997) it is possible that this community type occurs in the "*Melaleuca cardiophylla* Closed Scrub" (Mc in Alan Tingay and Associates 1993) and the "*Melaleuca huegelii* Vegetation on Limestone Outcrops" (C3 in Alan Tingay and Associates 1993). In early 1997 it was recommended that this community type be considered "critically threatened community" (Weston and Gibson 1997, after English and Blyth 1997). On the lower slopes of limestone ridges or in pockets were deeper soil is able to develop *Eucalyptus gomphocephala, E. foecunda* or *E. petrensis* ms woodlands or mallee develop over a dense heath (type 26b). Occasionally an overstorey was absent as was the case for the Guilderton site.

Taxa typical of the limestone heaths are *Trymalium ledifolium* subsp. *ledifolium, Templetonia retusa, Stylidium maritima, Wurmbea monantha* and *Acacia lasiocarpa.* While on the deeper soils *Hibbertia hypericoides, Caladenia flava, Lagenifera huegelii, Sowerbaea laxiflora, Schoenus clandestinus* and *Mesomelaena pseudostygia* are common. Species richness is similar in both subgroups (average 50.2 and 52.7). Weeds are relatively frequent in these communities (average 8.0 and 8.4 species / plot).

The other Spearwood system community type identified was type 28. This community type is largely made up of *Banksia attenuata* woodlands, *Eucalyptus calophylla - B. attenuata* woodlands or *E. marginata - B. attenuata* woodlands. Community type 28 has been recorded from Thompson's Lake north to Seabird (north of the Moore River). Species richness averages 55.2 species / plot and average weed frequency is high at 8 species / plot. Sites in this community predominantly fall in the Spearwood units except for a group of sites on at the base of the Dandaragan scarp (Map X, Appendix Y). Interestingly within this groups the Guilderton site (located alongside the River) showed greatest affinity with the sites in this group from the base of the Dandaragan Scarp.

Floristic community type 28 clearly show differences in species composition compared to the *Banksia* woodlands on Bassendean systems (supergroup 3). In the typical Bassendean *Banksia* woodlands species were largely absent (except in community type 21a which includes unusual Spearwood sites). In addition species such as *Mesomelaena pseudostygia* and *Petrophile macrostachya* which are common in the Spearwood *Banksia* woodlands are largely absent from Bassendean communities.

The third floristic community type identified in the area was type 29 which is largely restricted to the Quindalup system. Type 29 contains two distinct subgroups. The first subgroup are mostly heaths on shallow sands over limestone close to the coast, an area unable to be sampled by the System 6 Update at Guilderton. All of the Guilderton sites were in type 29b. This floristic community type is dominated by *Acacia* shrublands or mixed heaths and is found on the larger dunes. This community

type stretches from Seabird to south of Mandurah (Map 4, Appendix 6). Average species richness was 35.6 species / plot and weed frequency was significantly lower at 3.4 species / plot. There are no consistent dominant but species such as *Acacia rostellifera, Acacia lasiocarpa, Melaleuca acerosa* are reliably present.

In summary

~~That is~~, the area has a diversity of floristic community types representative of the region and the Spearwood and Quindalup Dune Systems and the interface between them. Floristic community types were not addressed in the environmental assessment of the study area.

Vegetation Condition

The bushland surveyed within the Guilderton area was generally in excellent to very good condition (Keighery 1994). Some of the areas could be described as Pristine as there was no evidence of previous human presence. Survey away from the tracks was difficult and transects of the area had to follow kangaroo trails. Alan Tingay and Associates (1993) found the vegetation to be in similar condition, except for the patches within the pasture.

Flora

A flora of 117 native species was listed by Alan Tingay and Associates (1993) and was considered to be "...90% of the total native species" (page 10). However this is most likely less than 50% of the expected native taxa as 219 native taxa have been recorded in the Wilbinga area (Trudgen *et al.* 1990) and 324 native taxa in the Seabird Bushland (Keighery *et al.* 1997). The presence of the river in the area would be expected to add to the complexity of the flora as this landform is not present at Wilbinga or Seabird.

Significant Flora

Two species of Declared Rare Flora, Wabling Hill Mallee (*Eucalyptus argutifolia*) and *Chorizema varium*, are found in the region of the study area, the former at Wilbinga and Seabird and the latter at Seabird. These could also possibly occur in the study area. These two species are described below.

Chorizema varium (Papilionaceae) was a presumed extinct taxon until rediscovered by E. A. Griffin in 1990 just north of the area on Tamala Limestone in the Breton Bay area (Trudgen, Griffin and Keighery 1990). *Chorizema varium* was first collected by James Drummond in the Fremantle area soon after British settlement. This attractive low shrub with brick - red pea flowers then grew prolifically on the Tamala Limestone areas near Fremantle. Extensive searches in the Fremantle area have failed to locate any populations of this species and it is now considered extinct there. Seven populations are now known and all populations are associated with floristic community type 29a. There are no known occurrences in a conservation reserve.

The Wabling Hill Mallee is also associated with Tamala Limestone. This species is known from a restricted area around Wabling Hill, Parrot Ridge and between Mindarie and Seabird.

A series of taxa identified in the area adjacent to the study area or by Alan Tingay and Associates are considered to be of regional significance being on the CALM Priority List (Atkins 1996) or have other special attributes. At this stage XX taxa have been identified in the area, these include: *Allocasuarina lehmanii., Melaleuca cardiophylla, Diplolaena angustifolia, Billardiera* sp. Seabird (identification to be confirmed, Priority 1 taxon), *Hemiandra pungens* (dune form), *Stylidium maritima* (Priority 3), *Hibbertia spicata* subsp. *leptotheca* (Priority 3) and *Chamelaucium uncinatum*. Descriptions of these and other species of interest follow.

Allocasuarina lehmannii (Casuarinaceae)

This is a relatively uncommon species on the Plain. Vegetation associations in which this is a dominant species are poorly reserved, small areas being present in the Wilbinga, Trigg Dune reserve and Bold Regional Park. There are significant areas dominated by this species along the Moore river

Hibbertia spicata subsp. *leptotheca* (Dilleniaceae)

This is one of the taxa characteristic of and endemic to Tamala Limestone ridges growing from Yalgorup to Wedge Island. This taxon has several forms the typical form grows at Seabird. This is a rare taxon (Priority 3).

Hemiandra pungens Dune form (GJK 12864) (Lamiaceae)

A series of taxa are presently grouped as *Hemiandra pungens*. This variant is a prostrate glabrous plant, with short ovate pungent leaves and purple flowers that grows on coastal calcareous dunes from Wanneroo to Seabird.

Acacia lasiocarpa var. *lasiocarpa* (Mimosaceae)
Acacia lasiocarpa var. *lasiocarpa* is found in near coastal areas generally on Tamala surfaces near the coast but, it is also characteristic of the Beach Ridge Plain at Becher Point.

Eremophila glabra subsp. *albicans* (Myoporaceae)
A series of subspecies have can be distinguished in *Eremophila glabra* (A. Chinnock pers. comm.). The form found along the west coast on calcareous dunes and sand overlying limestone is the widely cultivated grey - leafed red - flowered spreading shrub form of the taxon. While relatively common along the west coast, this taxon is confined to the west coast of WA south of Exmouth.

Chamelaucium uncinatum (Myrtaceae)
Populations of *Chamelaucium uncinatum* (Geraldton Wax) occur on sandy soils on the riverside sand cliffs. This species was named from collections from Fremantle alongside the Swan Estuary. It very likely that the vegetation associations associated with the riverside are similar to those that were typical of the mouth of the Swan River Estuary and as such not only have extremely high conservation values being the only remnants of their type on an estuary on the Swan Coastal Plain but have additional natural and cultural and heritage value as the remnants of a past more widely represented landscapes.

Melaleuca cardiophylla (Myrtaceae)
This is a relatively uncommon species on the Plain confined to coastal dunes. Vegetation associations in which this is a dominant species are poorly reserved. The most southern communities dominated by this species are at Burns Beach. There is a small area dominated by this species along the Moore River that appears to be outside the proposed foreshore reserve.

Jacksonia calcicola ms (Papilionaceae)
This species was previously known as *Jacksonia stricta* (J. Chappil pers. comm.).

Nemcia reticulatum (coastal form) (Papilionaceae)
This distinct broad leaved coastal form is very common on near-coastal sands and sand over Tamala Limestone on the Plain extending from Yalgorup to Northampton. It is found in Yalgorup National Park and Neerabup National Park.

