VEGETATION MAPPING

OF SOUTH WEST FOREST REGIONS

OF

WESTERN AUSTRALIA

PART 2 – APPENDICES A TO C

Prepared for:

CALMSCIENCE

Department of Conservation and Land Management
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Appendix A

APPENDIX A: VASCULAR PLANT SPECIES RECORDED IN THE SOUTH WEST FOREST REGION

(* - denotes introduced species; R - denotes - Declared Rare Flora , CALM 2000;
P1 to P4 - denotes Priority Flora spcies, CALM 2000)

Family		Species	
SELAGINELLACEAE		*Selaginella*	*gracillima*
SCHIZAEACEAE		*Lygodium*	*flexuosum*
		Schizaea	*fistulosa*
ADIANTACEAE		*Adiantum*	*aethiopicum*
		Cheilanthes	*adiantoides*
		Cheilanthes	*austrotenuifolia*
		Cheilanthes	*distans*
		Cheilanthes	*sieberi*
PTERIDACEAE		*Pteris*	*vittata*
DENNSTAEDTIACEAE		*Pteridium*	*esculentum*
LINDSAEACEAE		*Lindsaea*	*linearis*
ASPLENIACEAE	P4	*Asplenium*	*aethiopicum*
		Asplenium	*flabellifolium*
		Pleurosorus	*rutifolius*
MARSILEACEAE		*Marsilea*	*drummondii*
ZAMIACEAE		*Macrozamia*	*riedlei*
PODOCARPACEAE		*Podocarpus*	*drouynianus*
PINACEAE	*	*Pinus*	*pinaster*
	*	*Pinus*	*radiata*
CUPRESSACEAE		*Actinostrobus*	*arenarius*
		Actinostrobus	*pyramidalis*
TYPHACEAE		*Typha*	*domingensis*
POTAMOGETONACEAE		*Potamogeton*	*?ochreatus*
		Potamogeton	*sulcatus*
		Ruppia	*polycarpa*

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Family		Species	
JUNCAGINACEAE		*Triglochin*	*calcitrapum*
		Triglochin	*centrocarpum*
		Triglochin	*huegelii*
		Triglochin	*lineare*
		Triglochin	*mucronatum*
		Triglochin	*striatum*
POACEAE		*Agrostis*	*avenacea*
		Agrostis	*plebeia*
	*	*Aira*	*caryophyllea*
	*	*Aira*	*cupaniana*
	*	*Aira*	*praecox*
	*	*Ammophila*	*arenaria*
		Amphipogon	*amphipogonoides*
		Amphipogon	*avenaceus*
		Amphipogon	*debilis*
		Amphipogon	*laguroides*
		Amphipogon	*aff.laguroides*
		Amphipogon	*turbinatus*
	*	*Anthoxanthum*	*odoratum*
		Austrodanthonia	*acerosa*
		Austrodanthonia	*caespitosa*
		Austrodanthonia	*occidentalis*
		Austrodanthonia	*pilosa*
		Austrodanthonia	*setacea*
		Austrofestuca	*littoralis*
		Austrostipa	*campylachne*
		Austrostipa	*compressa*
		Austrostipa	*elegantissima*
		Austrostipa	*flavescens*
		Austrostipa	*mollis*
		Austrostipa	*semibarbata*
		Austrostipa	*tenuifolia*
		Austrostipa	*trichophylla*
		Austrostipa	*aff.variablis*
	*	*Avena*	*barbata*
	*	*Avena*	*fatua*

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Family		Species			
POACEAE	*	*Briza*	*maxima*		
(continued)	*	*Briza*	*minor*		
	*	*Bromus*	*diandrus*		
	*	*Bromus*	*hordeaceus*		
	*	*Cynodon*	*dactylon*		
		Deyeuxia	*quadriseta*		
		Deyeuxia	aff. *quadriseta*		
		Dichelachne	*crinita*		
		Diplopogon	*setaceus*		
		Echinopogon	*ovatus*		
	*	*Ehrharta*	*brevifolia*	var.	*cuspidata*
	*	*Ehrharta*	*calycina*		
	*	*Ehrharta*	*longiflora*		
		Hemarthria	*uncinata*	var.	*uncinata*
	*	*Holcus*	*lanatus*		
	*	*Hordeum*	*leporinum*		
	*	*Hordeum*	*marinum*		
	*	*Hordeum*	aff. *marinum*		
	*	*Lagurus*	*ovatus*		
	*	*Lolium*	*perenne*		
	*	*Lolium*	*temulentum*		
		Microlaena	*stipoides*		
		Neurachne	*alopecuroidea*		
		Paraneurachne	*muelleri*		
	*	*Pennisetum*	*clandestinum*		
	*	*Pentaschistis*	*airoides*		
	*	*Phalaris*	*aquatica*		
		Poa	*drummondiana*		
		Poa	*poiformis*		
		Poa	*porphyroclados*		
		Poa	*serpentum*		
	*	*Polypogon*	*monspeliensis*		
		Spartochloa	*scirpoidea*		
		Tetrarrhena	*laevis*		
		Themeda	*triandra*		
		Thyridolepis	*multiculmis*		
	*	*Vulpia*	*bromoides*		

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Family		Species	
POACEAE (continued)	*	*Vulpia*	*myuros*
		Xerochloa	*laniflora*
CYPERACEAE		*Baumea*	*acuta*
		Baumea	*arthrophylla*
		Baumea	*articulata*
		Baumea	*juncea*
		Baumea	*rubiginosa*
		Baumea	*vaginalis*
		Baumea	aff. *vaginalis*
		Baumea	sp.(GWJ5231)
		Carex	*fascicularis*
		Carex	sp.(GWJ5229)
		Caustis	*dioica*
		Chorizandra	*cymbaria*
		Chorizandra	*enodis*
	P3	*Chorizandra*	*multiarticulata*
		Cyathochaeta	*avenacea*
		Cyathochaeta	*clandestina*
	P3	*Cyathochaeta*	*stipoides*
	P3	*Cyathochaeta*	*teretifolia*
	P3	*Cyathochaeta*	*?teretifolia*
	*	*Cyperus*	*congestus*
	*	*Cyperus*	*tenellus*
		Eleocharis	sp.
		Evandra	*aristata*
		Evandra	*pauciflora*
		Gahnia	*ancistrophylla*
		Gahnia	*aristata*
		Gahnia	*decomposita*
		Gahnia	*lanigera*
		Gahnia	*trifida*
		Gymnoschoenus	*anceps*
		Isolepis	*cyperoides*
		Isolepis	*fluitans*
	*	*Isolepis*	*marginata*
		Isolepis	*nodosa*

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Family		Species			
CYPERACEAE	*	*Isolepis*	*prolifera*		
(continued)		*Isolepis*	*setiformis*		
		Lepidosperma	*brunonianum*		
		Lepidosperma	*costale*		
		Lepidosperma	*drummondii*		
		Lepidosperma	*effusum*		
		Lepidosperma	*gladiatum*		
		Lepidosperma	*gracile*		
		Lepidosperma	*leptostachyum*		
		Lepidosperma	*aff.leptostachyum*		
		Lepidosperma	*longitudinale*		
		Lepidosperma	*pruinosum*		
		Lepidosperma	*pubisquameum*		
		Lepidosperma	*resinosum*		
		Lepidosperma	*scabrum*		
		Lepidosperma	*squamatum*		
		Lepidosperma	*striatum*		
		Lepidosperma	*tenue*		
		Lepidosperma	aff. *tenue*		
		Lepidosperma	aff. *tenue* (GWJ5258)		
		Lepidosperma	*tetraquetrum*		
		Lepidosperma	*tuberculatum*		
		Lepidosperma	*viscidum*		
		Lepidosperma	aff. *viscidum*		
		Lepidosperma	sp.(GWJ5257)		
		Mesomelaena	*graciliceps*		
		Mesomelaena	*pseudostygia*		
		Mesomelaena	*stygia*		
		Mesomelaena	*stygia*	subsp.	*stygia*
		Mesomelaena	tetragona		
	P4	*Reedia*	*spathacea*		
		Schoenus	*acuminatus*		
		Schoenus	*armeria*		
		Schoenus	*asperocarpus*		
		Schoenus	*bifidus*		
		Schoenus	*brevisetis*		
		Schoenus	aff. *brevisetis*		

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CYPERACEAE		*Schoenus*	*caespititius*		
(continued)	P2	*Schoenus*	*capillifolius*		
		Schoenus	*clandestinus*		
		Schoenus	*cruentus*		
		Schoenus	*curvifolius*		
		Schoenus	*efoliatus*		
		Schoenus	*grandiflorus*		
		Schoenus	*lanatus*		
		Schoenus	*minutulus*		
		Schoenus	*nanus*		
		Schoenus	*nitens*		
		Schoenus	*pleiostemoneus*		
		Schoenus	*subaphyllus*		
		Schoenus	*subbarbatus*		
		Schoenus	*subbulbosus*		
		Schoenus	*subfascicularis*		
		Schoenus	*aff.subfascicularis*		
		Schoenus	*subflavus*		
		Schoenus	*sublateralis*		
		Schoenus	*sublaxus*		
		Schoenus	sp.(GWJ5244)		
		Tetraria	*capillaris*		
		Tetraria	*octandra*		
		Tricostularia	*compressa*		
		Tricostularia	*neesii*		
		Tricostularia	*neesii*	var.	*neesii*
ARACEAE	*	Zantedeschia	aethiopica		
RESTIONACEAE	P2	*Alexgeorgea*	*ganopoda*		
		Alexgeorgea	*nitens*		
		Anarthria	*gracilis*		
		Anarthria	*laevis*		
		Anarthria	*prolifera*		
		Anarthria	*scabra*		
		Anarthria	*spp.*		
		Chaetanthus	*aristatus*		

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RESTIONACEAE (continued)		*Chaetanthus*	*leptocarpoides*
		Chaetanthus	*tenellus*
	P3	*Chordifex*	*gracilior*
		Chordifex	*laxus*
		Chordifex	*sinuosus*
		Desmocladus	*fasciculatus*
		Desmocladus	*flexuosus*
		Desmocladus	*lateriticus*
		Empodisma	*gracillimum*
	P3	*Harperia*	*confertospicata*
		Harperia	*lateriflora*
		Hypolaena	*exsulca*
		Hypolaena	*fastigiata*
		Leptocarpus	*diffusus*
		Leptocarpus	*elegans*
		Lepidobolus	*preissianus*
		Leptocarpus	*tenax*
		Leptocarpus	aff. *tenax*
		Leptocarpus	sp.(GWJ5249)
		Lepyrodia	*drummondiana*
		Lepyrodia	*glauca*
		Lepyrodia	*hermaphrodita*
		Lepyrodia	*monoica*
		Lepyrodia	*muirii*
		Lepyrodia	*riparia*
		Loxocarya	*cinerea*
		Loxocarya	*striata*
		Loxocarya	sp. nov (GWJ3619)
		Lyginia	*barbata*
		Meeboldina	*cana*
		Meeboldina	*coangustata*
	P3	*Meeboldina*	*crassipes*
		Meeboldina	*crebriculmis*
		Meeboldina	*denmarkica*
		Meeboldina	*kraussii*
		Meeboldina	*roycei*
		Meeboldina	*scariosa*

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RESTIONACEAE		*Meeboldina*	*tephrina*		
(continued)		*Melanostachya*	*ustulata*		
		Platychorda	*applanata*		
	P3	*Sporadanthus*	*rivularis*		
		Sporadanthus	*strictus*		
		Stenotalis	*ramosissima*		
		Taraxis	*grossa*		
		Tremulina	*cracens*		
		Tremulina	*tremula*		
	P4	*Tyrbastes*	*glaucescens*		
CENTROLEPIDACEAE		*Aphelia*	*brizula*		
		Aphelia	*cyperoides*		
		Centrolepis	*aristata*		
		Centrolepis	*cephaloformis*	subsp.	*cephaloformis*
XYRIDACEAE		*Xyris*	*fimbriata*		
		Xyris	*flexifolia*		
		Xyris	*lacera*		
		Xyris	*lanata*		
		Xyris	*roycei*		
COMMELINACEAE		*Cartonema*	*philydroides*		
PHILYDRACEAE		*Philydrella*	*pygmaea*		
JUNCACEAE	*	*Juncus*	*acutus*		
		Juncus	*amabilis*		
		Juncus	*aridicola*		
	*	*Juncus*	*bufonius*		
		Juncus	*gregiflorus*		
		Juncus	*holoschoenus*		
		Juncus	*kraussii*		
		Juncus	*kraussii*	subsp.	*australiensis*
	*	*Juncus*	*microcephalus*		
	*	*Juncus*	*oxycarpus*		
		Juncus	*pallidus*		

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Family		Species			
JUNCACEAE (Continued)		*Juncus*	*pauciflorus*		
		Juncus	*planifolius*		
		Juncus	*subsecundus*		
		Luzula	*meridionalis*		
ASPARAGACEAE	*	*Asparagus*	*asparagoides*		
DASYPOGONACEAE		*Acanthocarpus*	*preissii*		
		Baxteria	*australis*		
		Calectasia	*grandiflora*		
		Chamaexeros	*serra*		
		Chamaexeros	sp. nov		
		Dasypogon	*bromeliifolius*		
		Dasypogon	*hookeri*		
		Kingia	*australis*		
		Lomandra	*brittanii*		
		Lomandra	*caespitosa*		
		Lomandra	*collina*		
		Lomandra	*drummondii*		
		Lomandra	*effusa*		
		Lomandra	*hermaphrodita*		
		Lomandra	*integra*		
		Lomandra	*micrantha*		
		Lomandra	*micrantha*	subsp.	*micrantha*
		Lomandra	*nigricans*		
		Lomandra	*nutans*		
		Lomandra	*odora*		
	P3	*Lomandra*	*ordii*		
		Lomandra	*pauciflora*		
		Lomandra	*preissii*		
		Lomandra	*purpurea*		
		Lomandra	*sericea*		
		Lomandra	*sonderi*		
		Lomandra	*spartea*		
		Lomandra	*suaveolens*		

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XANTHORRHOEACEAE		*Xanthorrhoea*	*brunonis*	
		Xanthorrhoea	*brunonis*	subsp. *brunonis*
		Xanthorrhoea	*drummondii*	
		Xanthorrhoea	*gracilis*	
		Xanthorrhoea	*platyphylla*	
		Xanthorrhoea	*preissii*	
PHORMIACEAE		*Dianella*	*brevicaulis*	
		Dianella	*revoluta*	
		Dianella	*revoluta*	var. *divaricata*
		Stypandra	*glauca*	
ANTHERICACEAE		*Agrostocrinum*	*scabrum*	
		Arnocrinum	*preissii*	
		Caesia	*micrantha*	
		Caesia	*occidentalis*	
		Chamaescilla	*corymbosa*	
		Chamaescilla	*corymbosa*	var. *latifolia*
		Corynotheca	*micrantha*	
		Corynotheca	*micrantha*	var. *panda*
		Dichopogon	*capillipes*	
		Dichopogon	*preissii*	
		Johnsonia	*acaulis*	
	P1	*Johnsonia*	*inconspicua*	
		Johnsonia	*lupulina*	
		Johnsonia	*pubescens*	
	R	*Laxmannia*	*jamesii*	
		Laxmannia	*minor*	
		Laxmannia	*ramosa*	
		Laxmannia	*sessiliflora*	
		Laxmannia	*sessiliflora*	subsp. *australis*
		Laxmannia	*squarrosa*	
		Sowerbaea	*laxiflora*	
	P3	*Thysanotus*	*anceps*	
		Thysanotus	*arenarius*	
		Thysanotus	*dichotomus*	
		Thysanotus	*fastigiatus*	

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Family		Species			
ANTHERICACEAE		*Thysanotus*	*gracilis*		
(continued)		*Thysanotus*	*manglesianus*		
		Thysanotus	*multiflorus*		
		Thysanotus	*patersonii*		
		Thysanotus	*pauciflorus*		
		Thysanotus	*sparteus*		
		Thysanotus	*tenellus*		
		Thysanotus	*thyrsoideus*		
		Thysanotus	*triandrus*		
		Tricoryne	*elatior*		
		Tricoryne	*humilis*		
		Tricoryne	sp. (GWJ2561)		
ASPHODELACEAE	*	*Asphodelus*	*fistulosus*		
		Bulbine	*semibarbata*		
COCHICACEAE		*Burchardia*	*monantha*		
		Burchardia	*multiflora*		
		Burchardia	*umbellata*		
		Wurmbea	*dioica*		
		Wurmbea	*dioica*	subsp.	*alba*
		Wurmbea	*monantha*		
		Wurmbea	*pygmaea*		
BORYACEAE		*Borya*	*constricta*		
	P2	*Borya*	*longiscapa*		
		Borya	*nitida*		
		Borya	*scirpoidea*		
		Borya	*sphaerocephala*		
HAEMODORACEAE		*Anigozanthos*	*bicolor*		
		Anigozanthos	*flavidus*		
		Anigozanthos	*humilis*		
		Anigozanthos	*manglesii*		
		Anigozanthos	*viridis*		
		Conostylis	*aculeata*		
		Conostylis	*aculeata*	subsp.	*aculeata*