Billardiera sp. Seabird (GJK 12977) (Pittosporaceae)
This probably what Alan Tingay and Associates (1993) refer to as *B. erubescens*. A population of an apparently undescribed subspecies of *Billardiera ringens* (E. Bennett pers. comm.) is located on limestone cliffs in the north-western section of the Seabird Bushland. *Billardiera ringens*, the Chapman River Creeper, is found in the Geraldton area. *Billardiera* sp. Seabird is a prostrate shiny leaved shrub, with brilliant red - orange flowers unlike the more creeper like typical form. *Billardiera* sp. Seabird is currently only known with certainty from this one site in the Seabird area.

Grevillea preissii (Proteaceae)
This attractive red flowered low shrub grows on limestone ridges from Yalgorup to Leeman. It is a limestone endemic and has recently been separated from the closely related *G. thelemanniana* (Alan Tingay and Associates use this name).

Hakea lissocarpha (Proteaceae)
While *Hakea lissocarpha* is found on both the Plain and the Darling Plateau it is confined to near coastal sands associated with limestone on the Plain. This species is found from Kalbarri to Israelite Bay.

Petrophile serruriae subsp. nov. (Proteaceae) (Keighery 1992)
This is a pink flowered variant of a normally yellow flowered species of the Darling Range. This subspecies is apparently disjunct between Bunbury and Hamelin Bay, a pattern also found in *Trachymene coerulea*. This taxon grows on limestone ridges from Cervantes to Bunbury with a disjunct occurrence at Hamelin Bay.

Trymalium ledifolium var. *ledifolium* (Rhamnaceae)
This taxon was previously referred to as *T. albicans* (Keighery 1992, Gibson *et al.* 1994). A limestone endemic, this erect low shrub is found from Yalgorup to north of Jurien.

Diplolaena angustifolia (Rutaceae)
This limestone endemic is found from Leeman to Yanchep.

Diplopeltis huegelii var. *huegelii* (Sapindaceae)
Currently *Diplopeltis huegelii* has several varieties. The typical variety is endemic to limestone ridges between Yalgorup and Dongara . Another variety occurs on the Darling Scarp and Plateau and has been recognised in the past as *D. lehmanii.* However it is considered that both varieties are subspecies of *D. huegelii* so, *D. huegelii and D. lehmanii,* will be combined and the subspecies described under *D. huegelii.*

Stylidium maritima ms (Stylidiaceae)
This species is related to *Stylidium affine* but occurs in near coastal locations on calcareous soils and limestone on the coastal plain from Cliff Head to Yalgorup. Although it can be locally common, populations are not common and much of its habitat between Cliff Head and Yalgorup has been cleared or degraded. This is a rare taxon (Priority 3).

Stylidium junceum (limestone variant) (Stylidiaceae)
This form of *S. junceum* grows tall enough to allow its large pale pink flowers to emerge above the shrubs of the Limestone Heath. This is a distinct variant of *S. junceum* which grows on limestone ridges from Yalgorup to Cliff Head.

Assessment of Conservation Value

The assessment of the regional conservation significance of the south Guilderton bushland is yet to be made for the System 6/1 Update. It was planned that this determination would be made in the second phase of the report using all available information such as that from the Update survey and analysis and other information, soil maps, remnant vegetation mapping, advice from the Department of Conservation and Land Management, percentage of vegetation complexes (Heddle *et al* 1983) protected in the Perth Metropolitan Area (PEP), wetlands mapping (Semeniuk 1989, Water Authority 1992), Allan Tingay and Associates 1993, regional study of the Quindalup Dunes (Griffin 1993) and the northern sandplains study (Griffin 1994). However, as determinations are presently being made on the area to be set aside in the coastal and foreshore reserves in the study area the following statements on conservation value can be made. the size and relatively undisturbed nature of the vegetation and the complexity of structural and floristic vegetation units in the area indicate that a percentage of the area will be recognised as being of regional significance. The vegetation has additional significance in forming an important link between Wilbinga and Seabird and is the only remaining example of fringing estuarine vegetation of the Spearwood and Quindalup Dunes similar to Swan.

Conservation value of the vegetation and flora and adequacy of proposed areas conservation areas to maintain these conservation values

There is insufficient information on the flora and vegetation of the area available in the environmental assessment document and the management plans to assess the adequacy of the size and proposed management of the reserves. However information on adjacent areas indicate that the intact vegetation in the study area has high conservation value and that the proposed foreshore and coastal reserves are inadequate to maintain these conservation values. In addition the vegetation and flora survey on which the plans are based does not adequately describe the values of the area. A series of individual points are detailed below.

• Presence of DRF and/or threatened ecological communities in the study area

There is not sufficient information on the flora and vegetation in the environmental assessment document (Alan Tingay and Associates 1993) to be confident that there are no DRF or threatened communities in the area. While the threatened ecological community study is relatively new (public

workshop in 1996, unpublished report 1997) the presence of the DRF species in the area was well documented in 1993.

• Regional Conservation Values for Coastal Dune Reserves

There has been a substantial amount of work produced on the conservation values of vegetation and flora of the coastal dunes systems (Quindalup and Spearwood Dunes) in the last four years - English and Blyth (1997), Gibson *et al.* (1994), Griffin (1993), Keighery (1990), Keighery *et al.* (1997) and Trudgen *et al.*. (1990) None of these references are listed in the 1993 environmental assessment document or the coastal and foreshore management plans (Alan Tingay and Associates 1993, 1996a, 1996b respectively). Without reference to these studies it is very difficult to design an adequate foreshore or coastal reserve that addresses the conservation significance of the coastal and foreshore vegetated areas.

• Linkage Value

Similar to Wilbinga and Seabird regionally (based on comparison floristic community types) and as such the intact coastal and riverine vegetation forms a significant corridor between these two major proposed conservation areas. However the areas proposed to be set aside along both the coast and river are fragmented by blowouts and are not of a sufficient size to be considered viable over time. In addition they do not encompass area of sufficient habitat diversity to provide sufficient habitat for migrating birds and other animals.

• Moore River and Estuary Values

Of particular significance is the vegetation associated with the Moore River, these communities add to diversity of vegetation associations and landscape qualities of the area and this is a feature absent from both the Wilbinga a Seabird areas. Notably there are no other rivers on the Swan Coastal Plain with such extensive tracts of bushland on the their banks. This was recognised in the System 6 Report (1983) which considered that the Moore River Valley be considered for a Regional Park. In addition it appears that the vegetation associated with the Moore River and Estuary is of scientific interest as recent studies of the vegetation and flora of remnants on the Swan and Moore River and Estuaries (DEP 1996, (Keighery and Keighery 1996, 1997) indicate that the vegetation along the river/estuaries has provided a corridor for the migration of coastal species inland. The Moore River/Estuary with its intact areas of associated vegetation is of particular significance.

The considerable natural and cultural and heritage values of the vegetated river are not considered in detail in any of the documentation for the study area. Reference to the particular values of the riverine vegetation is limited reference to the Tuart Woodland. The area proposed to be set aside in the river foreshore reserve is narrow and ~~predominantly~~ blowout. Considering the values of the riverine vegetation and the nature of the landforms along the river (steep sand cliffs) the river foreshore reserve is inadequate to maintain these values.

Conclusion

The following areas need to be addressed before the adequacy of the foreshore and coastal reserves and their management plans can be addressed:

- detailed spring flora survey to identify possible occurrence of Declared Rare Flora (*Eucalyptus argutifolia* and *Chorizema varium*) which are found in areas to north and south of the study area and to identify the locations of other significant taxa.
- Spring plot based survey of possible locations of the proposed threatened community floristic community type 26a (Weston and Gibson 1996, Gibson *et al.* 1994) in the "*Melaleuca cardiophylla* Closed Scrub" (Mc in Alan Tingay and Associates 1993) and the "*Melaleuca huegelii* Vegetation on Limestone Outcrops" (C3 in Alan Tingay and Associates 1993) and other restricted communities.
- With this information as a basis other studies be referenced to define the regional conservation values of the vegetation and flora of the intact vegetation in the coastal and foreshore areas that protects these values in perpetuity.

In light of the issues outlined above the Department of Environmental Protection is unable to make further determination of the adequacy of the river foreshore and coastal management reserve and management plans until a competent botanist, of the Department's choice is able to visit the study area and determine the adequacy of the reserves and the management plans.