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HAEMODORACEAE (continued)		*Conostylis*	*aculeata*	subsp. *preissii*
		Conostylis	*androstemma*	
		Conostylis	*aurea*	
		Conostylis	*caricina*	
		Conostylis	*pauciflora*	
		Conostylis	*phathyrantha*	
		Conostylis	*pusilla*	
		Conostylis	*serrulata*	
		Conostylis	*setigera*	
		Conostylis	*setigera*	subsp. *setigera*
		Conostylis	*setosa*	
		Conostylis	*stylidioides*	
		Conostylis	*teretifolia*	subsp. *planescens*
		Haemodorum	*discolor*	
		Haemodorum	*laxum*	
		Haemodorum	*paniculatum*	
		Haemodorum	*simplex*	
		Haemodorum	*sparsiflorum*	
		Haemodorum	*spicatum*	
		Phlebocarya	*ciliata*	
		Phlebocarya	*filifolia*	
		Tribonanthes	*australis*	
		Tribonanthes	*longipetala*	
HYPOXIDACEAE		*Hypoxis*	*glabella*	
		Hypoxis	*occidentalis*	var. *quadriloba*
DIOSCOREACEAE		*Dioscorea*	*hastifolia*	
IRIDACEAE		*Freesia*	*aff.leichtlinii*	
	*	*Gladiolus*	*undulatus*	
	*	*Moraea*	*flaccida*	
		Orthrosanthus	*laxus*	
		Orthrosanthus	*laxus*	var. *gramineus*
		Orthrosanthus	*laxus*	var. *laxus*
		Orthrosanthus	*polystachyus*	
		Patersonia	*babianoides*	

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IRIDACEAE		*Patersonia*	*juncea*		
(Continued)		*Patersonia*	*occidentalis*		
		Patersonia	*pygmaea*		
		Patersonia	*rudis*		
		Patersonia	*umbrosa*		
		Patersonia	*umbrosa*	var.	*dentata*
		Patersonia	*umbrosa*	var.	*umbrosa*
		Patersonia	*umbrosa*	var.	*xanthina*
	*	*Romulea*	*rosea*		
	*	*Watsonia*	*meriana*	var.	*bulbillifera*
ORCHIDACEAE		*Caladenia*	*attingens*	subsp.	*attingens*
		Caladenia	*corynephora*		
		Caladenia	*discoidea*		
		Caladenia	*falcata*		
		Caladenia	*flava*		
		Caladenia	*hirta*		
	R	*Caladenia*	*huegelii*		
	P4	*Caladenia*	*interjacens*		
		Caladenia	*latifolia*		
		Caladenia	*longicauda*	subsp.	*longicauda*
		Caladenia	*marginata*		
		Caladenia	*microchila*		
		Caladenia	*nana*		
		Caladenia	*pectinata*		
		Corybas	aff. *diemenicus* (GWJ2567)		
		Cryptostylis	*ovata*		
		Cyanicula	*sericea*		
		Cyrtostylis	*huegelii*		
		Cyrtostylis	*robusta*		
		Diuris	*laevis*		
		Diuris	*laxiflora*		
		Diuris	*longifolia*		
		Diuris	*pauciflora*		
	R	*Drakaea*	*elastica*		
		Drakaea	*glyptodon*		
		Elythranthera	*brunonis*		

APPENDIX A: VASCULAR PLANT SPECIES RECORDED IN THE SOUTH WEST FOREST REGION

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Family		Species		
ORCHIDACEAE (continued)		*Elythranthera*	*emarginata*	
		Eriochilus	*dilatatus*	
		Eriochilus	*dilatatus*	subsp. (GWJ3776)
		Eriochilus	*scaber*	
		Gastrodia	*lacista*	
		Leporella	*fimbriata*	
		Leptoceras	*menziesii*	
		Lyperanthus	*serratus*	
		Microtis	*alba*	
		Microtis	*brownii*	
		Microtis	*media*	
		Microtis	*media*	subsp. media
	*	*Monadenia*	*bracteata*	
		Paracaleana	*nigrita*	
		Praecoxanthus	*aphyllus*	
		Prasophyllum	*brownii*	
		Prasophyllum	*drummondii*	
		Prasophyllum	*elatum*	
		Prasophyllum	*fimbria*	
		Prasophyllum	*gibbosum*	
		Prasophyllum	*hians*	
		Prasophyllum	*macrostachyum*	
		Prasophyllum	*odoratissimum*	
		Prasophyllum	*parvifolium*	
		Prasophyllum	*regium*	
		Pterostylis	*barbata*	
		Pterostylis	aff. *nana*	
		Pterostylis	*pyramidalis*	
		Pterostylis	*recurva*	
		Pterostylis	*scabra*	
		Pterostylis	*vittata*	
		Pterostylis	*vittata*	var. *vittata*
		Pyrorchis	*forrestii*	
		Pyrorchis	*nigricans*	
		Thelymitra	*antennifera*	
		Thelymitra	*benthamiana*	
		Thelymitra	*crinita*	

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Family		Species			
ORCHIDACEAE (continued)		*Thelymitra*	*fuscolutea*	var.	*fuscolutea*
		Thelymitra	*graminea*		
		Thelymitra	*macrophylla*		
		Theylmitra	*?tigrina*		
CASUARINACEAE		Allocasuarina	acuaria		
		Allocasuarina	*campestris*		
		Allocasuarina	*decussata*		
		Allocasuarina	*fraseriana*		
		Allocasuarina	*huegeliana*		
		Allocasuarina	*humilis*		
		Allocasuarina	*microstachya*		
		Allocasuarina	*thuyoides*		
		Allocasuarina	*trichodon*		
		Casuarina	*obesa*		
URTICACEAE		*Parietaria*	*debilis*		
PROTEACEAE		*Acidonia*	*microcarpa*		
		Adenanthos	*barbiger*		
		Adenanthos	*barbiger*	subsp.	*barbiger*
		Adenanthos	*cuneatus*		
		Adenanthos	*x cunninghamii*		
		Adenanthos	*cygnorum*		
	P4	*Adenanthos*	*detmoldii*		
		Adenanthos	*meisneri*		
		Adenanthos	*obovatus*		
		Banksia	*attenuata*		
		Banksia	*coccinea*		
		Banksia	*gardneri*	var.	*gardneri*
		Banksia	*gardneri*	var.	*brevidentata*
	R	*Banksia*	*goodii*		
		Banksia	*grandis*		
		Banksia	*ilicifolia*		
		Banksia	*lemanniana*		
		Banksia	*lindleyana*		
		Banksia	*littoralis*		

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Family		Species			
PROTEACEAE (continued)		*Banksia*	*menziesii*		
		Banksia	*nutans*		
		Banksia	*occidentalis*		
		Banksia	*prionotes*		
		Banksia	*quercifolia*		
		Banksia	*repens*		
		Banksia	*seminuda*		
		Banksia	*sphaerocarpa*		
	R	*Banksia*	*verticillata*		
		Conospermum	*acerosum*	subsp.	*acerosum*
		Conospermum	*amoenum*		
		Conospermum	*caeruleum*		
		Conospermum	*caeruleum*	subsp.	*marginatum*
		Conospermum	*caeruleum*	subsp.	*caeruleum*
		Conospermum	*caeruleum*	subsp.	*spathulatum*
		Conospermum	*capitatum*		
		Conospermum	*capitatum*	subsp.	*glabratum*
		Conospermum	*capitatum*	subsp.	*capitatum*
		Conospermum	*flexuosum*		
		Conospermum	*flexuosum*	subsp.	*laevigatum*
		Conospermum	*huegelii*		
	P3	*Conospermum*	*paniculatum*		
	P3	*Conospermum*	*scaposum*		
		Conospermum	*stoechadis*		
		Conospermum	*teretifolium*		
		Conospermum	*triplinervium*		
		Dryandra	*armata*		
		Dryandra	*armata*	var.	*armata*
		Dryandra	*bipinnatifida*		
		Dryandra	*carlinoides*		
		Dryandra	*formosa*		
		Dryandra	*fraseri*		
		Dryandra	*fraseri*	?subsp.	fraseri
		Dryandra	*lindleyana*		
		Dryandra	*lindleyana*	subsp.	sylvestris
		Dryandra	*lindleyana*	var.	lindleyana
		Dryandra	*nivea*	subsp.	nivea

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Family		Species		
PROTEACEAE		*Dryandra*	*nobilis*	
(continued)	P4	*Dryandra*	*polycephala*	
		Dryandra	*porrecta*	
		Dryandra	*praemorsa*	
	P4	*Dryandra*	*preissii*	
		Dryandra	*pteridifolia*	
	P4	*Dryandra*	*serra*	
		Dryandra	*sessilis*	
		Dryandra	*sessilis*	var. *sessilis*
		Dryandra	*squarrosa*	subsp. *squarrosa*
		Franklandia	*fucifolia*	
	P4	*Franklandia*	*triaristata*	
		Grevillea	*bipinnatifida*	
		Grevillea	*brachystylis*	
		Grevillea	*bronwenae*	
		Grevillea	*centristigma*	
	P4	*Grevillea*	*cirsiifolia*	
	P3	*Grevillea*	*costata*	
		Grevillea	*depauperata*	
		Grevillea	*diversifolia*	
		Grevillea	*diversifolia*	subsp. subtersericata
		Grevillea	*diversifolia*	subsp. diversifolia
	P4	*Grevillea*	*drummondii*	
		Grevillea	*endlicheriana*	
	P2	*Grevillea*	*fuscolutea*	
		Grevillea	*hookeriana*	
		Grevillea	*insignis*	
		Grevillea	*leptobotrys*	
		Grevillea	*manglesii*	
		Grevillea	*manglesii*	subsp. *manglesii*
		Grevillea	*manglesioides*	subsp. *manglesioides*
		Grevillea	*manglesioides*	
		Grevillea	*monticola*	
		Grevillea	*occidentalis*	
	P3	*Grevillea*	*papillosa*	
		Grevillea	*pilulifera*	
	P4	*Grevillea*	*pimeleoides*	

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Family		Species		
PROTEACEAE		*Grevillea*	*pulchella*	
(continued)		*Grevillea*	*pulchella*	subsp. *ascendens*
		Grevillea	*quercifolia*	
		Grevillea	*synapheae*	
		Grevillea	*tenuiflora*	
		Grevillea	*trifida*	
	P3	*Grevillea*	*triloba*	
		Grevillea	*umbellulata*	subsp. *acerosa*
		Grevillea	*vestita*	
		Grevillea	*wilsonii*	
	R	*Hakea*	*aculeata*	
		Hakea	*adnata*	
		Hakea	*ambigua*	
		Hakea	*amplexicaulis*	
		Hakea	*ceratophylla*	
		Hakea	*ceratophylla*	subsp. *ceratophylla*
		Hakea	*ceratophylla*	subsp. *linearis*
		Hakea	*corymbosa*	
		Hakea	*costata*	
		Hakea	*cristata*	
		Hakea	*cucullata*	
		Hakea	*cyclocarpa*	
		Hakea	*elliptica*	
		Hakea	*erinacea*	
		Hakea	*falcata*	
		Hakea	*ferruginea*	
		Hakea	*florida*	
		Hakea	*horrida*	
		Hakea	*incrassata*	
		Hakea	*lasiantha*	
		Hakea	*lasianthoides*	
	P3	*Hakea*	*lasiocarpha*	
		Hakea	*linearis*	
		Hakea	*lissocarpha*	
		Hakea	*marginata*	
		Hakea	*nitida*	
		Hakea	*oleifolia*	

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Family		Species		
PROTEACEAE		*Hakea*	*petiolaris*	
(continued)		*Hakea*	*preissii*	
		Hakea	*prostrata*	
		Hakea	*ruscifolia*	
		Hakea	*stenocarpa*	
		Hakea	*sulcata*	
		Hakea	*trifurcata*	
	P2	*Hakea*	*tuberculata*	
		Hakea	*undulata*	
		Hakea	*varia*	
		Isopogon	*asper*	
		Isopogon	*attenuatus*	
		Isopogon	*axillaris*	
		Isopogon	*buxifolius*	
		Isopogon	*buxifolius*	var. *spathulatus*
		Isopogon	*cuneatus*	
		Isopogon	*dubius*	
		Isopogon	*formosus*	
		Isopogon	*formosus*	subsp. *formosus*
	P3	*Isopogon*	*latifolius*	
		Isopogon	*longifolius*	
		Isopogon	*sphaerocephalus*	
		Isopogon	teretifolius	
		Isopogon	*teretifolius*	subsp. *teretifolius*
		Lambertia	*echinata*	
		Lambertia	*multiflora*	
		Lambertia	*uniflora*	
		Persoonia	*aff.acicularis*	
		Persoonia	*angustiflora*	
		Persoonia	*elliptica*	
		Persoonia	*graminea*	
		Persoonia	*longifolia*	
		Persoonia	*quinquenervis*	
		Persoonia	*saccata*	
		Persoonia	*striata*	
		Petrophile	*acicularis*	
		Petrophile	*biloba*	

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Family		Species		
PROTEACEAE (continued)		*Petrophile brevifolia*		
		Petrophile divaricata		
		Petrophile diversifolia		
		Petrophile drummondii		
		Petrophile ericifolia		
		Petrophile heterophylla		
		Petrophile linearis		
		Petrophile longifolia		
		Petrophile media		
		Petrophile rigida		
		Petrophile scabriuscula		
		Petrophile seminuda		
		Petrophile serruriae		
		Petrophile squamata		
		Petrophile squamata	subsp.	"A"
		Petrophile squamata	subsp.	"B"
		Petrophile striata		
		Petrophile teretifolia		
		Stirlingia latifolia		
		Stirlingia seselifolia		
		Stirlingia simplex		
		Stirlingia tenuifolia		
		Strangea stenocarpoides		
		Synaphea damopsis		
		Synaphea favosa		
		Synaphea floribunda		
		Synaphea gracillima		
		Synaphea obtusata		
		Synaphea petiolaris		
	P2	*Synaphea petiolaris*	subsp.	*simplex*
		Synaphea petiolaris	subsp.	*petiolaris*
		Synaphea polymorpha		
	P3	*Synaphea preissii*		
		Synaphea reticulata		
		Synaphea spinulosa	subsp.	*spinulosa*
	P3	*Synaphea whicherensis*		
		Xylomelum occidentale		

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Family		Species			
SANTALACEAE		*Exocarpos*	*odoratus*		
		Exocarpos	*sparteus*		
		Leptomeria	*cunninghamii*		
		Leptomeria	*empetriformis*		
		Leptomeria	*lehmannii*		
		Leptomeria	*odorata*		
		Leptomeria	*pauciflora*		
		Leptomeria	*scrobiculata*		
		Leptomeria	*squarrulosa*		
		Santalum	*acuminatum*		
		Santalum	*lanceolatum*		
		Santalum	*spicatum*		
OLACACEAE		*Olax*	*benthamiana*		
		Olax	*phyllanthi*		
LORANTHACEAE		*Amyema*	*miquelii*		
		Nuytsia	*floribunda*		
POLYGALACEAE	*	*Acetosella*	*vulgaris*		
		Muehlenbeckia	*adpressa*		
	*	*Rumex*	*pulcher*	subsp.	*pulcher*
CHENOPODIACEAE	*	*Atriplex*	*prostrata*		
	*	*Chenopodium*	*album*		
	*	*Chenopodium*	*glaucum*		
		Halosarcia	*indica*	subsp.	*bidens*
		Halosarcia	*pergranulata*		
		Rhagodia	*baccata*		
		Rhagodia	*baccata*	subsp.	*baccata*
		Sarcocornia	*blackiana*		
		Sarcocornia	*quinqueflora*		
		Sclerostegia	*tenuis*		
		Threlkeldia	*diffusa*		

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Family		Species			
AMARANTHACEAE		*Alternanthera*	*nodiflora*		
		Gomphrena	*sordida*		
		Ptilotus	*declinatus*		
		Ptilotus	*drummondii*		
		Ptilotus	*manglesii*		
	P2	*Ptilotus*	*marduguru*		
		Ptilotus	*polystachyus*		
		Ptilotus	*stirlingii*		
		Ptilotus	*stirlingii*	var.	*laxus*
		Ptilotus	sp.(SC13)		
GYROSTEMONACEAE		*Gyrostemon*	*sheathii*		
PHYTOLACCACEAE	*	*Phytolacca*	*octandra*		
AIZOACEAE	*	*Carpobrotus*	*aequilaterus*		
	*	*Carpobrotus*	*edulis*		
		Carpobrotus	*modestus*		
		Carpobrotus	*virescens*		
MOLLUGINACEAE		*Macarthuria*	*keigheryi*		
PORTULACEAE		*Calandrinia*	*brevipedata*		
		Calandrinia	*calyptrata*		
		Calandrinia	*lehmannii*		
CARYOPHYLLACEAE	*	*Petrorhagia*	*velutina*		
		Polycarpaea	*longiflora*		
RANUNCULACEAE		*Clematis*	*linearifolia*		
		Clematis	*pubescens*		
		Ranunculus	*colonorum*		