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Notes on Department of Environmental Protection Regional Assessment Procedures of System 6 Update: Guilderton Regional Park
July 1996

Introduction

The Department of Environmental Protection is coordinating an update of the conservation recommendations for System 6 and the Swan Coastal Plain part of System 1 (Department of Conservation and Environment 1983, 1976). The main objective of the update is to propose a series of conservation areas representative of the ecological communities extant in the region.

This determination will be based on the best available information. On the Swan Coastal Plain existing published and unpublished information will be used in conjunction a recent regional floristic survey of the Swan Coastal Plain region. This regional survey, 'A Floristic Survey of the Southern Swan Coastal Plain' Gibson et al. (1994, Appendix 1), is being used to provide the main regional information base upon which to review the adequacy of the existing System recommendations and to assess other bushland areas. Bushland areas to be assessed from outside the existing System areas have been identified through

- remnant vegetation mapping
- identification of areas generally recognised as being of conservation significance outside of the System areas such as Nature Reserves, proposed Nature Reserves, areas on the Register of the National Estate, wetlands of national significance etc
- public submissions of bushland that they considered to be of regional significance made over approximately one month in 1995 (Appendix 2).

To make this comparison additional survey sites to those established by Gibson et al. (1994) have been located on bushland areas across the Plain identified in the process outlined above. Time for additional survey was limited and selected areas were surveyed according to their location, soil type, size of the vegetated area and other factors related to conservation significance.

The final selections for inclusion in the updated System Six Recommendations will be the best available examples of bushland containing plant community types that are either unrepresented or poorly represented in the current and proposed conservation system.

The first report on the metropolitan section of the region will be produced by the end of 1996 to be followed by a three month public submissions period. The remainder of the Swan Coastal Plain recommendations are expected to be released in draft form in the second half of 1997, again for three months public submissions.

Guilderton Regional Park

Public Submission to the System 6 Update

Twenty separate submissions were received by the Department for the Guilderton area supporting a "Guilderton Regional Park" (Appendix 3). This was the largest number of submissions received for any area.

System 6/1 Update Survey

Much of the Guilderton Regional Park submission was in private hands. A standard procedure was followed to seek permission to survey on private land. This included initial telephone contact be a Department officer whenever possible or when telephone contact could not be made contact was initiated by letter. If permission was received for the survey work a letter detailing this work was sent after the survey. Permission was obtained from DOLA and two of the private land holders in the Guilderton area. The owner of the most substantial land area would not allow access to the land either for survey work or to allow access to crown land surrounded by this land.

Time and the constraints described above limited survey work in 1995 one lot where a total of ten sites were located on a transect from the Moore River to the south to sample the principal

units of vegetation related to soils (Appendix 4) and mapped structural units (Appendix 5, Alan Tingay and Associates 1993).

The bushland surveyed within the Guilderton area was generally in excellent to very good condition (Keighery 1994). Some of the areas showed no evidence of previous human presence and no disturbance was evident. As a consequence survey away from the vehicle was difficult and transects of the area had to follow kangaroo trails.

Comparison with other Bushland areas in System 6/1 after Gibson *et al.* (1994)
The Guilderton area sites were analysed as part of a set of 1122 sites from across the Plain from Moore River south to Dunsborough. This analysis placed the sampled area in a regional context according to Gibson *et al.* 1994. This analysis dealt with areas of the Plain not sampled by Gibson *et al.* and some additional groups were identified. This work is still progressing and the following consideration of the groups identified in the Guilderton Regional Park area are based on a comparison with Gibson *et al.* unless otherwise indicated.

Gibson *et al.* identified four floristic supergroups on the Swan Coastal Plain. Three of the groups were related to broad geomorphological units on the Plain and the fourth was a wetland group. As would be expected from the soils the sites in the Guilderton area were placed with floristic community types centred on the Spearwood and Quindalup systems (supergroup 4) and the wetland group (supergroup 2).

Floristic Community type of the seasonal wetlands
The Guilderton Regional Park wetland site was identified as being in floristic community type 17. Of the seventeen floristic community types identified in this group three are restricted to the Spearwood, Quindalup and Vasse land systems close to the coast. Community type 17 has been principally recorded from swales in Quindalup and Spearwood dunes or at interfaces with other systems. *Melaleuca rhaphiophylla* is always present in these wetlands and is generally the dominant species. The understorey is composed of sedge species. Species diversity in these wetlands is naturally low (mean 13.6 species / site). The System 6 update identified the Guilderton location of this wetland type as the most northerly location of this community type. The community type extends as far south as Rockingham (Map 1, Appendix 6).

Floristic Community types centred on the Spearwood and Quindalup systems
This major grouping contains seven floristic community types, types 24 to 28 are largely restricted to the Spearwood system while types 29 and 30 occur on Quindalup system. Three of these floristic community types, types 26b, 28 and 29b, were identified in the Guilderton area.

Floristic community type 26 is restricted to the large limestone ridges north of Perth and those in the Yalgorup area (Map 2, Appendix 6). The two distinct subgroups are related to degree of soil development. On the skeletal soil on ridge slopes and ridge tops heaths dominated by *Melaleuca huegelii, M. acerosa, M.* aff. *acerosa* or *Dryandra sessilis* are found (type 26a). On the lower slopes or in pockets were deeper soil is able to develop *Eucalyptus gomphocephala, E. foecunda* or *E. petrensis* ms woodlands or mallee develop over a dense heath (type 26b). Occasionally an overstorey was absent as was the case for the Guilderton site.

Taxa typical of the limestone heaths are *Trymalium albicans, Templetonia retusa, Stylidium maritima, Wurmbea monantha,* and *Acacia lasiocarpa.* While on the deeper soils *Hibbertia hypericoides, Caladenia flava, Lagenifera huegelii, Sowerbaea laxiflora, Schoenus clandestinus* and *Mesomelaena pseudostygia* are common. Species richness is similar in both subgroups (average 50.2 and 52.7). Weeds are relatively frequent in these communities (average 8.0 and 8.4 species / plot).

The other Spearwood system community type identified was type 28. This community type is largely made up of *Banksia attenuata* woodlands, *Eucalyptus calophylla - B. attenuata* woodlands or *E. marginata - B. attenuata* woodlands. Community type 28 has been recorded from Thompson's Lake north to Seabird (north of the Moore River). Species richness averages

55.2 species / plot and average weed frequency is high at 8 species / plot. Sites in this community predominantly fall in the Spearwood units except for a group of sites on at the base of the Dandaragan scarp (Map 3, Appendix 6). Interestingly within this groups the Guilderton site (located alongside the River) showed greatest affinity with the sites in this group from the base of the Dandaragan Scarp.

Floristic community type 28 clearly show differences in species composition compared to the *Banksia* woodlands on Bassendean systems (supergroup 3). In the typical Bassendean *Banksia* woodlands species were largely absent (except in community type 21a which includes unusual Spearwood sites). In addition species such as *Mesomelaena pseudostygia* and *Petrophile macrostachya* which are common in the Spearwood *Banksia* woodlands are largely absent from Bassendean communities.

The third floristic community type identified in the area was type 29 which is largely restricted to the Quindalup system. Type 29 contains two distinct subgroups. The first subgroup are mostly heaths on shallow sands over limestone close to the coast, an area unable to be sampled by the System 6 Update at Guilderton. All of the Guilderton sites were in type 29b. This floristic community type is dominated by *Acacia* shrublands or mixed heaths and is found on the larger dunes. This community type stretches from Seabird to south of Mandurah (Map 4, Appendix 6). Average species richness was 35.6 species / plot and weed frequency was significantly lower at 3.4 species / plot. There are no consistent dominant but species such as *Acacia rostellifera, Acacia lasiocarpa, Melaleuca acerosa* are reliably present.

Obviously these sites do not cover the entire area of the "Guilderton Regional Park" submission, for the area not sampled the floristic community groupings will be inferred from the existing information on the area (see below).

Significant Flora

A series of taxa identified in the area are considered to be of regional significance being on the CALM Declared Rare Flora and Priority List (Atkins 1995) or have other special attributes. At this stage eight taxa have been identified in the area, these include: *Allcoasuarina lehmaniana., Melaleuca cardiophylla, Diplolaena angustifolia, Billardiera* sp. Seabird (identification to be confirmed, Priority 1 taxon), *Hemiandra pungens* (dune form), *Stylidium maritima* (Priority 3), *Hibbertia spicata* subsp. *leptotheca* (Priority 3) and *Chamelaucium uncinatum*. Also it is possible that a species of Declared Rare Flora occurs in the area.