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Family		Species			
LAURACEAE		*Cassytha*	*flava*		
		Cassytha	*glabella*		
		Cassytha	*melantha*		
		Cassytha	*micrantha*		
		Cassytha	*pomiformis*		
		Cassytha	*racemosa*		
		Cassytha	*racemosa*	forma	*pilosa*
		Cassytha	*racemosa*	forma	*racemosa*
BRASSICACEAE	*	*Brassica*	*rapa*		
	*	*Cakile*	*maritima*		
		Stenopetalum	*robustum*		
DROSERACEAE		*Drosera*	*bulbosa*		
		Drosera	*enodes*		
		Drosera	*erythrogyne*		
		Drosera	*erythrorhiza*		
		Drosera	*gigantea*		
		Drosera	*glanduligera*		
		Drosera	*hamiltonii*		
		Drosera	*huegelii*		
		Drosera	*leucoblasta*		
		Drosera	*macrantha*		
		Drosera	*macrantha*	subsp.	*macrantha*
		Drosera	*menziesii*		
		Drosera	*myriantha*		
		Drosera	*neesii*		
		Drosera	*pallida*		
		Drosera	*platystigma*		
		Drosera	*pulchella*		
		Drosera	*pygmaea*		
		Drosera	*stelliflora*		
		Drosera	*stolonifera*		
		Drosera	*stolonifera*	subsp.	*stolonifera*
		Drosera	*stricticaulis*		

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Family		Species			
CRASSULACEAE		*Crassula*	*colorata*		
		Crassula	*decumbens*	var.	*decumbens*
		Crassula	*exserta*		
	*	*Crassula*	*natans*		
CEPHALOTACEAE		*Cephalotus*	*follicularis*		
EREMOSYNACEAE		*Eremosyne*	*pectinata*		
PITTOSPORACEAE		*Billardiera*	*bicolor*		
		Billardiera	*bicolor*	var.	*bicolor*
		Billardiera	*coriacea*		
		Billardiera	*drummondiana*		
		Billardiera	*drummondiana*	var.	*collina*
		Billardiera	*floribunda*		
		Billardiera	*laxiflora*		
		Billardiera	*variifolia*		
		Cheiranthera	*preissiana*		
		Marianthus	*candidus*		
		Marianthus	*coeruleo-punctatus*		
		Marianthus	*tenuis*		
		Pronaya	*fraseri*		
	P4	*Sollya*	*drummondii*		
		Sollya	*heterophylla*		
SURIANACEAE		*Stylobasium*	*spathulatum*		
ROSACEAE	*	*Acaena*	*echinata*		
	*	*Acaena*	*echinata*	var.	*retrorsumpilosa*
	*	*Rubus*	*ulmifolius*		
MIMOSACEAE		*Acacia*	*acuminata*		
		Acacia	*alata*		
		Acacia	*ampliceps*		
		Acacia	*applanata*		
		Acacia	*barbinervis*		
		Acacia	*baxteri*		

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Family		Species			
MIMOSACEAE		*Acacia*	*biflora*		
(continued)		*Acacia*	*browniana*		
		Acacia	*browniana*	var.	*browniana*
		Acacia	*celastrifolia*		
		Acacia	*cochlearis*		
		Acacia	*crassiuscula*		
		Acacia	*crispula*		
		Acacia	*cyclops*		
	*	*Acacia*	*decurrens*		
		Acacia	*dentifera*		
		Acacia	*divergens*		
		Acacia	*drummondii*		
		Acacia	*drummondii*	subsp.	*candolleana*
		Acacia	*drummondii*	subsp.	*drummondii*
	*	*Acacia*	*elata*		
		Acacia	*ephedroides*		
		Acacia	*extensa*		
		Acacia	*gilbertii*		
		Acacia	*hastulata*		
	P3	*Acacia*	*horridula*		
		Acacia	*huegelii*		
		Acacia	*incurva*		
	P3	*Acacia*	*inops*		
		Acacia	*insolita*		
		Acacia	*lasiocarpa*		
		Acacia	*lasiocarpa*	var.	*lasiocarpa*
		Acacia	*lasiocarpa*	var.	*sedifolia*
		Acacia	*lateriticola*		
		Acacia	*leioderma*		
		Acacia	*leptoneura*		
		Acacia	*leptospermoides*	subsp.	*leptospermoides*
		Acacia	*ligulata*		
		Acacia	*linophylla*		
		Acacia	*littorea*		
		Acacia	*luteola*		
		Acacia	*microbotrya*		
		Acacia	*mooreana*		

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P1 to P4 - denotes Priority Flora spcies, CALM 2000)

Family		Species			
MIMOSACEAE		*Acacia*	*myrtifolia*		
(continued)		*Acacia*	*nervosa*		
		Acacia	aff. *nitidula*		
		Acacia	*obovata*		
		Acacia	*oncinophylla*		
		Acacia	*pentadenia*		
		Acacia	*platycarpa*		
		Acacia	*preissiana*		
		Acacia	*pulchella*		
		Acacia	*pulchella*	subsp.	*gilbertii*
		Acacia	*pulchella*	var.	*glaberrima*
		Acacia	*pulchella*	var.	*goadbyi*
		Acacia	*pulchella*	var.	*pulchella*
	*	*Acacia*	*pycnantha*		
	R	*Acacia*	*recurvata*		
		Acacia	*rostellifera*		
		Acacia	*saligna*		
		Acacia	*scabra*		
		Acacia	*scalpelliformis*		
	P3	*Acacia*	*semitrullata*		
	P1	*Acacia*	*setulifera*		
		Acacia	*sphacelata*		
		Acacia	*squamata*		
		Acacia	*steedmanii*		
		Acacia	*stenoptera*		
	P2	*Acacia*	*subracemosa*		
		Acacia	*sulcata*		
	P4	*Acacia*	*tayloriana*		
		Acacia	*tetragonocarpa*		
		Acacia	*triptycha*		
		Acacia	*uliginosa*		
		Acacia	*urophylla*		
		Acacia	*varia*		
		Acacia	*varia*	var.	*varia*
		Acacia	*willdenowiana*		
		Paraserianthes	*lophantha*		

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Family		Species		
CAESALPINIACEAE		*Labichea*	*punctata*	
	*	*Senna*	*occidentalis*	
PAPILIONACEAE	P4	*Aotus*	*carinata*	
	P3	*Aotus*	*cordifolia*	
		Aotus	*genistoides*	
		Aotus	*gracillima*	
		Aotus	*intermedia*	
		Aotus	*passerinoides*	
		Aotus	*procumbens*	
		Bossiaea	*aquifolium*	
		Bossiaea	*aquifolium*	subsp. *aquifolium*
		Bossiaea	*aquifolium*	subsp. *laidlawiana*
		Bossiaea	*dentata*	
	P3	*Bossiaea*	*disticha*	
		Bossiaea	*eriocarpa*	
		Bossiaea	*linophylla*	
		Bossiaea	*ornata*	
		Bossiaea	*peduncularis*	
		Bossiaea	*praetermissa*	
		Bossiaea	*pulchella*	
		Bossiaea	*rufa*	
		Bossiaea	*spinescens*	
		Bossiaea	*webbii*	
		Brachysema	*latifolium*	
		Brachysema	*minor*	
		Brachysema	*praemorsum*	
		Brachysema	*sericeum*	
		Callistachys	*lanceolata*	
		Chorizema	*aciculare*	
		Chorizema	aff. *aciculare* (GWJ2579)	
	P3	*Chorizema*	*carinatum*	
		Chorizema	*cordatum*	
		Chorizema	*dicksonii*	
		Chorizema	*diversifolium*	
		Chorizema	*glycinifolium*	
		Chorizema	*ilicifolium*	
		Chorizema	*nanum*	

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Family		Species	
PAPILIONACEAE (continued)	P3	*Chorizema*	*reticulatum*
		Chorizema	*retrorsum*
		Chorizema	*rhombeum*
		Chorizema	*spathulatum*
		Daviesia	aff. *incrassata* (GWJ4526)
		Daviesia	*cardiophylla*
		Daviesia	*cordata*
		Daviesia	*costata*
		Daviesia	*decurrens*
		Daviesia	*gracilis*
		Daviesia	*hakeoides*
		Daviesia	*hakeoides* subsp. *subnuda*
		Daviesia	*horrida*
		Daviesia	*incrassata*
		Daviesia	*inflata*
		Daviesia	*longifolia*
	P4	*Daviesia*	*microphylla*
		Daviesia	*nematophylla*
		Daviesia	*nudiflora*
		Daviesia	*oppositifolia*
		Daviesia	*physodes*
		Daviesia	*polyphylla*
		Daviesia	*preissii*
		Daviesia	*rhombifolia*
		Daviesia	*spinosissima*
		Dillwynia	sp. A Perth Flora (R.Coveny 8036)
		Euchilopsis	*linearis*
		Eutaxia	*cuneata*
		Eutaxia	*densifolia*
		Eutaxia	*epacridoides*
		Eutaxia	*obovata*
		Eutaxia	*parvifolia*
		Eutaxia	*spp.*
		Eutaxia	*virgata*
		Gastrolobium	*bilobum*
		Gastrolobium	*brownii*
	P4	*Gastrolobium*	*callistachys*

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Family	Species			
PAPILIONACEAE (continued)	*Gastrolobium*	*calycinum*		
	Gastrolobium	*cuneatum*		
	Gastrolobium	*oxylobioides*		
	Gastrolobium	*parviflorum*		
	Gastrolobium	*parvifolium*		
	Gastrolobium	*spinosum*		
	Gastrolobium	*spinosum*	var.	*spinosum*
	Gastrolobium	*trilobum*		
	Gastrolobium	*villosum*		
	Gompholobium	*aristatum*		
	Gompholobium	*burtonioides*		
	Gompholobium	*capitatum*		
	Gompholobium	*confertum*		
	Gompholobium	*knightianum*		
	Gompholobium	*marginatum*		
	Gompholobium	*ovatum*		
	Gompholobium	*polymorphum*		
	Gompholobium	*preissii*		
	Gompholobium	*scabrum*		
	Gompholobium	*shuttleworthii*		
	Gompholobium	*tomentosum*		
	Gompholobium	*venustum*		
	Gompholobium	*villosum*		
	Hardenbergia	*comptoniana*		
	Hovea	*chorizemifolia*		
	Hovea	*elliptica*		
	Hovea	*pungens*		
	Hovea	*stricta*		
	Hovea	*trisperma*		
	Isotropis	*cuneifolia*		
	Jacksonia	*alata*		
	Jacksonia	*condensata*		
	Jacksonia	*densiflora*		
	Jacksonia	*floribunda*		
	Jacksonia	*furcellata*		
	Jacksonia	aff. *furcellata* (GWJ1411)		
	Jacksonia	*hakeoides*		

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Family		Species		
PAPILIONACEAE		*Jacksonia*	*horrida*	
(continued)		*Jacksonia*	*nutans*	
		Jacksonia	*restioides*	
	P4	*Jacksonia*	*sparsa*	
		Jacksonia	*sternbergiana*	
	P3	*Jansonia*	*formosa*	
		Kennedia	*carinata*	
		Kennedia	*coccinea*	
		Kennedia	*microphylla*	
		Kennedia	*prorepens*	
		Kennedia	*prostrata*	
		Latrobea	*diosmifolia*	
		Latrobea	*genistoides*	
		Latrobea	*tenella*	
		Latrobea	*tenella* var.	*tenella*
	*	*Lotus*	*suaveolens*	
	*	*Lotus*	*uliginosus*	
		Mirbelia	*dilatata*	
		Mirbelia	*spinosa*	
		Mirbelia	*viminalis*	
		Nemcia	*biloba*	
		Nemcia	*capitata*	
		Nemcia	*coriacea*	
	P2	*Nemcia*	*crenulata*	
		Nemcia	*dilatata*	
		Nemcia	*obovata*	
		Nemcia	*spathulata*	
		Nemcia	*tricuspidata*	
		Oxylobium	*lineare*	
		Oxylobium	*linearifolium*	
		Phyllota	*barbata*	
		Pultenaea	*aspalathoides*	
		Pultenaea	*barbata*	
		Pultenaea	*drummondii*	
		Pultenaea	*ericifolia*	
		Pultenaea	*ochreata*	
	P3	*Pultenaea*	*pinifolia*	

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Family		Species			
PAPILIONACEAE (continued)	P3	*Pultenaea*	*radiata*		
		Pultenaea	*reticulata*		
		Pultenaea	*strobilifera*		
		Pultenaea	*verruculosa*		
		Sphaerolobium	*alatum*		
		Sphaerolobium	*gracile*		
		Sphaerolobium	*grandiflorum*		
		Sphaerolobium	*linophyllum*		
		Sphaerolobium	*macranthum*		
		Sphaerolobium	*medium*		
		Sphaerolobium	*nudiflorum*		
		Sphaerolobium	*racemulosum*		
		Sphaerolobium	*scabriusculum*		
		Sphaerolobium	*vimineum*		
		Templetonia	*biloba*		
	P4	*Templetonia*	*drummondii*		
		Templetonia	*retusa*		
	*	*Trifolium*	*angustifolium*		
	*	*Trifolium*	*campestre*		
	*	*Trifolium*	*dubium*		
	*	*Trifolium*	*fragiferum*		
		Viminaria	*juncea*		
GERANIACEAE	*	*Erodium*	*cicutarium*		
		Erodium	*cygnorum*		
	*	*Geranium*	*molle*		
		Geranium	*retrorsum*		
		Geranium	*solanderi*		
		Pelargonium	*australe*		
		Pelargonium	*australe*	subsp.	*australe*
	*	*Pelargonium*	*capitatum*		
		Pelargonium	*littorale*		
OXALIDACEAE	*	*Oxalis*	*corniculata*		
	*	*Oxalis*	*purpurea*		

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Family		Species			
LINACEAE		*Linum*	*marginale*		
RUTACEAE	P4	*Asterolasia*	*drummondii*		
		Asterolasia	*pallida*		
		Asterolasia	*squamuligera*		
		Boronia	*alata*		
		Boronia	*busselliana*		
		Boronia	*crenulata*	var.	*crenulata*
		Boronia	*crenulata*	subsp.	*pubescens*
		Boronia	*crenulata*		
		Boronia	*cymosa*		
		Boronia	*defoliata*		
		Boronia	*denticulata*		
	P2	*Boronia*	*ericifolia*		
		Boronia	*fastigiata*		
		Boronia	*fastigiata*	subsp.	*tenuior*
		Boronia	*gracilipes*		
		Boronia	*juncea*		
		Boronia	*juncea*	subsp.	*laniflora*
		Boronia	*juncea*	subsp.	*micrantha*
		Boronia	*juncea*	subsp.	*minima*
		Boronia	*megastigma*		
		Boronia	*molloyae*		
		Boronia	*nematophylla*		
		Boronia	*octandra*		
		Boronia	*ovata*		
		Boronia	*pulchella*		
		Boronia	*ramosa*		
		Boronia	*ramosa*	subsp.	*anethifolia*
		Boronia	*spathulata*		
		Boronia	*stricta*		
		Chorilaena	*quercifolia*		
		Crowea	*angustifolia*		
		Crowea	*angustifolia*	var.	*angustifolia*
		Crowea	*angustifolia*	var.	*platyphylla*
		Diplolaena	*dampieri*		
		Diplolaena	*drummondii*		

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Family		Species	
RUTACEAE (continued)		*Diplolaena*	*microcephala*
		Philotheca	*spicata*
		Rhadinothamnus	*anceps*
TREMANDRACEAE		*Platytheca*	*galioides*
		Tetratheca	*affinis*
		Tetratheca	*confertifolia*
		Tetratheca	*filiformis*
		Tetratheca	*hirsuta*
		Tetratheca	*hispidissima*
		Tetratheca	*nuda*
	P3	*Tetratheca*	*pilifera*
		Tetratheca	*setigera*
		Tetratheca	*virgata*
		Tremandra	*diffusa*
		Tremandra	*stelligera*
POLYGALACEAE		*Comesperma*	*calymega*
		Comesperma	*ciliatum*
		Comesperma	*confertum*
		Comesperma	*flavum*
		Comesperma	*nudiusculum*
		Comesperma	*polygaloides*
		Comesperma	*virgatum*
		Comesperma	*volubile*
EUPHORBIACEAE		*Amperea*	*ericoides*
	P2	*Amperea*	*micrantha*
	P2	*Amperea*	*protensa*
		Amperea	*simulans*
		Amperea	*volubilis*
		Monotaxis	*gracilis*
		Monotaxis	*grandiflora*
		Monotaxis	*lurida*
		Monotaxis	*occidentalis*
		Phyllanthus	*calycinus*
		Poranthera	*huegelii*

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Family		Species		
EUPHORBIACEAE (Continued)		*Poranthera*	aff. *huegelii* (GWJ2837)	
		Poranthera	*microphylla*	
		Pseudanthus	*virgatus*	
		Ricinocarpos	*glaucus*	
		Ricinocarpos	*tuberculatus*	
		Stachystemon	*vermicularis*	
STACKHOUSIACEAE		*Stackhousia*	*monogyna*	
		Tripterococcus	*brunonis*	
SAPINDACEAE		*Diplopeltis*	*huegelii*	
		Dodonaea	*aptera*	
		Dodonaea	*ceratocarpa*	
		Dodonaea	*concinna*	
		Dodonaea	*humifusa*	
		Dodonaea	*pinifolia*	
		Dodonaea	*viscosa*	
		Dodonaea	*viscosa*	subsp. *spatulata*
RHAMNACEAE		*Cryptandra*	*arbutiflora*	
	P2	*Cryptandra*	*glabriflora*	
		Cryptandra	*nutans*	
		Cryptandra	*pungens*	
		Spyridium	*globulosum*	
	P3	*Spyridium*	*oligocephalum*	
	P3	*Stenanthemum*	*tridentatum*	
		Trymalium	*angustifolium*	
		Trymalium	*floribundum*	
		Trymalium	*floribundum*	var. *tomentosum*
		Trymalium	*floribundum*	subsp. *floribundum*
		Trymalium	*floribundum*	subsp. *trifidum*
		Trymalium	*ledifolium*	
		Trymalium	*ledifolium*	var. *ledifolium*
TILIACEAE		*Corchorus*	*macropetalus*	

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Family		Species		
STERCULIACEAE	P4	*Lasiopetalum*	*bracteatum*	
	P2	*Lasiopetalum*	*cardiophyllum*	
		Lasiopetalum	*cordifolium*	
		Lasiopetalum	*floribundum*	
		Lasiopetalum	*floribundum*	subsp. nov
		Lasiopetalum	*glabratum*	
		Rulingia	*corylifolia*	
		Rulingia	*grandiflora*	
		Thomasia	*dichasma* (ms)	
	P3	*Thomasia*	*discolor*	
		Thomasia	*foliosa*	
		Thomasia	*glutinosa*	
		Thomasia	*glutinosa*	var. *latifolia*
		Thomasia	*grandiflora*	
		Thomasia	*heterophylla*	
		Thomasia	*macrocalyx*	
		Thomasia	*macrocarpa*	
		Thomasia	*paniculata*	
		Thomasia	*pauciflora*	
		Thomasia	*pauciflora*	var. *paniculata*
		Thomasia	*petalocalyx*	
		Thomasia	*purpurea*	
	P2	*Thomasia*	*quercifolia*	
		Thomasia	*rhynchocarpa*	
	P1	*Thomasia*	*triloba*	
		Thomasia	*triphylla*	
		Thomasia	sp."Big Brook"	
DILLENIACEAE		*Hibbertia*	*acerosa*	
		Hibbertia	*amplexicaulis*	
	P3	*Hibbertia*	*argentea*	
		Hibbertia	*aurea*	
		Hibbertia	*commutata*	
		Hibbertia	*crassifolia*	
		Hibbertia	*cuneiformis*	
		Hibbertia	*cunninghamii*	
		Hibbertia	*depressa*	

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Family		Species		
DILLENIACEAE		*Hibbertia*	*desmophylla*	
(continued)		*Hibbertia*	*enervia*	var. *teretifolia*
		Hibbertia	*exasperata*	
		Hibbertia	*ferruginea*	
		Hibbertia	*furfuracea*	
	P2	*Hibbertia*	*glaberrima*	
		Hibbertia	*glomerata*	
		Hibbertia	*gracilipes*	
		Hibbertia	*grossulariifolia*	
		Hibbertia	*huegelii*	
		Hibbertia	*hypericoides*	
		Hibbertia	*inconspicua*	
		Hibbertia	*lasiopus*	
		Hibbertia	*lineata*	
		Hibbertia	*microphylla*	
	P4	*Hibbertia*	*montana*	
		Hibbertia	*nymphaea*	
		Hibbertia	*ovata*	
		Hibbertia	*pachyrrhiza*	
		Hibbertia	*perfoliata*	
		Hibbertia	*pilosa*	
		Hibbertia	*polystachya*	
		Hibbertia	*pulchra*	
		Hibbertia	aff. *pulchra* (GWJ4083,4523,4525,4541,4542)	
		Hibbertia	*quadricolor*	
		Hibbertia	*racemosa*	
		Hibbertia	*recurvifolia*	
		Hibbertia	*rhadinopoda*	
		Hibbertia	*rupicola*	
		Hibbertia	*serrata*	
	P4	*Hibbertia*	*silvestris*	
		Hibbertia	*spicata*	subsp. *spicata*
		Hibbertia	*spicata*	
		Hibbertia	*stellaris*	
		Hibbertia	*subvaginata*	
		Hibbertia	*vaginata*	
		Hibbertia	sp. (GWJ4822)	

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Family		Species		
FRANKENIACEAE		*Frankenia*	*tetrapetala*	
VIOLACEAE		*Hybanthus*	*calycinus*	
		Hybanthus	*debilissimus*	
		Hybanthus	*floribundus*	
		Hybanthus	*floribundus*	subsp. *floribundus*
	P2	*Hybanthus*	*volubilis*	
PASSIFLORACEAE		*Passiflora*	*edulis*	
THYMELAEACEAE		*Pimelea*	*?affine*	
		Pimelea	*angustifolia*	
		Pimelea	*argentea*	
		Pimelea	*ciliata*	
		Pimelea	*clavata*	
		Pimelea	*ferruginea*	
		Pimelea	*floribunda*	
		Pimelea	*graniticola*	
		Pimelea	*hispida*	
		Pimelea	*imbricata*	
		Pimelea	*imbricata*	var. *piligera*
		Pimelea	*lanata*	
		Pimelea	*lehmanniana*	
		Pimelea	*lehmanniana*	subsp. *lehmanniana*
		Pimelea	*longiflora*	
		Pimelea	*longiflora*	subsp. *longiflora*
		Pimelea	*preissii*	
		Pimelea	*rosea*	
		Pimelea	*spectabilis*	
		Pimelea	*suaveolens*	
		Pimelea	*suaveolens*	subsp. *suaveolens*
		Pimelea	*sulphurea*	
		Pimelea	*sylvestris*	
		Pimelea	sp. (GWJ4204)	

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Family	Species			
MYRTACEAE	*Agonis*	*flexuosa*		
	Agonis	*flexuosa*	var.	*flexuosa*
	Agonis	*hypericifolia*		
	Agonis	*juniperina*		
	Agonis	aff. *juniperina* (GWJ3628)		
	Agonis	*linearifolia*		
	Agonis	*marginata*		
	Agonis	*parviceps*		
	Agonis	*spathulata*		
	Agonis	sp."Lake Jasper"		
	Agonis	sp.(GWJ2133)		
	Agonis	sp.(GWJ4768)		
	Agonis	sp.Coarse Agonis(J.R.Wheeler 2939)		
	Astartea	fascicularis		
	Astartea	sp."Gingalup"		
	Astartea	sp."juniperina"		
	Astartea	sp."Long Leaves"		
	Astartea	sp."Scott River"		
	Astartea	sp."White Tips"		
	Astartea	sp."Winged Tips"		
	Baeckea	*astarteoides*		
	Baeckea	*camphorosmae*		
	Baeckea	*crispiflora*		
	Baeckea	aff. *crispiflora* (GWJ4827)		
	Baeckea	*preissiana*		
	Baeckea	aff. *preissiana* (GWJ4804)		
	Beaufortia	*anisandra*		
	Beaufortia	*bracteosa*		
	Beaufortia	*decussata*		
	Beaufortia	*sparsa*		
	Beaufortia	*squarrosa*		
	Callistemon	*glaucus*		
	Callistemon	*phoeniceus*		
	Calothamnus	*gracilis*		
P4	*Calothamnus*	*graniticus*	subsp.	*leptophyllus*
	Calothamnus	*huegelii*		
	Calothamnus	*lateralis*		

APPENDIX A: VASCULAR PLANT SPECIES RECORDED IN THE SOUTH WEST FOREST REGION

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Family		Species		
MYRTACEAE		*Calothamnus*	*lehmannii*	
(continued)	P4	*Calothamnus*	*pachystachyus*	
	P4	*Calothamnus*	*pallidifolius*	
		Calothamnus	*planifolius*	
		Calothamnus	*quadrifidus*	
	P4	*Calothamnus*	*rupestris*	
		Calothamnus	*sanguineus*	
		Calothamnus	*schaueri*	
		Calytrix	*acutifolia*	
		Calytrix	*angulata*	
		Calytrix	*asperula*	
		Calytrix	*depressa*	
		Calytrix	*flavescens*	
		Calytrix	*fraseri*	
		Calytrix	*glutinosa*	
		Calytrix	*leschenaultii*	
		Calytrix	*variabilis*	
	P4	*Chamelaucium*	*erythrochlorum*	
		Chamelaucium	sp. (GWJ3784)	
		Conothamnus	*neglectus*	
		Corymbia	*calophylla*	
		Corymbia	*ficifolia*	
		Corymbia	*haematoxylon*	
		Darwinia	*citriodora*	
		Darwinia	*oederoides*	
		Darwinia	*thymoides*	
		Darwinia	*vestita*	
		Eremaea	*pauciflora*	
		Eremaea	*pauciflora*	var. *pauciflora*
		Eucalyptus	*accedens*	
	P4	*Eucalyptus*	*aspersa*	
	P3	*Eucalyptus*	*brevistylis*	
	P4	*Eucalyptus*	*calcicola*	
		Eucalyptus	*cornuta*	
		Eucalyptus	*decipiens*	subsp. *chalara*
		Eucalyptus	*decipiens*	
		Eucalyptus	*diversicolor*	

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Family		Species			
MYRTACEAE		*Eucalyptus*	*doratoxylon*		
(continued)		*Eucalyptus*	*drummondii*		
		Eucalyptus	*falcata*		
		Eucalyptus	*guilfoylei*		
		Eucalyptus	*incrassata*		
		Eucalyptus	*jacksonii*		
		Eucalyptus	*laeliae*		
	P4	*Eucalyptus*	*latens*		
		Eucalyptus	*macrocarpa*	subsp.	*macrocarpa*
		Eucalyptus	*marginata*	subsp.	*marginata*
		Eucalyptus	*marginata*	subsp.	*thalassica*
		Eucalyptus	*marginata*		
		Eucalyptus	*megacarpa*		
		Eucalyptus	*occidentalis*		
		Eucalyptus	*patens*		
		Eucalyptus	*rudis*		
		Eucalyptus	*staeri*		
	P4	*Eucalyptus*	*stoatei*		
		Eucalyptus	*todtiana*		
		Eucalyptus	*uncinata*		
	P2	*Eucalyptus*	*virginae*		
		Eucalyptus	*wandoo*		
		Homalospermum	*firmum*		
		Hypocalymma	*angustifolium*		
		Hypocalymma	*cordifolium*		
		Hypocalymma	*robustum*		
		Hypocalymma	*scariosum*		
		Hypocalymma	*strictum*		
		Hypocalymma	*xanthopetalum*		
		Hypocalymma	sp."Scott River"		
		Kunzea	*baxteri*		
		Kunzea	*ciliata*		
		Kunzea	*ericifolia*		
		Kunzea	*?glabrescens*		
		Kunzea	*micromera*		
		Kunzea	*recurva*		
		Kunzea	*rostrata*		

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Family		Species		
MYRTACEAE (continued)		*Kunzea*	*spathulata*	
		Kunzea	*sulphurea*	
		Leptospermum	*erubescens*	
	*	*Leptospermum*	*laevigatum*	
	P4	*Melaleuca*	*basicephala*	
		Melaleuca	*blaeriifolia*	
		Melaleuca	*cuticularis*	
		Melaleuca	*densa*	
	P3	*Melaleuca*	*diosmifolia*	
		Melaleuca	*hamulosa*	
		Melaleuca	*huegelii*	
		Melaleuca	*huegelii*	subsp. *huegelii*
		Melaleuca	*incana*	
	P3	*Melaleuca*	*incana*	subsp. *tenella*
		Melaleuca	*incana*	subsp. *incana*
		Melaleuca	*lateralis*	
		Melaleuca	*lateriflora*	subsp. *acutifolia*
		Melaleuca	*lateritia*	
		Melaleuca	*microphylla*	
		Melaleuca	*pauciflora*	
	P3	*Melaleuca*	*polycephala*	
		Melaleuca	aff. *polygaloides* (GWJ2697)	
		Melaleuca	*preissiana*	
		Melaleuca	*radula*	
		Melaleuca	*rhaphiophylla*	
		Melaleuca	*scabra*	
		Melaleuca	*sericea*	
		Melaleuca	*spathulata*	
		Melaleuca	*systena*	
		Melaleuca	*teretifolia*	
		Melaleuca	*thymoides*	
		Melaleuca	*trichophylla*	
		Melaleuca	*viminea*	
		Melaleuca	*viminea*	subsp. *viminea*
		Melaleuca	*violacea*	
		Pericalymma	*crassipes*	
		Pericalymma	*ellipticum*	

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Family		Species			
MYRTACEAE		*Pericalymma*	*ellipticum*	var.	*ellipticum*
(continued)		*Regelia*	*ciliata*		
		Rinzia	*fumana*		
		Rinzia	*schollerifolia*		
		Scholtzia	*involucrata*		
		Thryptomene	*australis*		
		Thryptomene	*saxicola*		
		Verticordia	*acerosa*		
		Verticordia	*densiflora*		
	R	*Verticordia*	*densiflora*	var.	*pedunculata*
		Verticordia	*densiflora*	var.	*densiflora*
		Verticordia	*drummondii*		
		Verticordia	*fimbrilepis*	subsp.	*?australis*
		Verticordia	*habrantha*		
		Verticordia	*huegelii*		
		Verticordia	*huegelii*	?var.	*stylosa*
		Verticordia	*nitens*		
		Verticordia	*pennigera*		
		Verticordia	*plumosa*		
		Verticordia	*plumosa*	var.	*plumosa*
		Verticordia	*serrata*		
		Verticordia	sp. (GWJ4830)		
HALORAGACEAE		*Glischrocaryon*	*aureum*		
		Glischrocaryon	*aureum*	var.	*aureum*
		Glischrocaryon	*aureum*	var.	*angustifolium*
		Gonocarpus	*benthamii*		
		Gonocarpus	*cordiger*		
		Gonocarpus	*diffusus*		
		Gonocarpus	*hexandrus*		
		Gonocarpus	*hexandrus*	subsp.	*serratus*
		Gonocarpus	*nodulosus*		
		Gonocarpus	*paniculatus*		
		Gonocarpus	*pithyoides*		
	P3	*Gonocarpus*	*simplex*		
		Haloragis	*brownii*		
		Haloragodendron	*racemosum*		

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Family		Species		
APIACEAE		*Actinotus*	*glomeratus*	
		Actinotus	*laxus*	
		Actinotus	*leucocephalus*	
		Actinotus	*omnifertilis*	
		Actinotus	*whicheranus*	
	P3	*Actinotus*	sp. Walpole (J.R.Wheeler 3786)	
		Apium	*prostratum*	
		Apium	*prostratum*	var. *prostratum*
		Centella	*asiatica*	
		Daucus	*glochidiatus*	
		Eryngium	*pinnatifidum*	
		Eryngium	*pinnatifidum*	subsp. *pinnatifidum*
		Homalosciadium	*homalocarpum*	
		Hydrocotyle	*callicarpa*	
		Hydrocotyle	*hirta*	
	P4	*Hydrocotyle*	*lemnoides*	
		Hydrocotyle	*plebeya*	
		Hydrocotyle	*tetragonocarpa*	
		Pentapeltis	*peltigera*	
		Pentapeltis	*silvatica*	
		Platysace	*commutata*	
		Platysace	*compressa*	
		Platysace	*filiformis*	
		Platysace	*juncea*	
		Platysace	*pendula*	
		Platysace	*tenuissima*	
		Schoenolaena	*juncea*	
		Trachymene	*anisocarpa*	
		Trachymene	*coerulea*	
		Trachymene	*pilosa*	
		Xanthosia	*atkinsoniana*	
		Xanthosia	*candida*	
		Xanthosia	*ciliata*	
		Xanthosia	*fruticulosa*	
		Xanthosia	*huegelii*	
	P3	*Xanthosia*	*peduncularis*	
		Xanthosia	*pusilla*	

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Family		Species			
APIACEAE		*Xanthosia*	*rotundifolia*		
(continued)		*Xanthosia*	*singuliflora*		
		Xanthosia	sp."Dardanup"		
		Xanthosia	sp."Warren"		
EPACRIDACEAE		*Andersonia*	*aristata*		
	P2	*Andersonia*	*auriculata*		
		Andersonia	*brevifolia*		
		Andersonia	*caerulea*		
		Andersonia	aff. *caerulea* (GWJ1563)		
	P2	*Andersonia*	*carinata*		
		?Astroloma	*ciliatum*		
		Andersonia	*involucrata*		
		Andersonia	*latiflora*		
		Andersonia	*lehmanniana*	subsp.	*lehmanniana*
		Andersonia	*lehmanniana*		
	P2	*Andersonia*	*longifolia*		
		Andersonia	*micrantha*		
	P3	*Andersonia*	*setifolia*		
		Andersonia	*sprengelioides*		
		Astroloma	*baxteri*		
		Astroloma	*ciliatum*		
		Astroloma	*compactum*		
		Astroloma	*drummondii*		
		Astroloma	*epacridis*		
	P2	*Astroloma*	*foliosum*		
		Astroloma	*glaucescens*		
		Astroloma	*humifusum*		
		Astroloma	*macrocalyx*		
		Astroloma	*microcalyx*		
		Astroloma	*pallidum*		
		Astroloma	*prostratum*		
		Astroloma	*serratifolium*		
		Astroloma	*xerophyllum*		
	P4	*Astroloma*	sp.Nannup(R.D.Royce 3978)		
		Brachyloma	*concolor*		
		Brachyloma	*preissii*		