Assessment of Conservation Value

The assessment of the regional conservation significance of the Guilderton Regional Park is yet to be made for the System 6/1 Update. This will be made in the second phase of the report (see Introduction). This assessment will be made using all available information such as that from the Update survey and analysis and other information and advice from the Department of Environmental Protection (Appendix 7), soil maps, remnant vegetation mapping, advice from the Department of Conservation and Land Management, percentage of vegetation complexes (Heddle et al 1983) protected in the Perth Metropolitan Area (PEP), wetlands mapping (Semeniuk 1989, Water Authority 1992), Allan Tingay and Associates 1993, regional study of the Quindalup Dunes (Griffin 1993) and the northern sandplains study (Griffin 1994).

However the size and relatively undisturbed nature of the vegetation and the complexity of structural and floristic vegetation units in the area indicate that a percentage of the area will be recognised as being of regional significance. In addition the association of this vegetation with the Moore River adds to its complexity and soils and landscape qualities which further identify the area as having regional conservation significance. Notably there are no other rivers on the Swan Coastal Plain with such extensive tracts of bushland on the their banks. This was recognised in the System 6 Report (1983) which considered that the Moore River Valley be considered for a Regional Park.

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Appendix 1

Abstract from: Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H. and Lyons, M.N. (1994) A Floristic Survey of the Southern Swan Coastal Plain. Unpublished Report for the Australian Heritage Commission prepared by Department of Conservation and Land Management and the Conservation Council of Western Australia (Inc.).

Appendix 2

Notes on the System 6 Update distributed inviting public submissions

Appendix 3

"Guilderton Regional Park" Submission to the System 6 Update

Appendix 4

Copy of the relevant section from: McArthur, W.M. and Bartle, G.A. (1980) Landforms and Soils as an Aid to Urban Planning in the Perth Metropolitan Northwest Corridor, Western Australia. Maps 1-4. CSIRO Land Resources Management Series No. 5.

Appendix 5

Vegetation Map from: Tingay, A and Associates. 1993 South Guilderton Environmental Assessment. Unpublished Resort for Moore River Co. Pty Ltd.

Appendix 6

Maps of floristic community type distributions from: Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H. and Lyons, M.N. (1994) A Floristic Survey of the Southern Swan Coastal Plain. Unpublished Report for the Australian Heritage Commission prepared by Department of Conservation and Land Management and the Conservation Council of Western Australia (Inc.).

Appendix 7

Department of Environmental Protection correspondence to Ministry for Planning, September 1994.

Notes on Departement of Environmental Protection Regional Assessment Procedures of System 6 Update: Guilderton Regional Park

Introduction

The Department of Environmental Protection is coordinating an update of the conservation recommendations for System 6 and the Swan Coastal Plain part of System 1 (DE 1983, 197?). The main objective of the update is to propose a series of conservation areas representative of the ecological communities extant in the region.

This determination will be based on the best available information. On the Swan Coastal Plain existing published and unpublished information will be used in conjunction a recent regioanl floristic survey of the Swan Coastal Plain region. This regional survey, 'A Floristic Survey of the Southern Swan Coastal Plain' Gibson et al. (1994, Appendix 1), is being used to provide the main regional information base upon which to review the adequacy of the existing System recommendations and to assess other bushland areas. Bushland areas to be assessed from outside the existing System areas have been identified through

- remanat vegetation mapping
- identification of areas generally recognised as being of conservation significance outside of the System areas such as Nature Reserves, proposed Nature Reserves, areas on the Register of the National Estate, wetlands of national significance etc
- public submissions of bushland that they considered to be of regional significance made over approximately one month in 1995 (Appendix 2).

To make this comparison additional survey sites to those established by Gibson et al. (1994) have been located located on bushland areas across the Plain identified in the process outlined above. Time for additional survey was limited and selected areas were surveyed according to their location, soil type, size of the vegetated area and other factors related to conservation significance.

The final selections for inclusion in the updated System Six Recommendations will be the best available examples of bushland containing plant community types that are either unrepresented or poorly represented in the current and proposed conservation system.

The first report on the metropolitan section of the region will be produced by the end of 1996 to be followed by a three month public submissions period. The remainder of the Swan Coastal Plain recommendations are expected to be released in draft form in ~~mid~~ 1997, again for three months public submissions.

Guilderton Regional Park

Public Submission to the System 6 Update

Twenty separate submissions were recieved by the Department for the Guilderton Regional Park (Appendix 3). This was the largest number of submissions recieved for any area.

System 6/1 Update Survey

Much of the the Guilderton Regional Park submission was in private hands. A standard procedure was followed to seek permission to suvey on private land. This included initiatal telephone contact be a Department officer whenever posssible or when telephone contact could not be made contact was initiated by letter. If permission was recieved for the survey work a letter detiling this work was sent after the survey. Permission was obtained from DOLA and two of the private land holders in the Guilderton ~~Regional Park~~ area. The most substantial land holder would not allow any access to the land either for survey work or to allow access to crown land surrounded by this land.

Time and the constraints described above limited survey work in 1995 one lot where a total of ten sites were located on a transect from the Moore River to the south to sample the principal units of vegetation related to soils (Appendix 4) and mapped structural units (Appendix 5, Alan Tindgay and Associates 1993).

This proposal has no formal standing at this time.

The bushland surveyed within the Guiderton ~~Regional Park~~ area was generaly in excellent to very good condition (Keighery 1994). Some of the areas showed no evidence of previous human presence and no disturbacne was evident. As a consequence survey away from vehicle was difficult and transects of the area had to follow kangaroo trails.

Comparison with other Bushland areas in System 6/1 after Gibson *et al.* (1994)

~~Analysis of~~ the Guilderton ~~Regional Park~~ sites is a set of 1122 sites from across the Plain placed the sampled area in a regional context according to Gibson *et al.* 1994. This analysis dalt with areas of the Plain not sampled by Gibson *et al.* and some additional groups were identified. This work is still progressing and the following consideration of the groups identified in the Guilderton Regional Park area are based on a comparison with Gibson *et al.* unless otherwise indicated.

Gibson *et al.* four supergroups, three related to the major ~~geomorphological~~ units on the Plain and ~~and a~~ wetland ~~group~~. As would be expected from the soils the sites in the Guilderton area were placed with Floristic Community types centred on the Spearwood and Quindalup systems (supergroup 4) and the wetland group (supergroup 2).

Floristic Community type of the seasonal wetlands

The Guilderton Regional Park wetland site was identified as being in floristic community type 17. Of the seventeen floristic community types identified in this group three are restricted to the Spearwood, Quindalup and Vasse land systems close to the coast. Community type 17 has been principally recorded from swales in Quindalup and Spearwood dunes or at interfaces with other systems. *Melaleuca rhaphiophylla* is always present in these wetlands and is generally the dominant species. ~~Species in Species group 1 were common with *Gahnia trifida, Baumea juncea* and *Lepidosperma longnitudinale* being the sedges are the usual dominants or subdominants in the~~ understorey. Species diversity ~~was very~~ low (~~mean~~ 13.6 species / site). The Guilderton ~~Regional Park location of this wetland type~~ is the most northerly location of this community type. The community type extends as far south as Rockingham (Appendix 6).

Floristic Community types centred on the Spearwood and Quindalup systems

~~This last major group seen is centred on the Spearwood and Quindalup systems~~. This group contains seven floristic community types, types 24 to 28 are largely restricted to the Spearwood system while types 29 and 30 occur on Quindalup system. ~~Both the Spearwood and Quindalup types are characterised by high frequency of species in group A.~~ Floristic community types 26b, 28b and 29b were identified in the Guilderton ~~Regional Park~~ area.

Floristic community type 26 is restricted to the large limestone ridges north of Perth and those in the Yalgorup area. The two distinct subgroups are related to degree of soil development. On the skeletal soil on ridge slopes and ridge tops heaths dominated by *Melaleuca huegelii, M. acerosa, M.* aff. *acerosa* or *Dryandra sessilis* are found (type 26a). On the lower slopes or in pockets were deeper soil is able to develop *Eucalyptus gomphocephala, E. foecunda* or *E. petrensis* ~~mb~~ woodlands or mallee develop over a dense heath (type 26b). Occasionally an overstorey was absent as was the case for the Guilderton Regional Park site.