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Family		Species		
EPACRIDACEAE (continued)		*Coleanthera*	*myrtoides*	
		Conostephium	*pendulum*	
		Conostephium	*preissii*	
		Cosmelia	*rubra*	
		Leucopogon	*alternifolius*	
		Leucopogon	*assimilis*	
		Leucopogon	*australis*	
	P2	*Leucopogon*	*bracteolaris*	
		Leucopogon	*capitellatus*	
		Leucopogon	*carinatus*	
		Leucopogon	*concinnus*	
		Leucopogon	*conostephioides*	
		Leucopogon	*cordatus*	
		Leucopogon	*cucullatus*	
		Leucopogon	*cymbiformis*	
		Leucopogon	*distans*	
		Leucopogon	*distans*	subsp. *contractus*
		Leucopogon	*elegans*	
		Leucopogon	*gilbertii*	
		Leucopogon	*glabellus*	
		Leucopogon	*gracilis*	
		Leucopogon	*gracillimus*	
		Leucopogon	*hirsutus*	
		Leucopogon	*nutans*	
		Leucopogon	*obovatus*	
		Leucopogon	*oxycedrus*	
		Leucopogon	*parviflorus*	
		Leucopogon	*pendulus*	
		Leucopogon	*polymorphus*	
	P2	*Leucopogon*	*polystachyus*	
		Leucopogon	*propinquus*	
		Leucopogon	*pulchellus*	
		Leucopogon	*racemulosus*	
		Leucopogon	*reflexus*	
		Leucopogon	*sprengelioides*	
		Leucopogon	*striatus*	
		Leucopogon	*strictus*	

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Family		Species			
EPACRIDACEAE		*Leucopogon*	*tenuicaulis*		
(continued)		*Leucopogon*	*tenuis*		
		Leucopogon	*unilateralis*		
		Leucopogon	*verticillatus*		
		Leucopogon	sp.(GWJ4828)		
		Leucopogon	sp.(JK10)		
		Leucopogon	sp.nov		
		Lysinema	*ciliatum*		
		Lysinema	*conspicuum*		
		Monotoca	*tamariscina*		
		Sphenotoma	*capitatum*		
		Sphenotoma	*gracile*		
	P3	*Sphenotoma*	*parviflorum*		
		Sphenotoma	*squarrosum*		
		Styphelia	*tenuiflora*		
PRIMULACEAE	*	*Anagallis*	*arvensis*		
	*	*Anagallis*	*arvensis*	var.	*arvensis*
		Samolus	*junceus*		
		Samolus	*repens*		
LOGANIACEAE		*Logania*	*campanulata*		
		Logania	*serpyllifolia*		
		Logania	*serpyllifolia*	subsp.	*angustifolia*
		Logania	*serpyllifolia*	subsp.	*serpyllifolia*
		Logania	*vaginalis*		
	P2	*Phyllangium*	*palustre*		
		Phyllangium	*paradoxum*		
GENTIANACEAE	*	*Centaurium*	*erythraea*		
		Centaurium	*spicatum*		
	*	*Cicendia*	*filiformis*		
		Sebaea	*ovata*		

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Family		Species			
MENYANTHACEAE		*Villarsia*	*albiflora*		
		Villarsia	*lasiosperma*		
		Villarsia	*latifolia*		
		Villarsia	*parnassifolia*		
CONVOLVULACEAE		*Dichondra*	*repens*		
CUSCUTACEAE	*	*Cuscuta*	*epithymum*		
BORAGINACEAE		*Halgania*	*anagalloides*	var.	*preissiana*
	P3	*Halgania*	*corymbosa*		
VERBENACEAE	*	*Phyla*	*canescens*		
CHLOANTHACEAE		*Pityrodia*	*bartlingii*		
LAMIACEAE		*Hemiandra*	*incana*		
		Hemiandra	*leiantha*		
		Hemiandra	*pungens*		
		Hemigenia	*canescens*		
		Hemigenia	*incana*		
	P3	*Hemigenia*	*microphylla*		
		Hemigenia	*podalyrina*		
		Hemigenia	*pritzelii*		
	P2	*Hemigenia*	*ramosissima*		
		Hemigenia	*rigida*		
		Hemigenia	*sericea*		
		Hemigenia	sp.(GWJ4119,4672,4515,4221)		
		Hemigenia	sp.(GWJ4517)		
		Hemigenia	sp.Albany(G.J.Keighery 8712)		
	*	*Mentha*	*pulegium*		
		Microcorys	*barbata*		
SOLANACEAE		*Anthocercis*	*viscosa*		
	*	*Cestrum*	*parqui*		
	*	*Solanum*	*laciniatum*		
	*	*Solanum*	*nigrum*		

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Family		Species	
SCROPHULARIACEAE	*	*Bartsia*	*trixago*
		Gratiola	*pubescens*
	*	*Parentucellia*	*latifolia*
	*	*Parentucellia*	*viscosa*
		Veronica	*calycina*
		Veronica	*distans*
		Veronica	*plebeia*
OROBANCHACEAE	*	*Orobanche*	*minor*
LENTIBULARIACEAE		*Utricularia*	*inaequalis*
		Utricularia	*menziesii*
		Utricularia	*multifida*
		Utricularia	*simplex*
		Utricularia	*tenella*
		Utricularia	*violacea*
MYOPORACEAE		*Myoporum*	*oppositifolium*
		Myoporum	*tetrandrum*
PLANTAGINACEAE		*Plantago*	*debilis*
	*	*Plantago*	*lanceolata*
RUBIACEAE	*	*Galium*	*murale*
		Opercularia	*apiciflora*
		Opercularia	*echinocephala*
		Opercularia	*hispidula*
		Opercularia	*spermacocea*
		Opercularia	*vaginata*
		Opercularia	*volubilis*
CAMPANULACEAE	*	*Wahlenbergia*	*capensis*
		Wahlenbergia	*communis*
		Wahlenbergia	*gracilenta*
		Wahlenbergia	*multicaulis*
		Wahlenbergia	*preissii*

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Family		Species	
LOBELIACEAE		*Grammatotheca*	*bergiana*
		Isotoma	*hypocrateriformis*
		Lobelia	*alata*
		Lobelia	*gibbosa*
		Lobelia	*heterophylla*
		Lobelia	*rarifolia*
		Lobelia	*rhombifolia*
		Lobelia	*rhytidosperma*
		Lobelia	*tenuior*
GOODENIACEAE		*Anthotium*	*humile*
	P4	*Anthotium*	*junciforme*
		Brunonia	*australis*
		Dampiera	*alata*
	P2	*Dampiera*	*decurrens*
		Dampiera	*hederacea*
		Dampiera	*lavandulacea*
		Dampiera	*leptoclada*
		Dampiera	*linearis*
		Dampiera	*trigona*
		Diaspasis	*filifolia*
		Goodenia	*affinis*
		Goodenia	*caerulea*
		Goodenia	*eatoniana*
		Goodenia	*fasciculata*
	P3	*Goodenia*	*filiformis*
		Goodenia	*helmsii*
		Goodenia	*incana*
		Goodenia	*leptoclada*
		Goodenia	*pinifolia*
		Goodenia	*pulchella*
		Goodenia	*pusilla*
		Goodenia	*pusilliflora*
		Goodenia	*scaevolina*
		Lechenaultia	*biloba*
		Lechenaultia	*expansa*
		Lechenaultia	*floribunda*
		Lechenaultia	*formosa*

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Family		Species		
GOODENIACEAE (continued)		*Scaevola*	*anchusifolia*	
		Scaevola	*auriculata*	
		Scaevola	*calliptera*	
		Scaevola	*crassifolia*	
		Scaevola	*glandulifera*	
		Scaevola	*lanceolata*	
		Scaevola	*microphylla*	
	P2	*Scaevola*	*paludosa*	
		Scaevola	*pilosa*	
		Scaevola	*platyphylla*	
		Scaevola	*striata*	
		Scaevola	*thesioides*	
		Velleia	*macrophylla*	
		Velleia	*trinervis*	
STYLIDIACEAE		*Levenhookia*	*dubia*	
		Levenhookia	*preissii*	
		Levenhookia	*pusilla*	
		Levenhookia	*stipitata*	
		Stylidium	*adnatum*	
		Stylidium	*affine*	
		Stylidium	*amoenum*	
		Stylidium	*assimile*	
	P3	*Stylidium*	*barleei*	
		Stylidium	*breviscapum*	
		Stylidium	*brunonianum*	
		Stylidium	*brunonianum*	subsp. *minor*
		Stylidium	*bulbiferum*	
		Stylidium	*caespitosum*	
		Stylidium	*calcaratum*	
		Stylidium	*canaliculatum*	
		Stylidium	*caricifolium*	
		Stylidium	*carnosum*	
		Stylidium	*ciliatum*	
		Stylidium	*crassifolium*	
		Stylidium	*dichotomum*	
		Stylidium	*diversifolium*	

APPENDIX A: VASCULAR PLANT SPECIES RECORDED IN THE SOUTH WEST FOREST REGION

(* - denotes introduced species; R - denotes - Declared Rare Flora , CALM 2000;
P1 to P4 - denotes Priority Flora spcies, CALM 2000)

Family		Species			
STYLIDIACEAE (continued)		*Stylidium*	*emarginatum*		
		Stylidium	*falcatum*		
		Stylidium	*fasciculatum*		
	R	*Stylidium*	*galioides*		
		Stylidium	*glaucum*		
		Stylidium	*glaucum*	subsp.	*angustifolium*
		Stylidium	*guttatum*		
		Stylidium	*hispidum*		
		Stylidium	*imbricatum*		
		Stylidium	*inundatum*		
		Stylidium	*junceum*		
		Stylidium	*junceum*	subsp.	*brevius*
		Stylidium	*laciniatum*		
	P3	*Stylidium*	*lepidum*		
		Stylidium	*leptophyllum*		
		Stylidium	*lineatum*		
		Stylidium	*luteum*	subsp.	*glaucifolium*
		Stylidium	*luteum*		
		Stylidium	*megacarpum*		
		Stylidium	*pendulum*		
		Stylidium	*petiolare*		
		Stylidium	*piliferum*		
		Stylidium	*piliferum*	subsp.	*minor*
	P4	*Stylidium*	*plantagineum*		
		Stylidium	*pritzelianum*		
		Stylidium	*pulchellum*		
		Stylidium	*repens*		
		Stylidium	*rhynchocarpum*		
		Stylidium	*roseo-alatum*		
		Stylidium	*rupestre*		
		Stylidium	*scandens*		
		Stylidium	*schoenoides*		
		Stylidium	*spathulatum*		
		Stylidium	*spathulatum*	subsp.	*acuminatum*
		Stylidium	*spathulatum*	subsp.	*spathulatum*
		Stylidium	*spinulosum*		
		Stylidium	*squamosotuberosum*		

APPENDIX A: VASCULAR PLANT SPECIES RECORDED IN THE SOUTH WEST FOREST REGION

(* - denotes introduced species; R - denotes - Declared Rare Flora , CALM 2000;
P1 to P4 - denotes Priority Flora spcies, CALM 2000)

Family		Species	
STYLIDIACEAE		*Stylidium*	*striatum*
(continued)		*Stylidium*	*uniflorum*
	P3	*Stylidium*	*verticillatum*
		Stylidium	*violaceum*
		Stylidium	sp.(GWJ3615)
ASTERACEAE		*Angianthus*	sp.
	*	*Arctotheca*	*calendula*
	*	*Aster*	*subulatus*
		Asteridea	*pulverulenta*
		Blennospora	*drummondii*
		Brachyscome	*bellidioides*
		Brachyscome	*ciliaris*
		Brachyscome	*iberidifolia*
		Bracteantha	*bracteata*
	*	*Carduus*	*tenuiflorus*
		Centipeda	*cunninghamii*
	*	*Cirsium*	*vulgare*
	*	*Conyza*	*albida*
	*	*Conyza*	*bonariensis*
		Cotula	*australis*
		Cotula	*coronopifolia*
		Cotula	*cotuloides*
		Craspedia	*variabilis*
	*	*Dittrichia*	*graveolens*
	P3	*Euchiton*	*collinus*
		Euchiton	*sphaericus*
		Gnaphalium	sp.
		Gnephosis	*tenuissima*
		Helichrysum	*leucopsideum*
		Helichrysum	*macranthum*
		Hyalosperma	*cotula*
		Hyalosperma	*demissum*
		Hyalosperma	*simplex*
	*	*Hypochaeris*	*glabra*
		Lagenophora	*huegelii*
		Lawrencella	*rosea*

APPENDIX A: VASCULAR PLANT SPECIES RECORDED IN THE SOUTH WEST FOREST REGION

(* - denotes introduced species; R - denotes - Declared Rare Flora , CALM 2000;
P1 to P4 - denotes Priority Flora spcies, CALM 2000)

Family		Species		
ASTERACEAE (continued)	P2	*Leptinella*	*drummondii*	
		Leucophyta	*brownii*	
		Millotia	*myosotidifolia*	
		Millotia	*tenuifolia*	
		Olearia	*axillaris*	
		Olearia	*cassiniae*	
		Olearia	*ciliata*	
		Olearia	*muricata*	
		Olearia	*paucidentata*	
		Olearia	aff. *paucidentata* (GWJ2959)	
		Olearia	*?revoluta*	
		Olearia	*rudis*	
		Ozothamnus	*cordatus*	
		Ozothamnus	*ramosus*	
	P2	*Pithocarpa*	*corymbulosa*	
		Pithocarpa	*pulchella*	
		Pithocarpa	*pulchella*	var. *melanostigma*
		Podolepis	*canescens*	
		Podolepis	*gracilis*	
		Podolepis	*lessonii*	
		Podotheca	*angustifolia*	
		Podotheca	*chrysantha*	
	*	*Pseudognaphalium*	*luteoalbum*	
		Pterochaeta	*paniculata*	
		Quinetia	*urvillei*	
		Rhodanthe	*chlorocephala*	subsp. *splendida*
		Rhodanthe	*citrina*	
		Rhodanthe	*corymbosa*	
		Rhodanthe	*floribunda*	
		Rhodanthe	*manglesii*	
	*	*Senecio*	diaschides	
	P1	*Senecio*	*gilbertii*	
		Senecio	*glomeratus*	
		Senecio	*glossanthus*	
		Senecio	*hispidulus*	
		Senecio	*lautus*	
		Senecio	*lautus*	subsp. *maritimus*
		Senecio	*lautus*	subsp. *dissectifolius*

APPENDIX A: VASCULAR PLANT SPECIES RECORDED IN THE SOUTH WEST FOREST REGION

(* - denotes introduced species; R - denotes - Declared Rare Flora , CALM 2000;
P1 to P4 - denotes Priority Flora spcies, CALM 2000)

Family		Species	
ASTERACEAE	P4	*Senecio*	*leucoglossus*
(continued)		*Senecio*	*quadridentatus*
		Senecio	*ramosissimus*
	*	*Senecio*	*vulgaris*
		Sigesbeckia	sp.
		Siloxerus	*filifolius*
		Siloxerus	*humifusus*
	*	*Sonchus*	*oleraceus*
		Trichocline	*spathulata*
		Trichocline	sp."Treeton"
	*	*Ursinia*	*anthemoides*
	*	*Vellereophyton*	*dealbatum*
		Waitzia	*acuminata*
		Waitzia	*suaveolens*
	*	*Xanthium*	*occidentale*

Appendix B

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Site-vegetation Types

Custodian Details

Name: Alcoa of Australia Limited
Jurisdiction: Western Australia

Description

Abstract: Havel site-vegetation types have been mapped in areas within Alcoa's 10 year mining regions. The data are used to help plan all mining operations to minimise dieback spread and impact and to also minimise damage to rare and unusual vegetation communities.
Site-vegetation typing is recorded on 1:10000 mapping based on permanent plot and grid data. Attributes include site parameters, floristic structure and condition data.

Search Words:
VEGETATION Floristic Mapping
VEGETATION Mapping

Geographic Extent Names:

Geographic Extent Polygons:
Northern Jarrah Forest, Jarrahdale, Huntly
Hedges and Willowdale Mines

Currency and Status

Beginning Date: 01 Jan 1990
Progress: In Progress
Ending Date: Current
Maintenance and Update Frequency: As Required
Metadata Date: 29 Jan 1997

Access

Stored Data Format: ARC/INFO point and polygon coverage
Available Format Types: Digital ARC/INFO export files
Access Conditions: Restricted usage, written application required and subject to licence agreement.

Data Quality

Lineage: Data are recorded on field data sheets and 1:10,000 topographic maps. Coverage is based on 60m x 120m or 120m x 120m grids. The data include presence/absence records of 150 understorey species, key indicator species and relevant site parameters.

Positional Accuracy: Majority of sites located at surveyed and pegged sites based on Alcoa's grid system (based on AMG).

Attribute Accuracy: The major attribute of this dataset is species. Identifications are confirmed using WA Herbarium voucher specimens where required.

Logical Consistency: All results are plotted at 1:10,000 and returned to the mapping consultants for validation GIS point/polygon datasets are topologically consistent.