~~Type 26b is virtually restricted to the Cottosloe unit (Spearwood System).~~ Taxa typical of the limestone heaths are *Trymalium albicans, Templetonia retusa, Stylidium maritima, Wurmbea monantha,* and *Acacia lasiocarpa.* While on the deeper soils *Hibbertia hypericoides, Caladenia flava, Lagenifera huegelii, Sowerbaea laxiflora, Schoenus clandestinus* and *Mesomelaena pseudostygia* are common. Species richness is similar in both subgroups (~~mean~~ 50.2 and 52.7) ~~as~~ was a high ~~mean~~ weed frequency (8.0 and 8.4 species / plot).

The other Spearwood system community type identified was type 28. This community type is largely made up of *Banksia attenuata* woodlands, *Eucalyptus calophylla - B. attenuata* woodlands or *E. marginata - B. attenuata* woodlands. Community type 28 has been recorded from Thompson's Lake north to Seabird (north of the Moore River). Species richness averages 55.2 species / plot and average weed frequency is high at 8 species / plot. Sites in this

community predominantly fall in the ~~Karrakatta and Cottosloe unit~~s except for a group of sites on at the base of the Dandaragan scarp (Appendix 6). In the 1996 System 6 analysis with a greater representation of sites from the Dandaragan Plateau these sites were identified as a separate floristic community grouping, 28a and the type from the Karrakatta and Cottosloe units as 28b.

Floristic community type 28 ~~clearly~~ show differences in species composition compared to the *Banksia* woodlands on Bassendean ~~systems~~ (supergroup 3). ~~In the typical Bassendean *Banksia* woodlands species were largely absent (except in community type 21a which includes unusual Spearwood sites). In addition species such as *Mesomelaena pseudostygia* and *Petrophile macrostachya* which are common in the Spearwood *Banksia* woodlands are largely absent from Bassendean communities (Appendix 6).~~

The third floristic community type identified in the area was type 29, which is largely restricted to the Quindalup system. Type 29 contains two distinct subgroups. The first subgroup are mostly heaths on shallow sands over limestone close to the coast. Sites of type 29b were dominated by *Acacia* shrublands or mixed heaths of the larger dunes. This community type stretched from Seabird to south of Mandurah. Average species richness was 35.6 species / plot and weed frequency was significantly lower at 3.4 species / plot. Again there ~~was~~ is no consistent dominant but species such as *Acacia rostellifera, Acacia lasiocarpa, Melaleuca acerosa* ~~were important~~. (Appendix 6)

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However, the relatively undisturbed nature of the vegetation and the complexity of structural and floristic vegetation units in the area indicate that a percentage of the area will be recognised as being of regional significance. In addition the association of this vegetation with the Moore River further identifies the area as having regional conservation significance. There are no other rivers on the Swan Coastal Plain with such extensive tracts of vegetation on the their banks, ~~which~~ was recognised in the System 6 Report (1983).

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Floristic community type 26 is restricted to the large limestone ridges north of Perth and those in the Yalgorup area (Map 2, Appendix 6). The two distinct subgroups are related to degree of soil development. On the skeletal soil on ridge slopes and ridge tops heaths dominated by *Melaleuca huegelii, M. acerosa, M.* aff. *acerosa* or *Dryandra sessilis* are found (type 26a). On the lower slopes or in pockets were deeper soil is able to develop *Eucalyptus gomphocephala, E. foecunda* or *E. petrensis* ms woodlands or mallee develop over a dense heath (type 26b). Occasionally an overstorey was absent as was the case for the Guilderton site.

Taxa typical of the limestone heaths are *Trymalium albicans, Templetonia retusa, Stylidium maritima, Wurmbea monantha,* and *Acacia lasiocarpa.* While on the deeper soils *Hibbertia hypericoides, Caladenia flava, Lagenifera huegelii, Sowerbaea laxiflora, Schoenus clandestinus* and *Mesomelaena pseudostygia* are common. Species richness is similar in both subgroups (average 50.2 and 52.7). Weeds are relatively frequent in these communities (average 8.0 and 8.4 species / plot).

The other Spearwood system community type identified was type 28. This community type is largely made up of *Banksia attenuata* woodlands, *Eucalyptus calophylla - B. attenuata* woodlands or *E. marginata - B. attenuata* woodlands. Community type 28 has been recorded from Thompson's Lake north to Seabird (north of the Moore River). Species richness averages

55.2 species / plot and average weed frequency is high at 8 species / plot. Sites in this community predominantly fall in the Spearwood units except for a group of sites on at the base of the Dandaragan scarp (Map 3, Appendix 6). Interestingly within this groups the Guilderton site (located alongside the River) showed greatest affinity with the sites in this group from the base of the Dandaragan Scarp.

Floristic community type 28 clearly show differences in species composition compared to the *Banksia* woodlands on Bassendean systems (supergroup 3). In the typical Bassendean *Banksia* woodlands species were largely absent (except in community type 21a which includes unusual Spearwood sites). In addition species such as *Mesomelaena pseudostygia* and *Petrophile macrostachya* which are common in the Spearwood *Banksia* woodlands are largely absent from Bassendean communities.

The third floristic community type identified in the area was type 29 which is largely restricted to the Quindalup system. Type 29 contains two distinct subgroups. The first subgroup are mostly heaths on shallow sands over limestone close to the coast, an area unable to be sampled by the System 6 Update at Guilderton. All of the Guilderton sites were in type 29b. This floristic community type is dominated by *Acacia* shrublands or mixed heaths and is found on the larger dunes. This community type stretches from Seabird to south of Mandurah (Map 4, Appendix 6). Average species richness was 35.6 species / plot and weed frequency was significantly lower at 3.4 species / plot. There are no consistent dominant but species such as *Acacia rostellifera, Acacia lasiocarpa, Melaleuca acerosa* are reliably present.

Obviously these sites do not cover the entire area of the "Guilderton Regioanl Park" submission, for the area not sampled the floristic community groupings will be inferred from the existing information on the area (see below).

Significant Flora

A series of taxa identified in the area are considered to be of regional significance being on the CALM Declared Rare Flora and Priority List (Atkins 1995) or have other special attributes. At this stage eight taxa have been identified in the area. Also it is possible that a species of Declared Rare Flora occurs in the area.

Assessment of Conservation Value

The assessment of the regional conservation significance of the Guilderton Regional Park is yet to be made for the System 6/1 Update. This will be made in the second phase of the report (see Introduction). This assessment will be made using all available information such as that from the Update survey and analysis and other information and advice from the Department of Environmental Protection (Appendix 7), CALM'S advice on the area (Appendix 7), soil maps, remnant vegetation mapping, percentage of vegetation complexes (Heddle et al 1983) protected (PEP), Allan Tingay and Associates 1993, regional study of the Quindalup Dunes (Griffin 1993) and the northern sandplains study (Griffin 1994).

However the size and relatively undisturbed nature of the vegetation and the complexity of structural and floristic vegetation units in the area indicate that a percentage of the area will be recognised as being of regional significance. In addition the association of this vegetation with the Moore River adds to its complexity and soils and landscape qualities which further identify the area as having regional conservation significance. Notably there are no other rivers on the Swan Coastal Plain with such extensive tracts of bushland on the their banks. This was recognised in the System 6 Report (1983) which ~~considered~~ recommended that the Moore River Valley be considered for a Regional Park.

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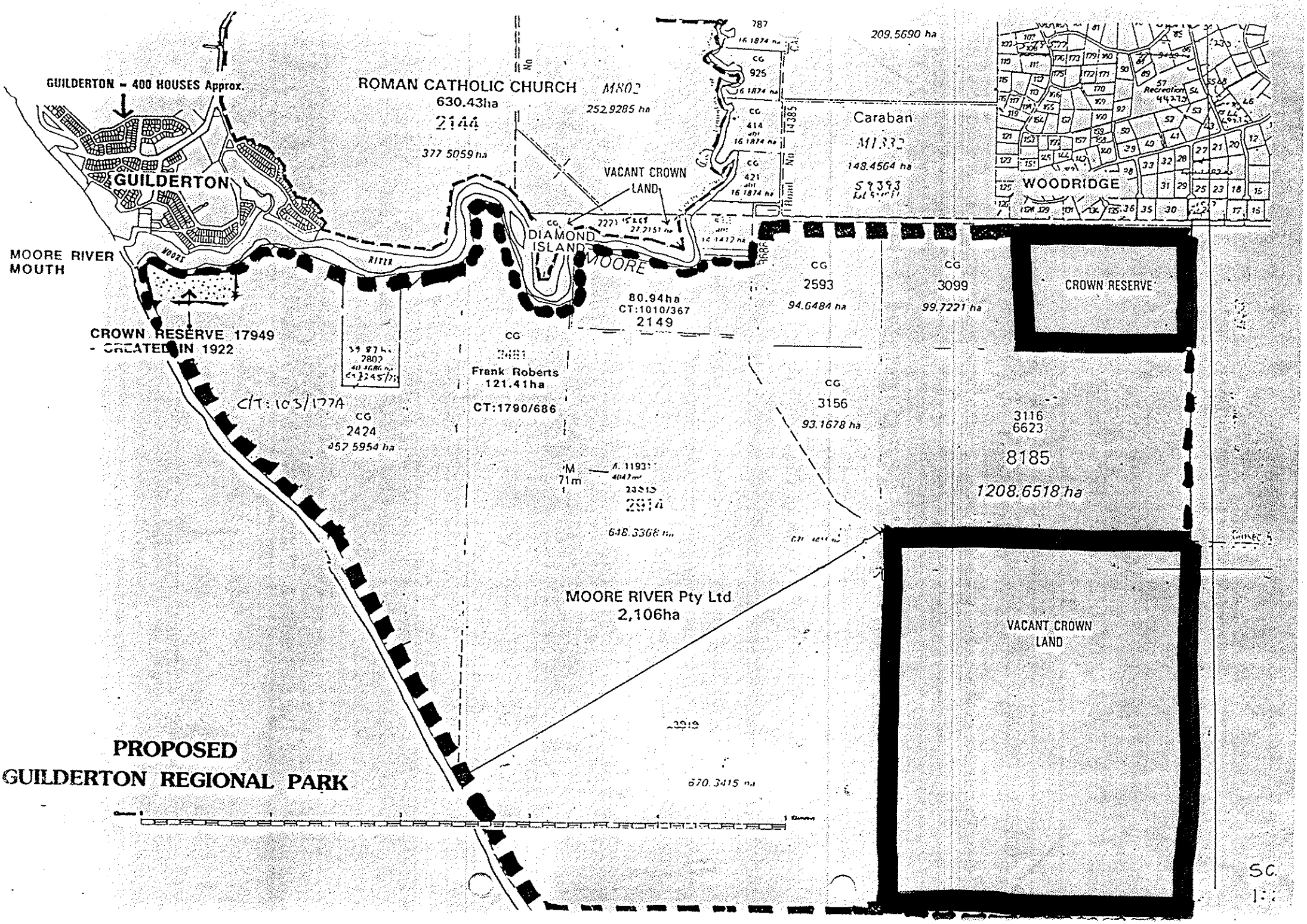
GUILDERTON ~ 400 HOUSES Approx.
GUILDERTON
ROMAN CATHOLIC CHURCH
630.43ha
2144
377 5059 ha
M802
252.9285 ha
209.5690 ha
787
925
414
421
VACANT CROWN LAND
Caraban
M1332
148.4564 ha
WOODRIDGE
Recreation
DIAMOND ISLAND
MOORE RIVER MOUTH
MOORE RIVER
80.94ha
CT:1010/367
2149
CROWN RESERVE
CROWN RESERVE 17949
- CREATED IN 1922
2593
94.6484 ha
3099
99.7221 ha
Frank Roberts
121.41ha
CT:1790/686
CT:103/177A
2424
457 5954 ha
3156
93.1678 ha
3116
6623
8185
1208.6518 ha
2914
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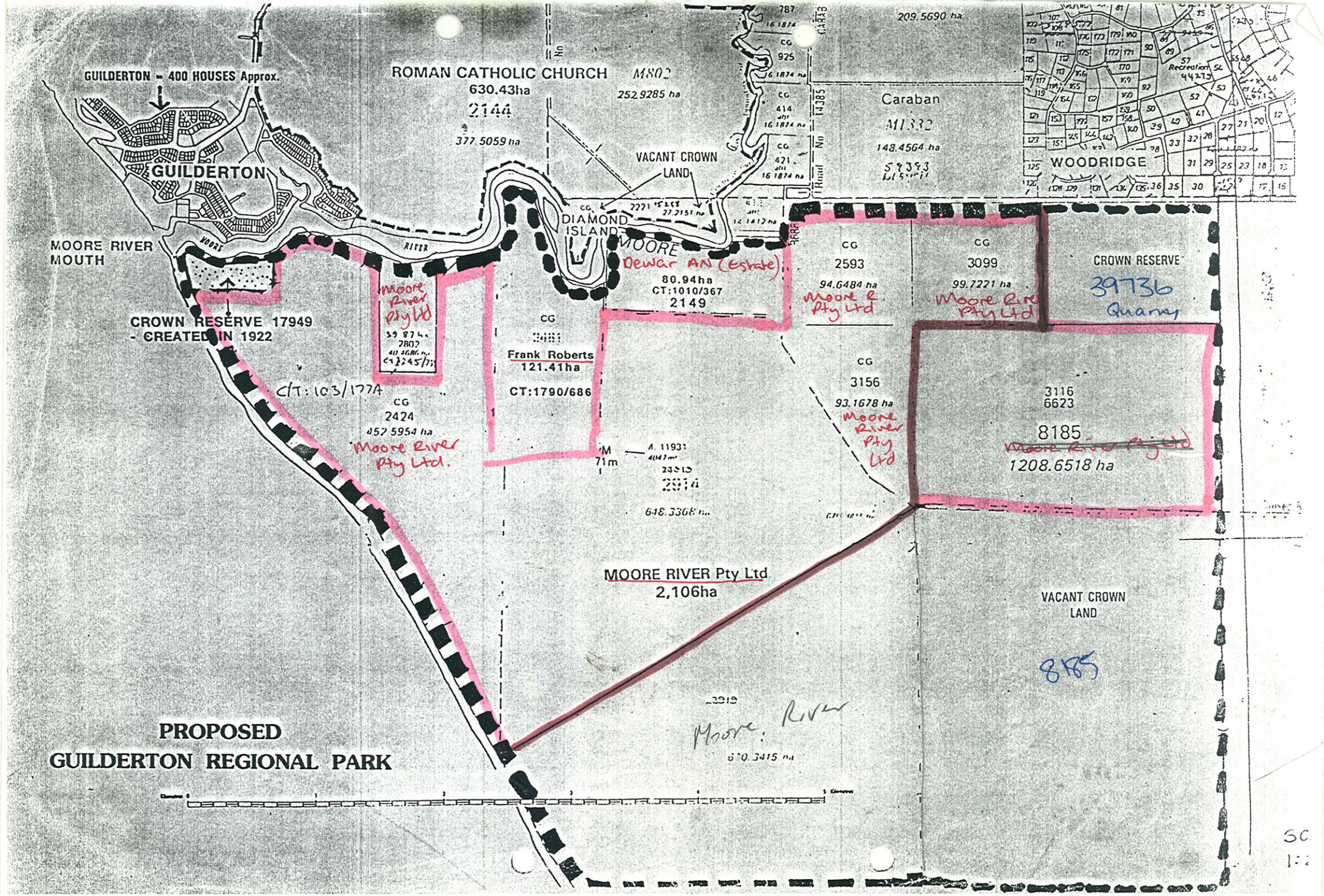
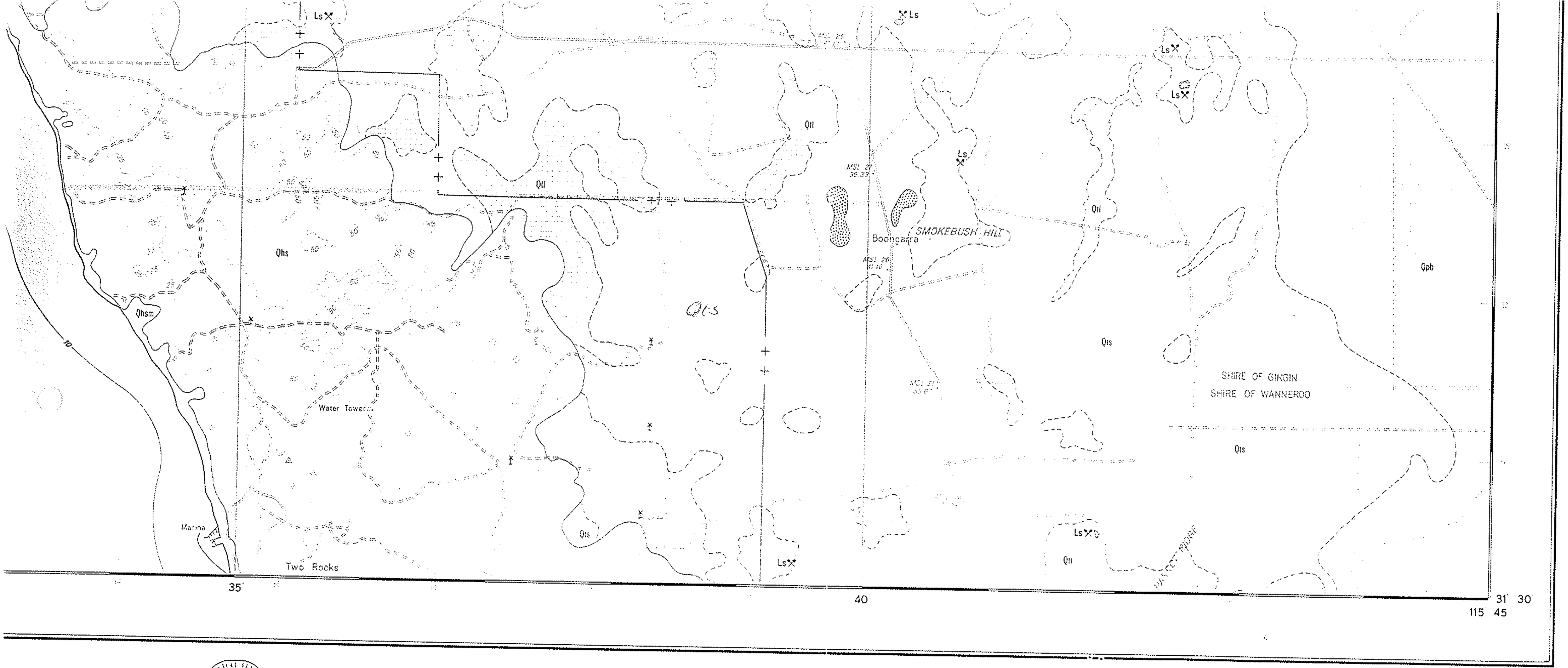
MOORE RIVER Pty Ltd.
2,106ha
VACANT CROWN LAND
PROPOSED
GUILDERTON REGIONAL PARK
670.3415 ha