Completeness: Site-vegetation types are mapped over substantial areas of the 10 year mining region for each mine. Some other limited areas in the region of mining operations have also been mapped.

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Site-vegetation Types (Continued)

Custodian Details

Name:	Alcoa of Australia Limited
Jurisdiction:	Western Australia

Contact Information

Organisational Name:	Alcoa of Australia Limited		
Position:	Environmental Manager Mining		
Mail Address:	PO Box 252	State:	WA
Mail Address 2:		Country:	Australia
Suburb or Locality:	Applecross	Post Code:	6153
Telephone Number:	09 3165242	Facsimiile Number:	09 3165167
Email Address:	john.gardner@alcoa.com.au		
Organisation Name:	Alcoa of Australia		
Position:	GIS Manager		
Mail Address:	PO Box 252	State:	WA
Mail Address 2:		Country:	Australia
Suburb or Locality:	Applecross	Post Code:	6153
Telephone Number:	09 3165242	Facsimiile Number:	09 3165167
Email Address:	graham.wake@alcoa.com.au		

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Site-vegetation Types

Custodian Details

Name: Mattiske Consulting Pty Ltd for various Clients including Alcoa of Australia Limited and the Department of Conservation and Land Management

Jurisdiction: Western Australia

Description

Abstract: Havel site-vegetation types have been mapped in areas within scattered pockets of the northern, southern and eastern forests for a range of clients. Site-vegetation typing is recorded on 1:10000 mapping based on permanent plot, opportunistic and grid data. Attributes include site parameters, floristic structure and condition data.

Search Words:
VEGETATION Floristic Mapping
VEGETATION Mapping

Geographic Extent Names:

Geographic Extent Polygons:
Northern Jarrah Forest, Southern Jarrah Forest,
Eastern Jarrah Forest, Eastern Wandoo Woodlands

Currency and Status

Beginning Date: 01 Jan 1976
Progress: In Progress
Ending Date: Current
Maintenance and Update Frequency: As Required
Metadata Date: 14 Feb 1997

Access

Stored Data Format: Quattro Pro, Microsoft Access and ARC/INFO point and polygon coverage
Available Format Types: Digital spread sheet and ARC/INFO export files
Access Conditions: Restricted usage, written application required and subject to licence agreement with Clients.

Data Quality

Lineage: Data are recorded on field data sheets and 1:10,000 topographic maps. Coverage is based on 60m x 120m or 120m x 120m or 200m x 100m grids. The data include presence/absence, ranking records of at least 150 understorey species, key indicator species and relevant site parameters.

Positional Accuracy: Majority of sites located at surveyed and pegged sites or verified by GPS records.

Attribute Accuracy: The major attribute of this dataset is species. Identifications are confirmed using WA Herbarium voucher specimens where required.

Logical Consistency: All results are plotted at 1:10,000 and datasets are topologically consistent.

Completeness: Site-vegetation types are mapped in sections of the northern, eastern and southern forest areas.

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Site-vegetation Types (Continued)

Custodian Details

Name:	Mattiske Consulting Pty Ltd for various Clients including Alcoa of Australia Limited and the Department of Conservation and Land Management
Jurisdiction:	Western Australia

Contact Information

Organisational Name:	Dr Libby Mattiske		
Position:	Managing Director		
Mail Address:	PO Box 437	State:	WA
Mail Address 2:		Country:	Australia
Suburb or Locality:	Kalamunda	Post Code:	6076
Telephone Number:	09 2571625	Facsimiile Number:	09 2571640
Email Address:	admin@mattiske.com.au		

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Vegetation Monitoring Plots

Custodian Details

Name: Alcoa of Australia Limited
Jurisdiction: Western Australia

Description

Abstract: Permanent vegetation monitoring plots have been established in forest surrounding Alcoa's mines and in the rehabilitation mined areas. The plots are 20m x 20m and cover a range of upland site-vegetation types (P,T,S and combinations) and ages of rehabilitation from 1966 to 1996. They are used to provide comparative measurements of rehabilitation performance.

Search Words: FLORA Monitoring
VEGETATION Floristic Monitoring

Geographic Extent Names:

Geographic Extent Polygons:
Northern Jarrah Forest mainly around Jarrahdale
Huntly and Willowdale Mines

Currency and Status

Beginning Date: 01 Aug 1981
Progress: In Progress
Ending Date: Current
Maintenance and Update Frequency: Annual
Metadata Date: 29 Jan 1997

Access

Stored Data Format: ARC/INFO polygon coverage
Available Format Types: Digital GIS export format and SAS database
Access Conditions: Written application required for all unpublished data. Licence agreement may apply.

Data Quality

Lineage: Quadrat Data hardcopy is manually enterred onto computer.
Positional Accuracy: Plots are surveyed using standard surveying techniques.
Attribute Accuracy: Attributes are very accurate and are checked after computer entry.
Logical Consistency: Validation occurs and the GIS coverage is topologically consistent.
Completeness: The permanent plots represent only a small fraction of the total forest area but are considered representative of the type of vegetation mined. Plots in rehabilitation are representative of that year's rehabilitation.

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Vegetation Monitoring Plots (Continued)

Custodian Details

Name:	Alcoa of Australia Limited
Jurisdiction:	Western Australia

Contact Information

Organisational Name:	Alcoa of Australia Limited		
Position:	Environmental Manager Mining		
Mail Address:	PO Box 252	State:	WA
Mail Address 2:		Country:	Australia
Suburb or Locality:	Applecross	Post Code:	6153
Telephone Number:	09 3165242	Facsimiile Number:	09 3165167
Email Address:	john.gardner@alcoa.com.au		
Organisation Name:	Alcoa of Australia		
Position:	GIS Manager		
Mail Address:	PO Box 252	State:	WA
Mail Address 2:		Country:	Australia
Suburb or Locality:	Applecross	Post Code:	6153
Telephone Number:	09 3165242	Facsimiile Number:	09 3165167
Email Address:	graham.wake@alcoa.com.au		

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Vegetation Monitoring Plots

Custodian Details

Name: Mattiske Consulting Pty Ltd for various Clients including Alcoa of Australia Limited and the Department of Conservation and Land Management
Jurisdiction: Western Australia

Description

Abstract: Permanent vegetation monitoring plots have been established in northern, southern and eastern forests on behalf of a range of Clients. The plots are 20m x 20m or 40m x 40m and cover a large range of the site-vegetation types.

Search Words:
FLORA Monitoring
VEGETATION Floristic Monitoring

Geographic Extent Names:

Geographic Extent Polygons:
Northern Jarrah Forest, Southern Jarrah Forest
Eastern Jarrah Forest

Currency and Status

Beginning Date: 01 July 1979
Progress: In Progress
Ending Date: Current
Maintenance and Update Frequency: Annual
Metadata Date: 14 Feb 1997

Access

Stored Data Format: Quattro Pro and Microsoft Access and ARC/INFO
Available Format Types: Digital GIS export format
Access Conditions: Written application required for all unpublished data to Clients of Mattiske Consulting Pty Ltd. Licence agreement may apply.

Data Quality

Lineage: Quadrat Data hardcopy is manually enterred onto computer.
Positional Accuracy: Plots are surveyed using standard surveying techniques.
Attribute Accuracy: Attributes including species, heights, cover, numbers, presence/absence and condition are very accurate and are checked after computer entry.
Logical Consistency: Validation occurs and the GIS coverage is topologically consistent.
Completeness: The permanent plots represent only a small fraction of the total forest area but are considered representative of the site-vegetation types.

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Vegetation Monitoring Plots (Continued)

Custodian Details

Name:	Mattiske Consulting Pty Ltd for various Clients including Alcoa of Australia Limited and the Department of Conservation and Land Management
Jurisdiction:	Western Australia

Custodian Details

Name:	Various Clients and Organisations
Jurisdiction:	Western Australia

Contact Information

Organisational Name:	Dr Libby Mattiske		
Position:	Managing Director		
Mail Address:	PO Box 437	State:	WA
Mail Address 2:		Country:	Australia
Suburb or Locality:	Kalamunda	Post Code:	6076
Telephone Number:	09 2571625	Facsimiile Number:	09 2571640
Email Address:	admin@mattiske.com.au		

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: South West Western Australia Climate Grids

Custodian Details

Name: Environmental Resources Information Network (ERIN), Commonwealth Department of the Environment, Sports and Territories
Jurisdiction: Australia

Description

Abstract: This data contains climate grids for temperature, precipitation and evaporation. The grids were calculated using the program ANUCLIM (including the Australian climate surfaces) and the South West WA Digital Elevation Model (DEM). The ANUCLIM program and surfaces were supplied by the Centre for Resource and Environmental Studies, Australian National University. The DEM was clipped from the GEODATA National 9 Second DEM for which the Australian Surveying and Land Information Group (AUSLIG) is custodian.

Search Words: Climate and Weather, Temperature, Precipitation and Evaporation

Geographic Extent Names: SW Forest Region, Western Australia

Currency and Status

Beginning Date: 1900
Ending Date: 1980
Data Status: Complete
Maintenance and Update Frequency: As Required
Metadata Statement: 9 Oct 1996

Access

Stored Data Format: Digital - Raster
Available Format Types: Digital - ARC/INFO
Access Conditions: The climate grids supplied to Mattiske Consulting Pty Ltd under licence for the work in relation to the two projects associated with the vegetation projects for the South West Forest Region.

Data Quality

Lineage: Climate Grids were derived using ANUCLIM by interrogating climate surfaces using the National 9 Second DEM. ANUCLIM was used to generate the command file for running BIOCLIM. BIOCLIM was then used to calculate climate grids for temperature, precipitation and evaporation. ARC/INFO grids were then created from the output of BIOCLIM.
Cell Size: 9 seconds (=250m)
Positional Accuracy: Elevation inputs for the 9 seconds DEM were for 1:100,000 scale sources. Major waterbodies and watercourses were from GEODATA TOPO-250k hydrography.
Attribute Accuracy: The climate grids were calculated using the BIOCLIM algorithm that is national and internationally recognised. Climate surfaces are being updated.
Logical Consistency: Some edge matching problems resulting from climate surfaces are apparent in the climate grids.
Completeness: The DEM used to interrogate climate surfaces was the Perth and Albany 1:1 million map sheets of the National 9 second DEM. Climate grids were created for selected temperature, precipitation and evaporation parameters.

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: South West Western Australia Climate Grids (Continued)

Contact Information

Organisational Name:	Department of the Environment, Sports and Territories		
Contact Position:	Scientific Coordinator, Regional Information Section		
Contact Person:	Kate Ord		
Contact Address:	GPO Box 787	State:	ACT
Mail Address 2:		Country:	Australia
Suburb or Locality:	Canberra	Post Code:	2601
Telephone Number:	06 250 7531	Facsimiile Number:	06 250 7543
Email Address:	kateo@erin.gov.au		

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: South West Western Australia Soil and Landform Maps

Custodian Details

Name:	Various Authors, currently being merged by Agriculture Western Australia as another project in the South-West Forest Region Assessment and supplied to the Department of Conservation and Land Management and Mattiske Consulting Pty Ltd for the vegetation mapping project.
Jurisdiction:	Western Australia

Description

Abstract:	This data contains soil and landform mapping (historical and new data) for the South-West Forest Region.
Search Words:	Soils and Landforms

Geographic Extent Names: SW Forest Region, Western Australia

Currency and Status

Beginning Date:	1970
Ending Date:	Current
Data Status:	Being Completed as part of another project.
Maintenance and Update Frequency:	As Required
Metadata Statement:	14 Feb 1997

Access

Stored Data Format:	Digital - ARC/INFO
Available Format Types:	Digital - ARC/INFO
Access Conditions:	The soils and landform polygon data supplied to Mattiske Consulting Pty Ltd for the work in relation to the two projects associated with the vegetation projects for the South West Forest Region.

Data Quality

Lineage:	Soil and landform data was derived from a range of authors and part of the contract held by Agriculture Western Australia is to cleanse and rationalise the datasets for then South-West Forest Region.
Positional Accuracy:	From 1:50,000 scale sources.
Attribute Accuracy:	The soil and landform mapping was undertaken on the basis of extensive field surveys and sampling.
Logical Consistency:	Some edge matching problems resulting from differences in detail and authors.
Completeness:	The soil and landform mapping currently being completed as part of another project.

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: South West Western Australia Soil and Landform Maps

Contact Information

Organisational Name:	Agriculture Western Australia		
Contact Person:	Greg Beeston		
Contact Address:	Baron-Hay Court	State:	WA
Mail Address 2:		Country:	Australia
Suburb or Locality:	South Perth	Post Code:	6151
Telephone Number:	09 368 3333	Facsimiile Number:	
Email Address:			

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: South West Western Australia Topography and Drainage Data

Custodian Details

Name:	Department of Land Administration and supplied to the Department of Conservation and Land Management.
Jurisdiction:	Western Australia

Description

Abstract:	This data contains topography and drainage data for the South-West Forest Region.
Search Words:	Topography, Drainage
Geographic Extent Names:	SW Forest Region, Western Australia

Currency and Status

Beginning Date:	1900
Ending Date:	Current
Data Status:	Current
Maintenance and Update Frequency:	As Required
Metadata Statement:	14 Feb 1997

Access

Stored Data Format:	Digital - ARC/INFO
Available Format Types:	Digital - ARC/INFO
Access Conditions:	The topography and drainage polygon data supplied to Mattiske Consulting Pty Ltd for the work in relation to the two projects associated with the vegetation projects for the South West Forest Region.

Data Quality

Lineage:	Topography and drainage data was derived from data held by the Department of Land Administration.
Positional Accuracy:	From 1:50,000 scale sources.
Attribute Accuracy:	AUSLIG standards
Logical Consistency:	AUSLIG standards
Completeness:	Complete for South-West Forest Region.

Contact Information

Organisational Name:	Department of Land Administration		
Contact Person:			
Contact Address:	Midland Square	State:	WA
Mail Address 2:	Morrison Road	Country:	Australia
Suburb or Locality:	Midland	Post Code:	6056
Telephone Number:	09 273 7046	Facsimile Number:	
Email Address:			

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: South West Western Australia Base Cadastral, Tenure, Clearing and Roads Data

Custodian Details

Name:	Department of Conservation and Land Management
Jurisdiction:	Australia

Description

Abstract:	This data contains cadastral, ownership/tenure, clearing and roads data for the South-West Forest Region.
Search Words:	Roads, Tenure

Geographic Extent Names: SW Forest Region, Western Australia

Currency and Status

Beginning Date:	1950
Ending Date:	Current
Data Status:	Current
Maintenance and Update Frequency:	As Required
Metadata Statement:	14 Feb 1997

Access

Stored Data Format:	Digital - ARC/INFO
Available Format Types:	Digital - ARC/INFO
Access Conditions:	The base cadastral, ownership/tenure, clearing and roads polygon data supplied to Mattiske Consulting Pty Ltd for the work in relation to the two projects associated with the vegetation projects for the South West Forest Region.

Data Quality

Lineage:	The base data held by Department of Conservation and Land Management.
Positional Accuracy:	From 1:50,000 scale sources.
Attribute Accuracy:	AUSLIG standards
Logical Consistency:	AUSLIG standards
Completeness:	Complete for South-West Forest Region.

Contact Information

Organisational Name:	Department of Conservation and Land Management		
Contact Person:	Executive Director – Mr W Cox		
Contact Address:	PO Box 104	State:	WA
Mail Address 2:	Hayman Road	Country:	Australia
Suburb or Locality:	Como	Post Code:	6152
Telephone Number:	09 3340333	Facsimile Number:	
Email Address:			

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Floristic and Vegetation Data - South-West Forest Region Western Australia

Custodian Details

Name:	Various Authors employed by the Department of Conservation and Land Management and the former Forests Department of Western Australia (whilst employed - Havel, Heddle, McCutcheon, Wardell-Johnson, Strelein, Inions and Gibson, Christensen - Ph.D. data)
Jurisdiction:	Australia

Description

Abstract:	This data contains a vast array of point survey data and vegetation plot data for the South-West Forest Region.
Search Words:	Floristic Classifications Vegetation Mapping Site-vegetation Types Flora Vegetation Monitoring

Geographic Extent Names: SW Forest Region, Western Australia

Currency and Status

Beginning Date:	1960
Ending Date:	Current
Data Status:	Current
Maintenance and Update Frequency:	As Required
Metadata Statement:	14 Feb 1997

Access

Stored Data Format:	Various formats, hard copies of field sheets through to Digital format in Excel, Quattro Pro, Microsoft Access and ARC/INFO
Available Format Types:	Spreadsheets and Digital - ARC/INFO
Access Conditions:	The base data for most authors needs entering from field sheets and then editing and merging.

Data Quality

Lineage:	Variable, minimum detailed locations supplied (often in hard copy map form rather than GPS locations), presence/absence data and in most instances ranked data (mostly on scale of 1 to 5 as developed by Havel 1975a). Data held by Department of Conservation and Land Management and authors in various status and availability.
Positional Accuracy:	From hard copies of maps supplied by authors.
Attribute Accuracy:	Variable, however minimum standards apply.
Logical Consistency:	Variable, needs verifying in view of taxonomic changes.
Completeness:	Mostly complete, although some subsets of data lost (e.g. some of Havel's raw data.