GUILDERTON – 400 HOUSES Approx.
GUILDERTON
ROMAN CATHOLIC CHURCH
630.43ha
2144
377.5059 ha
M802
252.9285 ha
209.5690 ha
Caraban
M1332
148.4564 ha
57393
VACANT CROWN LAND
DIAMOND ISLAND
MOORE
Dewar AN (Estate)
80.94ha
CT:1010/367
2149
WOODRIDGE
Recreation 44273
MOORE RIVER MOUTH
CROWN RESERVE 17949
- CREATED IN 1922
Moore River Pty Ltd
CG 2424
852.5954 ha
Moore River Pty Ltd.
C/T: 103/177A
CG 2481
Frank Roberts
121.41ha
CT:1790/686
CG 2593
94.6484 ha
Moore R. Pty Ltd
CG 3099
99.7221 ha
Moore River Pty Ltd
CROWN RESERVE
39736
Quarry
CG 3156
93.1678 ha
Moore River Pty Ltd
3116
6623
8185
Moore River Pty Ltd
1208.6518 ha
MOORE RIVER Pty Ltd
2,106ha
VACANT CROWN LAND
8185
Moore River
PROPOSED
GUILDERTON REGIONAL PARK


5107 WA 2812 (C) COASTAL WETLANDS AREA "A" RUN 17 (5001-5112) 1:20000 9.12.89


TWO ROCKS
Yanchep
Yanchep Beach Rd
Pipidinny Rd
Wanneroo
M1
Burns Beach



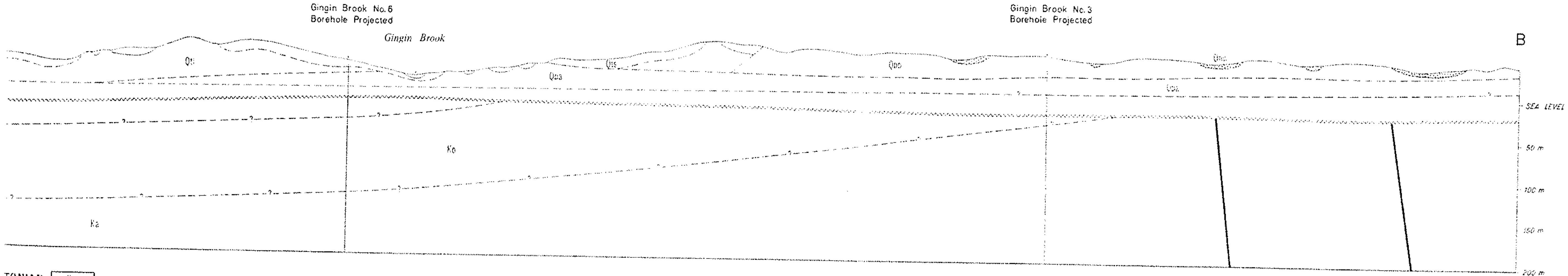
Geology: R. H. Archer, E. R. Biggs, J. P. Rexilius, 1975
Compiled: R. H. Archer