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Floristic and Vegetation Data - South-West Forest Region Western Australia

Contact Information

Organisational Name:	Department of Conservation and Land Management		
Contact Person:	Executive Director – Mr W Cox		
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Email Address:			

Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Floristic and Vegetation Data - Loneragan - Northern Forest Region in South-West Forest Region Western Australia

Custodian Details

Name:	Ph.D. data collected by Loneragan 1978 (University of Western Australia Botany Department)
Jurisdiction:	Australia

Description

Abstract:	This data covers some 122 plots scattered in the northern section of the forests within the South-West Forest Region.
Search Words:	Floristic Classifications Vegetation Mapping Flora

Geographic Extent Names: SW Forest Region, Western Australia

Currency and Status

Beginning Date:	1960's
Ending Date:	1978
Data Status:	Current
Maintenance and Update Frequency:	As Required
Metadata Statement:	14 Feb 1997

Access

Stored Data Format:	Held by Author.
Available Format Types:	Field sheets and spreadsheets
Access Conditions:	Written application required for data from author. Licence agreement may apply.

Data Quality

Lineage:	Data collected for all tree species in 48m x 48m plots (numbers, basal area) and in 16 - 1m x 1m quadrats for understorey species (frequency and canopy cover in selected central quadrats). Site parameters were also recorded.
Positional Accuracy:	Subject to author.
Attribute Accuracy:	Accurate in terms of data collected.
Logical Consistency:	Will need verifying in view of taxonomic changes.
Completeness:	Subject to author releasing data.

Contact Information

Organisational Name:	University of Western Australia - Botany Department		
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Additional Metadata

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Floristic and Vegetation Data - Griffin - Northern Forest Region in South-West Forest Region Western Australia

Custodian Details

Name:	Data collected by Griffin 1992 for Department of Agriculture Western Australia (published in 1992)
Jurisdiction:	Australia

Description

Abstract:	This data covers remnant areas in the northern section of the RFA survey area within the South-West Forest Region (Moora to Chittering). 479 sites, quadrats 100m^2. All species were recorded, including canopy cover. Used Muir system which incorporates layers within vegetation to descrive communities (height and cover).
Search Words:	Floristic Classifications Vegetation Mapping Flora

Geographic Extent Names: SW Forest Region, Western Australia

Currency and Status

Beginning Date:	1990's
Ending Date:	1992
Data Status:	Published
Maintenance and Update Frequency:	As Required
Metadata Statement:	14 Feb 1997

Access

Stored Data Format:	Held by Author and Department of Agriculture Western Australia (now Agriculture Western Australia).
Available Format Types:	Field sheets and spreadsheets, digital format.
Access Conditions:	Written application required for data from author. Licence agreement may apply.

Data Quality

Lineage:	Data collected for species in 479 sites, quadrats 100m^2. All species were recorded, including canopy cover and heights. Site parameters were also recorded.
Positional Accuracy:	Subject to author.
Attribute Accuracy:	Accurate in terms of data collected.
Logical Consistency:	Will need verifying in view of taxonomic changes.
Completeness:	Subject to author releasing data.

APPENDIX B: SUMMARY OF METADATA BASE STATEMENTS FOR VEGETATION MAPPING PROJECT IN SOUTH WEST REGION

ANZLIC Core Metadata Elements - Directory Item Report
Vegetation Mapping Project - South-West Forest Region of Western Australia

Title: Floristic and Vegetation Data - Griffin - Northern Forest Region in South-West Forest Region Western Australia

Contact Information

Organisational Name:	Agriculture Western Australia - Moora		
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Email Address:			

Appendix C

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

(*Note: In subsequent text the landforms presented in bold format are those used on maps of vegetation complexes*).

Introduction

The following information is extracted from the landform and soil classifications for the south west forest region of Western Australia. The linkage to the classification names, with the climatic zonings, underpin the earlier mapping of the System 6 area by Heddle *et al.*. (1980) and the more recent vegetation mapping by Mattiske and Havel for the vegetation complexes and by Havel and Mattiske for the ecological vegetation systems (as summarized in this volume, on the maps attached, and Appendices D and E respectively).

The earlier landform and soil mapping was amalgamated into a mapping system by Smolinski (1999) through Agriculture Western Australia, as part of the Regional Forest Agreement projects in Western Australia (see Appendix B for meta database statements). Following the completion of all licence arrangements, these maps were supplied in draft form to the Department of Conservation and Land Management and Environment Australia and then were made available to Mattiske Consulting Pty Ltd for the vegetation mapping project.

The following text is a brief extract of the key areas and the associated landform and soil mapping units defined by the respective authors.

The vegetation mapping project area can be subdivided into the following main subregions on the basis of their geology and resulting landforms (see a map on the back of each of the vegetation complex maps):

Darling Plateau
Dandaragan Plateau
Blackwood Plateau and Plain (sometimes referred to as the Donnybrook Sunklands)
Margaret River Plateau
Leeuwin – Naturaliste Coast
Swan Coastal Plain
Scott Coastal Plain
Southern Coastal Dune System
Southern Plain
Redmond Silstone PLain
Unicup Plain
Collie Plain

Review of Linkages with Landform and Soil Mapping

Churchward and McArthur's (1980) subdivision of the largest of these areas, the Darling Plateau, was:

Lateritic Uplands
Minor Valleys
Major Valleys including Slopes and Floors
Major Valley Floors and
Major Valley Slopes and Scarps

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

These subdivisions were not actually mapped, nor given any generic name.

The lateritic uplands were subdivided into six mapping units. Churchward and McArthur's (1980) considered their mapping units, based on aerial photographs and contour base maps of between 1:25 000 and 1:50 000, to be approximately equivalent to soil associations. The units were given names of the locality in which the particular landform was best expressed.

Dwellingup – extensive uplands with coarse gravels in the west and northwest
Yalanbee - extensive uplands with fine gravels in the east and northeast
Hester – residual narrow crests in the south

Three additional units were included in the uplands

Cooke – hills (monadnocks) raised above the plateau surface
Goonaping – sandy deposits in heads of drainage lines in the north
Wilga – sandy deposits on flat or gently undulating divides in the south

The minor valleys, most of which have NW-SE lineation determined by the basement rock, include both the floors and slopes and are divided into the following set of mapping units.

Yarragil – valleys with smooth slopes and narrow swampy floors in the west
Pindalup – broader floors and greater stripping of the laterite on slopes, in centre and east
Catterick – more irregular and rockier slopes, in the south
Coolakin – extensively stripped slopes with much rock outcrop, in the east.

The major valleys, occurring in the deep dissection of the plateau, were subdivided on the magnitude of the relief, the degree steepness and rockiness of the slopes and on the nature of the floor. The component units were

Helena – deep (200 m) valleys with steep (30) slopes and rocky bed
Bridgetown - deep (200 m) valleys with steep (30) slopes and terraced floor, mainly in the south
Murray – moderately deep (90-120 m) valleys with intermediate (15) slopes and narrow floors, mainly in the centre and north
Balingup - moderately deep (90-120 m) valleys with intermediate (15) slopes and narrow floors, mainly in the south.

Where the valley floors were broad enough to be mapped separately, they were defined as follows

Williams – gentle gradient, loamy deposits and duplex soils
Avon – steep gradient, sandy deposit
Brockman and **Nooning** – terraces with red earth soils
Mumballup – complex terraces.

Major valley slopes and scarps are steep slopes with laterite largely stripped away and include minor valleys too small to be mapped separately. They are separated on relief, steepness, rockiness and soil cover:

Michibin – least relief, in the east
Bindoon – moderate relief, in the northwest
Lowdon - greatest relief, in the southwest
Darling Scarp – straight linear occurrence in west.

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

Similar subdivisions also exists for the Swan Coastal Plain and the Dandaragan Plateau, which are only peripheral to the RFA project area. Those mapping units falling marginally into the northwestern periphery of the RFA project area are:

On the Dandaragan Plateau

Wannamal - sandplain with a high proportion of swamps and lakes situated at the interface between the Darling and Dandaragan Plateau
Cullala - more extensive sandplain without lakes
Mogumber - remnant of the lateritised uplands with grey sand detritus
Karamal - remnant of the lateritised uplands with yellow sand detritus
Moondah – broad shallow minor valleys with brown, earthy sands
Reagan – gently sloping scarp with laterite spurs and sandy slopes.

On the northern Swan Coastal Plain

Beermullah – alluvial deposits with solonetzic soils
Yanga - alluvial deposits with solonetzic soils in depressions and sandy soils on intervening flat benches
Coonambidgee – mildly sloping sandy deposits flanking the Reagan scarp
Forrestfield – sandy and gravelly spurs at the foot of the Darling Scarp
Guildford – mildly sloping alluvial plain with duplex soils.

The Blackwood Plateau and the southern Swan Coastal plain, which were only peripheral to the System 6 project, have been more fully described in the subsequent land resources surveys carried out by the Department of Agriculture (Tille and Lantzke 1990, Tille 1990). This is also true of some of the southern landforms of the Darling Plateau described above, such as Wilga, Catterick, Balingup, Bridgetown, Mumballup and Lowdon, some of which were redefined in the process (Tille 1990).

Although Churchward and McArthur (1980) did not subdivide their mapping units, Churchward and Dimmock (1989) did subsequently provide soil catenas for the shallow and deep valley forms of the Darling Range. They describe them in terms of Northcote's 1979) soil classification of Australian soils. In the case of the Yarragil minor valley form in the western Darling Plateau the sequence from upper slopes to streamline was:

Yellowish brown sandy gravels (KS.Uc5 and Ks.Uc4), increasing in depth and proportion of sand downslope
Yellowish brown sands on lower slope (Uc5 and Uc4)
Non-calcareous loams or orange earths, underlain by bog-iron ore, on valley floor (Um5.21).

In the case of the major valleys forms (Murray and Helena), the sequence from upper slope to valley floor was:

Yellowish brown sandy gravels (KS.Uc5 and Ks.Uc4)
Red and yellow earth (Gn2) and red (Dr) and yellow duplex soils (Dy), with occasional outcrops of country rock. (The soil colours are influenced by parent material, those derived from mafic rocks being red and those derived from granitic rocks being yellow.)
Sandy loams and loams (Um5) of the valley floors.

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Review of Linkages with Landform and Soil Mapping

The valley forms of Churchward and McArthur (1980) were subsequently subdivided and mapped for a limited area of alienated (privately-owned) portion of the Darling Plateau near Perth by King and Wells (1990), who referred to Churchward and McArthur's (1980) mapping units as geomorphologic elements and to their subdivisions of them as landforms.

The Murray valley form (My) was subdivided into the following landforms:

My1 - Moderately steep to steep valleys slopes with yellow and mottled duplex soils and with common rock outcrops

My2 - Moderately inclined to moderately steep valley side-slopes with yellow and mottled yellow duplex soils

My3 - gentle to moderately inclined lower valley side-slopes, with complex duplex and gradational soils

My4 - very gently inclined valley floors, with yellow, red and brown gradational earths which are commonly saline

From the above description it seems that the uppermost valley slopes, with their strong lateritic influence, were described as part of the adjacent uplands, namely as landform D3 of moderately inclined undulating slopes.

King and Wells (1990) described each of their landforms in the terms of topsoil and subsoils texture, topsoil and subsoils field pH, profile permeability, profile gravel and stone, nutrient availability and nutrient retention ability in topsoil and profile, moisture availability, rooting conditions, salinity risk, as well as such applied criteria as foundation soundness, soils instability risk, soils absorption ability and subsoil retention ability, dam-site construction suitability, soil workability, ground-water supply, surface supply, water erosion, wind erosion, microbial purification ability, water pollution risk and flood risk.

Many of these criteria can be related to vegetation, though King and Wells (1990), who were mainly surveying a strongly anthropogenic landscape, did not make references to the original vegetation.

It would, however, not be difficult to make the connection with Havel's (1975 a) site-vegetation types. Southeast of Perth the linkage would be:

King and Wells (1990) landforms	**Havel (1975 a) site-vegetation types**
My1	R, G
My2	U, R
My3	Q
My4	C, CQ

At the level of Churchward and McArthur's (1980) landform mapping units and Heddle *et al.*'s (1980) vegetation complexes the equivalence is:

Churchward and McArthur's (1980) units	**Heddle *et al.*'s (1980) vegetation complexes**
Murray	Murray in Medium to High Rainfall
Bindoon	Murray and Bindoon (Low to Medium Rainfall)

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

Tille's (1996) map of the Wellington-Blackwood district provides not only an example of his hierarchical approach, but also covers landforms not covered, or less adequately described by Churchward and McArthur (1980) where the two maps overlap. Tille (1996) divides the district into the Donnybrook Sunkland Zone of the sedimentary low plateau in the west, the high-rainfall Western Darling Range Zone and the low rainfall Eastern Darling Zone of the crystalline plateau. His survey stops short of the Zone of Rejuvenated Drainage, which marginally comes into our project area, and just touches on the Warren-Denmark Southland Zone, the bulk of which is covered by Churchward's (1992) and Churchward *et al.*.'s (1988) surveys.

Within the Western Darling Range Zone Tille(1996) identifies three systems:

Darling Plateau System of the undulating surface of the crystalline plateau
Lowden Valleys System of valleys cut into the crystalline plateau
Coalfields System of sedimentary basins within the crystalline plateau.

The Darling Plateau System is essentially equivalent to Churchward and McArthur's (1980) lateritic uplands and the shallow minor valleys within them, which have been already described. The same basic nomenclature is used (Dwellingup, Hester, Wilga, Yarragil, Pindalup), but some categories common in the north of the Darling Plateau are omitted (Yalanbee, Goonaping, Coolakin, Cooke, Swamp) and the following additional categories are defined in the south:

Boonarie Subsystem of shallow swampy valleys in Kirup Conglomerate
Harris Subsystem of shallow swampy floors of major rivers
Mornington Hills Subsystem of low hills rising above the plateau surface

The Louden Valleys System consists of the following components

Donnybrook Subsystem of gravely slopes over Donnybrook sandstone
Dickson Subsystem of steep loamy slopes on the Darling Scarp *(on the vegetation complex mapped this was merged with the Darling Scarp)*
Wishart Subsystem of low gravely slopes on the Darling Scarp
Gale Subsystem of low apron below the Darling Scarp
Grimwade Subsystem of moderately incised valleys with loams and gravels
Kirup Subsystem of slopes with gravels and sands on Kirup Conglomerate
Queenwood Subsystem of lateritic slopes on Kirup Conglomerate
Southampton Subsystem of alluvial brown deep sands on river flats

The Coalfields System of Permian and subsequent sedimentary basins also retains the nomenclature of Churchward and McArthur's (1980) for Collie Basin (Collie, Cardiff, Muja), but extends to the southeast into the Wilga and Boyup Brook Basins. A new subsystem (Stockton) is introduced. The full set thus is:

Collie Subsystem of broad lateritic divides with gravels and sands
Cardiff Subsystem of broad tracts of swampy terrain
Muja Subsystem of shallow major valleys with well drained flats
Stockton Subsystem of shallow minor valleys with swampy floors.

Within the Eastern Darling Range Zone, which is a dissected terrain with large remnants of the lateritic plateau, Tille(1996) identifies two systems:

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

Eulin Uplands System of the uplands of the laterised crystalline plateau and its remnants, together with the intervening poorly drained flats over sedimentary deposits

Boyup Brook Valleys System of valleys incised into the Eulin uplands by the Blackwood River.

The Eulin Uplands System is a rather heterogeneous collection of subsystems:

Dalmore Subsystem of broad ridges and divides with gravels, loams and sands
Sandalwood Subsystem of low hills rising above the plateau
Kulikup Subsystem of extensive flats with poor drainage, over sedimentary deposits, surrounded by dissected terrain of valleys
Qualeup Subsystem of extensive flats with poor drainage, over sedimentary deposits, surrounded by low hills
Lukin Subsystem of shallow minor valleys with swampy floors

The Boyup Brook Valleys System is also a rather heterogeneous collection of subsystems, associated with the Blackwood River and its tributaries:

Newlgalup Subsystem of moderately to deeply incised major valleys in crystalline terrain, with moderate to steep slopes
Boree Subsystem of shallow major valleys in sedimentary terrain, with gentle slopes
Gnowergerup Subsystem of narrow flats on minor valley floors, often waterlogged and affected by salinity
Condinup Subsystem of narrow well drained flats on floors of major valleys.

The Eastern Darling Zone entered marginally into the System 6 region mapped by Churchward and McArthur (1980), who placed the uplands into their Dwellingup, Yalanbee, Hester and Wilga landforms, and the valleys into the Michibin and Coolakin landforms. The use of this nomenclature is now confined to Darling Range north of the Blackwood River dissection.

Within the Donnybrook Sunkland Zone Tille (1996) recognises three systems:

Blackwood Plateau System of broadly undulating uplands of the plateau
Goodwood Valley System of valleys formed by the dissection of the plateau
Whicher Scarp System forming the northern margin of the plateau.