HON. A. MENSAROS, M.L.A.
MINISTER FOR MINES
J. H. LORD, DIRECTOR, GEOLOGICAL SURVEY

DIAGRAMMATIC SECTION

SCALE V/H = 10

SECTION A - B



TONIAN Kup GINGIN CHALK ALBIAN–CENOMANIAN Ko OSBORNE FORMATION NEOCOMIAN–APTIAN

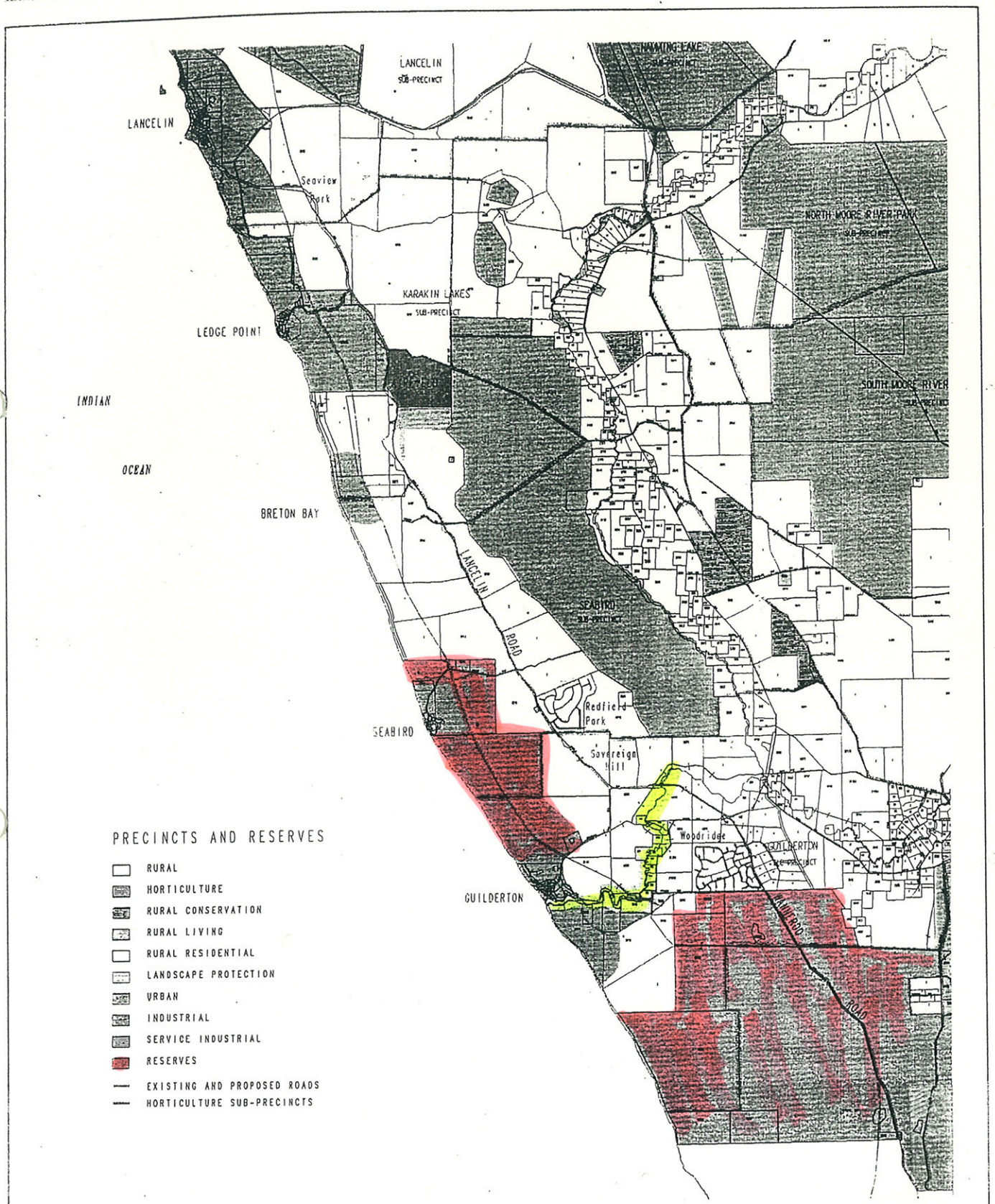
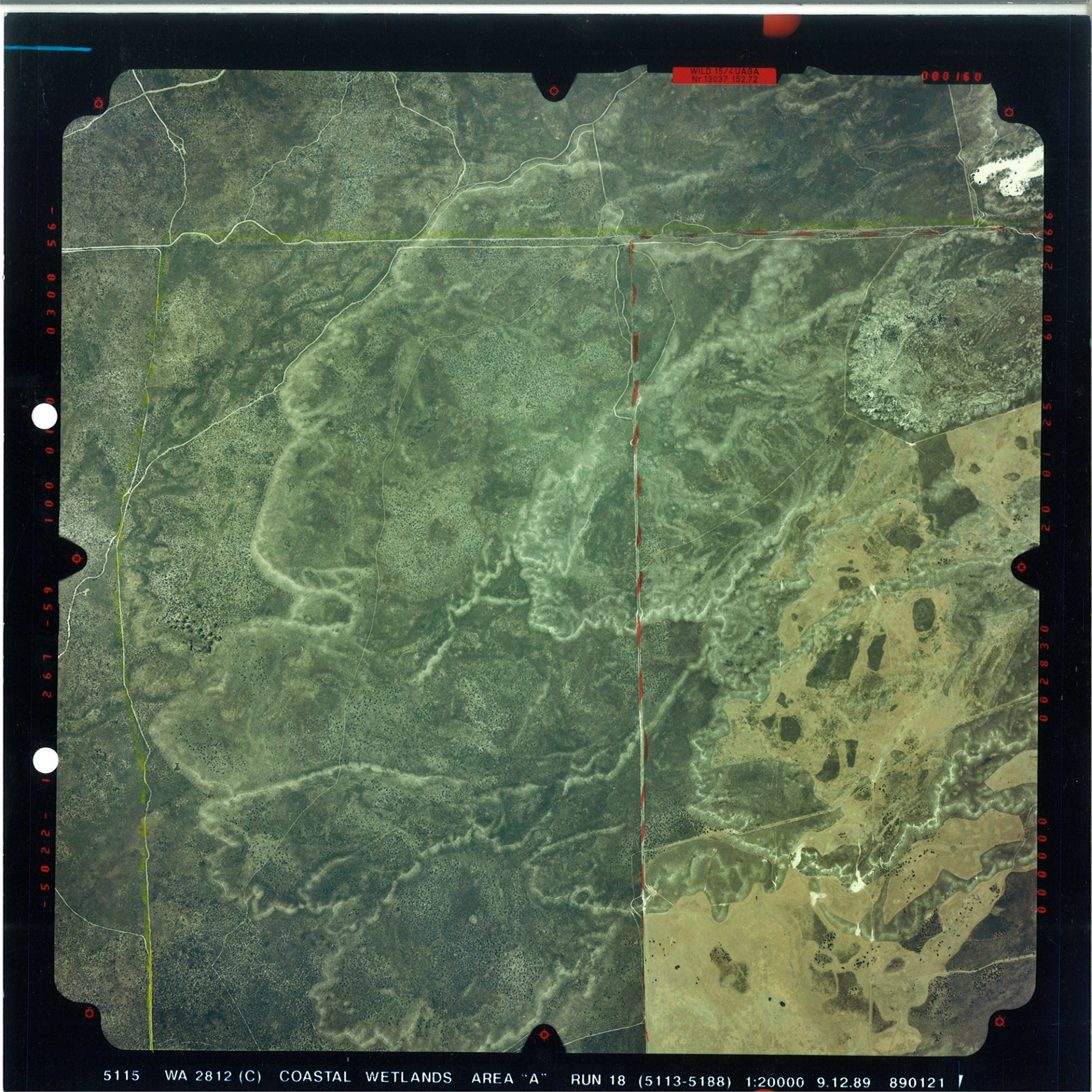


Figure 5

LOCAL RURAL STRATEGY
SHIRE OF GINGIN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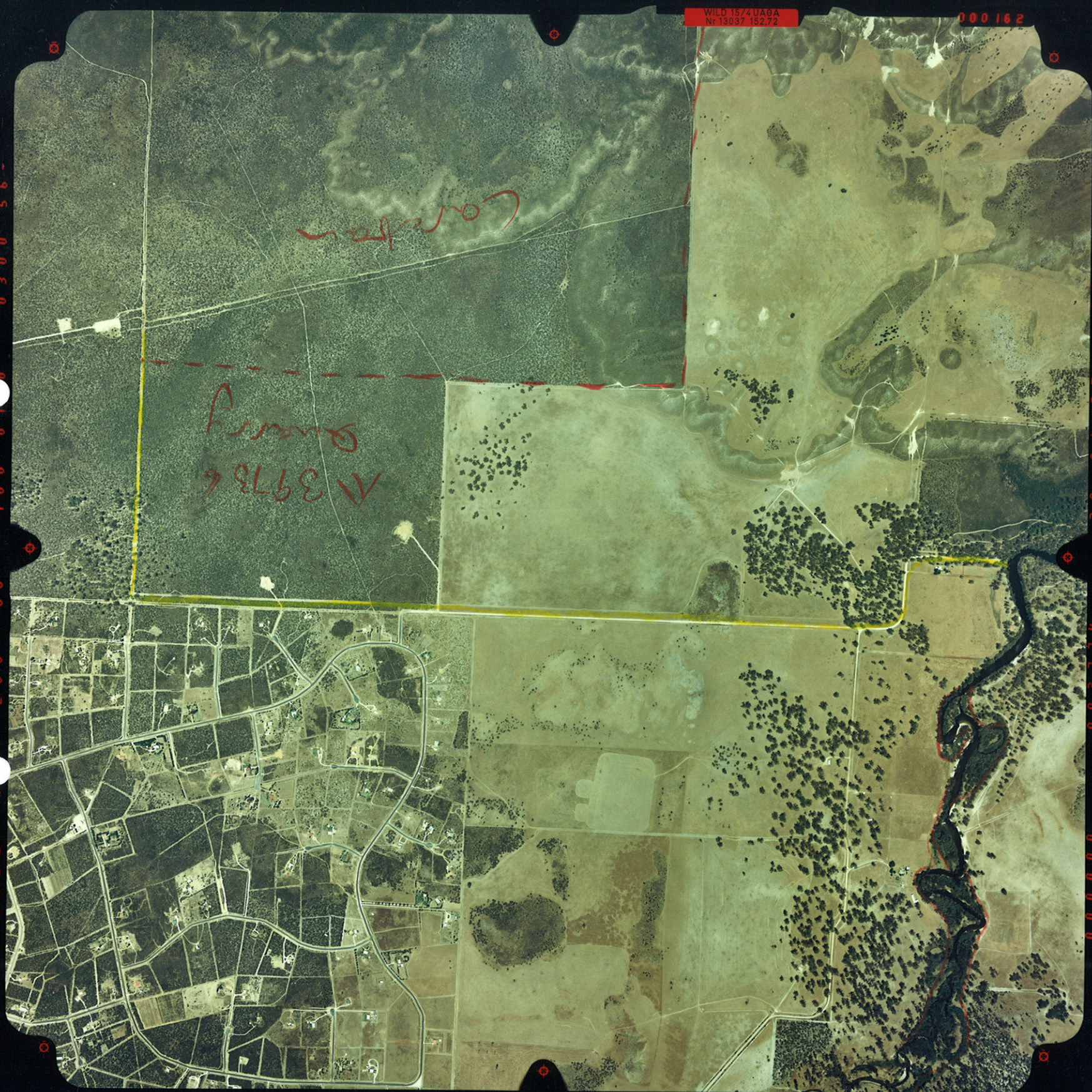

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