The Blackwood Plateau System is subdivided into:

Kingia Subsystem of broad lateritic divides with gravels
Telerah Subsystem of broad, more sandy divides
Coate Subsystem of swampy upland depressions
Bidella Subsystem of shallow minor valleys with swampy floors
Jalbaragup Subsystem of deeper valleys with narrower, better drained floors
Milyenup Subsystem developed of Bunbury basalts

The Goodwood Valley System is subdivided into:

Rosa Subsystem of valley side slopes in the north and west of the Blackwood Plateau
Blackwood Subsystem of valley side slopes in the centre of the Blackwood Plateau, on the Blackwood River and its tributaries
Preston Subsystem of alluvial terraces in the north and west of the Blackwood Plateau

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

Darradup Subsystem of alluvial terraces in the centre of the Blackwood Plateau, on the Blackwood River and its tributaries
Layman Subsystem of swampy depressions within the major valleys
Bentley Subsystem of raised flats within the major valleys.

The Whicher Scarp System, which consists of a low scarp separating the Blackwood Plateau from the southern Swan Coastal Plain, is subdivided into:
Whicher Subsystem of gentle lateritic slopes of the scarp
Yelverton Subsystem of a low shelf below the scarp.

The Donnybrook Sunkland Zone of Tille (1996) is closely related to the western half of the area Manjimup region mapped by Churchward (1992), who refers to it as the Blackwood Plateau, subdivided it into:
Units associated with drainage lines
Uplands units (other than those of the drainage lines)

Churchward (1992) subdivided the latter into
Units developed on Mesozoic sediments
Units developed on crystalline rocks – Bunbury Basalt

The upland units developed on Mesozoic sediments are further subdivided into:
Undulating local divides
Swampy tracts

Within the undulating local divide group he recognises three units:
Kingia unit of gently undulating ridge crests forming local drainage divides
Telerah unit of slightly undulating ridge crests forming local drainage divides
Jangardup unit of slightly undulating terrain at the interface of the Blackwood plateau and Scott Coastal Plain.

Kingia and Telerah have also been mapped by Tille (1996), who adopted Churchward's (1992) nomenclature but distinguished the more gravely Kingia from sandier Telerah. He did not describe Jangardup as it does not extend so far north.

Churchward recognised only one unit within the swampy tracts
Coate unit of the broad swampy upper tracts of the drainage systems. It was also described by Tille (1996), who adopted Churchward's (1992) nomenclature.

Within the units developed on Bunbury Basalt Churchward (1992) distinguished between
Scott unit associated with scarps and valley slopes and loamy soils and
Milyennup unit associated with uplands and gravely-sandy soils.

Only Milyennup extended marginally into the area mapped by Tille(1996), who adopted Churchward's (1992) nomenclature and description.

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

Churchward's (1992) units associated with drainage lines are divided into:

Major Valleys
Blackwood unit of valleys 40-60 m deep, with relatively steep slopes
Jalbaragup unit of valleys 20-40 m deep, with moderate slopes
Barlee unit of valleys 20 m deep, with mild slopes

Minor Valleys
Bidella unit of minor valleys less than 20 m deep, with mild slopes
Layman unit of broad concave valleys with flat floor, considered to be former valley of the Blackwood River.

Churchward's (1992) units associated with drainage lines only partly match the Goodwood Valleys System of Tille (1996), who separated the valley floors of the Blackwood unit from the slopes as the Darradup Subsystem of river terraces. In addition he described the Rosa and Preston Subsystems which occur only in north. He did not describe an equivalent of the Barlee unit, which does not occur so far north.

He also treated the Jalbaragup and Bidella units as part of his Blackwood Plateau System, presumably because they are only shallowly incised into the plateau.

The landforms of the Blackwood Plateau have also been described near its western interface with the crystalline Margaret River Plateau by Tille and Lantzke (1990), but the nomenclature is so radically different that it will be dealt with separately.

In addition to the Blackwood Plateau Churchward (1992) also mapped the southwestern portion of the Darling Plateau centred on Manjimup, extending from Yornup in the north to Pemberton and Quininup in the south. He subdivided this region into:

Units associated with drainage lines
Upland units (other than those of the drainage lines)

Within the upland group he distinguished between:

Units developed mainly on crystalline igneous rocks –granites and gneisses
Units developed on quartzite and/or unconsolidated quartzose sediments.

The upland units on crystalline igneous rocks were further subdivided into:

Units of the western fringe of the plateau
Units of the plateau surface.

Within the western fringe group Churchward (1992) distinguished between:

Dickson unit of stripped, moderately steep slopes, in the northern portion of the Darling Scarp
Wishart unit of weathered, milder slopes of the southern portion of the Darling Scarp
Gale unit of depositional apron of the Wishart unit, with very gentle slopes.

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

Within the plateau surface group Churchward (1992) distinguished between:

Hills
Undulating plateau elements and broad crests
Swampy tracts.

The hills group contained the following units:

***Mattaband** unit of single higher hills rising 20-40 m above the plateau surface
***Collis** unit of single low hills rising less than 20 m above the plateau surface.

The undulating plateau elements and broad crests group was subdivided into:

***Bevan** unit of gently undulating tracts comprising broadly convex crests and shallow minor valleys
Corbalup unit of very gently undulating terrain with very broad crests and broad, sandy, poorly drained concavities
***Crowea** unit of broadly convex ridge crests and the gentle flanking upper slopes
Cattaminup unit of very gently undulating terrain of low rises and shallow flat drainage floors
Hawk unit of very gently undulating terrain with minor swampy drainage floors at the interface between the southern tip of the Darling Plateau and the Southern Coastal Plain.

The swampy tracts group contains:

Yornup unit of swampy plains with some included low rises
Kapalarup unit of semi-permanent swamps and swampy plains.

The units developed on quartzite and/or unconsolidated quartzose sediments is subdivided on the base of topography into:

Quartzite unit of ridge crests and low hills
Quininup unit of low smoothly convex hills and vales
Toponup unit of broad ridge crests capped by lateritic duricrust
Forrard unit of crests and upper slopes formed on Kirup Conglomerate
Cormint unit of swampy tracts and low rises
***Quagering** unit of very gently sloping, poorly drained sandy terrain
***Angove** unit of very gentle slopes and broad drainage divides.

The broad group of drainage line units on the crystalline plateau is subdivided into major and minor valleys.

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

The major valley units are:

Donnelly unit of very deeply incised (100-140 m) valleys with moderate to steep slopes in gneissic or migmatic terrain

Warren unit of deeply incised (60-100 m) valleys with moderate to steep slopes in gneissic terrain

Wilgarup unit of moderately incised (50-70 m) valleys with irregular slopes, in granitic terrain

Lefroy unit with moderately incised (40-60 m) valleys with moderate to steep slopes and clearly defined stream channel, in gneissic terrain

Wheatley unit of moderately (20-40 m) incised valleys with moderate slopes and swampy floor, in gneissic or migmatic terrain

Yerraminnup unit of moderately incised (20-40 m) valleys with moderate slopes in granitic terrain

Strachan unit of shallowly incised (less than 20 m) valleys with smooth gentle slopes slopes in granitic terrain

The minor valley units are:

Pemberton unit of moderately incised (20-40 m) valleys with mild to moderate slopes and gently sloping floors with little or no channel development, in deeply weathered terrain

Catterick unit of shallowly incised valleys (20 m) with mild to moderate slopes and flat swampy floors in granitic terrain

Carbunup unit of shallowly incised valleys (less than 20 m) with mild to moderate slopes and broad swampy floors in deeply weathered terrain

Yanmah unit of shallowly incised valleys (less than 20 m) with mild slopes and broadly concave swampy floors, in deeply weathered terrain.

Those of Churchward's (1992) mapping units marked with asterisk (*) are widely spread landforms that occur throughout the southern forests. They were first defined in Churchward *et al.*'s (1988) survey of the south coast and hinterland. However the 1988 survey also defined a number of landform units that only occur south and east of the area surveyed by Churchward (1992). Similar classification was used for these:

The three major categories described by Churchward *et al.*'s (1988) were:

I. Units developed on granitic rocks and associated unconsolidated sediments
II. Units developed on siltstones and sandstones
III. Units developed in coastal Aeolian and fluviatile sediments.

Within the broad group of landforms developed on granitic rocks and associated unconsolidated sediments, the next level of subdivision was:

Plateau Elements
Hills and Hilly Terrain
Swampy terrain

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The main component of the Plateau Element group, the **Bevan** unit, is extensively distributed through the south coast hinterland. Here it is subdivided on the basis of soils into

BEy with yellow duplex soils (Dy3.62)
Beb with yellow duplex soils (Dy2.62) and red earths.

The other component of the group, the **Crowea** unit, is subdivided into three subunits:

CRy with yellow duplex soils (Dy3.62)
CRb with yellow duplex soils (Dy2.62) and red earths.
CRd yellow duplex soils with grey sandy topsoil (Dy5.81).

The only new Plateau Element unit is

Perillup unit of gently sloping or slightly undulating plains with some included swampy depressions and few shallow valleys.

The Hills and Hilly Terrain group is much more strongly developed in the south coast and hinterland than in the Manjimup region surveyed by Churchward (1996). This is due to the fact that the bulk of it falls into the Albany-Fraser Orogen rather than the Yilgarn Craton. Churchward *et al.* (1988) included the Mattaband and Collis units in this category rather than the Plateau Elements.

The units of the south coast hinterland described by Churchward *et al.* (1988) differ from those described from the Manjimup region by Churchward (1992) by being divided on the basis of soils into subunits.

In the case of **Mattaband**, the complex of low (20-60 m) hills with smooth slopes, the subunits are:

MTy of yellow duplex soils with grey brown topsoil and some lateritic duricrust on mild upland slopes
MTb of brown duplex soils, red duplex soils and red earths, with some granitic outcrops on steeper slopes
MTp of shallow duplex soils with gritty topsoil and some granitic outcrops
MTd of duplex soils with grey sandy topsoil and some quartz gravel.

Similarly, the **Collis** unit of low hills (less than 20 m) with smooth flanking slopes includes the following subunits:

COy of grey-brown sandy topsoil with some boulders of lateritic duricrust on mild upland slopes
COb of brown duplex soils, red duplex soils and red earths, with some granitic outcrops on steeper slopes
COp of shallow duplex soils with gritty topsoil and some granitic outcrops
COd of duplex soils with grey sandy topsoil and some quartz gravel.

Additional members of the Hills and Hilly Terrain group described from the south coast and hinterland are:

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Keystone unit of hills and ridges rising up 60 - 300 m above the swampy corridors, with granite outcrops (domes) on upper slopes and smooth midslopes on weathered granite and gneiss. It is subdivided on the basis of rock outcropping, surface texture and hue of the subsoil into

Kg dominated by granitic outcrops, with shallow, brown gritty soils
Kb on broad crests and flanking slopes with yellow and red duplex soils and yellow and red earths

Ky on moderate to gentle slopes with gravely yellow duplex soils and lateritic duricrust
Kp on mid to lower slopes with yellow duplex soils with shallow gritty topsoil
Ks pockets sandy podzols in saddles and concavities, often poorly drained .

Lindesay unit of hills and ridges rising up 60 - 300 m above the adjacent terrain, with frequent granitic and gneissic outcrops (pavements, domes). Hill slopes are of irregular form, with outcrops interspersed with varying depth of weathered mantle and sands. The unit is subdivided on the degree of rock outcropping and on soils into

Lg extensive granitic outcrops flanked by shallow brown gritty loams
Ly smooth slopes with much less frequent rock outcrops and gravely yellow duplex soil
Lp smooth mid slopes with yellow duplex soils with shallow gritty topsoil
Ls pockets of sandy podzols in saddles and concavities, often poorly drained.

Gardner unit of coastal hills and ridges with relief of more than 60 m, whose upper slopes and crests consist of granitic and gneissic outcrops but lower slopes are smooth and covered by deep weathered mantle and sometimes by calcareous sands. The unit is only weakly represented in the project area as

Gg granite pavements and domes
most of it occurring further to the east.

Barrow unit of hills and ridges with relief of 60 - 300 m. There are granite outcrops (domes, pavements and tors) on upper slopes and smooth lower slopes of weathered granite and sand mantle, sometimes surrounded by Plantagenet sediments.
It is subdivided on the basis of rock outcropping into

BAg upper slopes and crests dominated by granitic outcrops, with shallow gritty loamy soils
BAf moderate to gentle slopes with yellow duplex soils with sandy topsoil and boulders of lateritic duricrust.

Another hill unit, described only from the extreme east of the project area, and then only as one small occurrence, is
Pillenorup (PN), consisting of isolated hills rising less than 60 m above the general level of the plateau north of Mt Barker, developed on granite partially covered by Pallinup siltstone. Usually there are no granitic outcrops and the soils are yellow duplex soils with deep sandy topsoil.

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The Swampy Terrain group is particularly strongly developed on the Southern Coastal Plain and as belts between the hills in the hinterland. The units described by Churchward *et al.* (1988) include:

Angove (A) already describe above

Camballup (CM) swampy plains with broad drainage floors, permanent and ephemeral swamps, lunettes and low rises of weathered rock, in granitic terrain. The dominant soils are yellow solonetzic soils.

Caldyanup (CA) poorly drained plains and broad drainage floors between hill ridges, mainly in granitic terrain but with some siltstone. The dominant soils are yellow solonetzic soils.

Sidcup (SD) Narrow and shallow drainage depressions in granitic terrain, filled with colluvial sands occurring as extensions of Camballup. The dominant soils are humus podzols.

Quindabellup (QN) slightly concave valley divides or elongate saddles. The dominant soils are humus podzols.

Pingerup (Pi) poorly drained plains and interridge corridors, including broad drainage floors, ephemeral and permanent swamps and few low granite domes. The dominant soils are humus podzols

Burnett (BU) gently sloping plains with drainage floors and numerous granite outcrops. The dominant soils are humus podzols on plains and shallow gritty soils around the outcrops.

Morande (MO) complex of lunettes, dunes and hummocks with intervening swampy terrain, mostly in weathered Pallinup siltstone. The dominant soils are heavy clays or yellow solonetzic soils in swamps and podzols on the dunes and lunettes

Quagering (Q) broadly convex or flat valley divides with some swamps, with unconsolidated sandy sediments over granite or quartzite. The dominant soils are humus podzols and peaty podzols.

Hazelvale (HA) swampy corridors partially incised by minor streams,
developed on shallow unconsolidated sandy sediments over weathered granite. The dominant soils are humus podzols, peaty podzols and sandy yellow duplex soils

Within the second major group of units, namely those developed on siltstones and sandstones, the main division is between

Plateau Elements and
Swampy Terrain.

The Plateau Elements group contains the following mapping units:

Redmond (R) flat or gently undulating upland plain on Pallinup siltstone, with ephemeral swamps and lakes and ill-defined drainage lines. The dominant soils are yellow duplex soils, often with lateritic gravel in topsoil.

Dempster(D) spurs and ridges in the dissected southern margin of the Pallinup siltstone plateau, with both lateritic duricrust and deep sands. The unit is subdivided into:

Dc broad convex crests of spurs and ridges with yellow duplex soils containing lateritic gravel

Ds gentle slopes adjacent to Dc, with humus podzols developed on deep sands

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Mitchell (MI) gently undulating uplands with broadly convex crests and gentle flanking slopes and some included swampy, sandy depressions, developed on sandstones. The dominant soils are gravely duplex soils on crests, deep sands on slopes and humus podzols in depressions.

Trent (TR) low hills with less than 40 m relief, with broad convex crests and gentle flanking slopes, on siltstones and sandstones. The unit is subdivided into:

TRc ridge crests with gravely sandy yellow duplex soils and some lateritic duricrust

TRs gentle slopes with deep grey sands and podzols

The Swampy Terrain group contains the following mapping units:

Boulongup (BO) broad, shallow, circular, poorly drained depressions in the siltstone plateau, with some included lunettes and hammocks. The dominant soils are yellow solonetzic soils, but there are also cracking clay soils.

Fernley (F) gently undulating terrain of broad low rises and broad swampy depressions on siltstones, sandstones and sandy detritus. The dominant soils are yellow duplex soils on the rises and humus podzols in depressions.

The broad group of landforms (mapping units) developed on coastal Aeolian and fluviatile sediments (III) is subdivided into:

Dune systems and

Coastal Swampy Terrain

The units comprising the dune systems are:

D'Entrecasteaux (E) broad coastal ridges often more than 100 m high, adjacent to curved bays between granite headlands, with steep seaward scarps and mild landward slopes, formed on Tamala limestone, which is cemented calcareous aeolian sand. The dominant soils are deep calcareous sands, with outcrops of limestone (travertine), but there are also some shallow brown sands and podzols.

Meerup (M) complex of parabolic dunes extending inland from the southern coast, considered to be the product of four successive phases of deposition. The dunes often overlie granitic headlands, **D'Entrecasteaux** ridges and coastal alluvium. The dunes are subdivided into:

Ms oldest dunes furthest inland, with smooth rounded crests and gentle slopes. The dominant soils are podzols over slightly calcareous sand at depth.

Mp second oldest dunes with sharper crest and steeper slopes. The dominant soils are podzols over slightly calcareous sand at depth.

Mc third phase of sand dunes with sharp irregular crests and steep slopes. The dominant soils are pale calcareous sands with organic enrichment in the surface 10 cm.

My youngest phase of sand dunes adjacent to the beach, with very sharp irregular crests and very steep slopes. The dominant soils are loose pale calcareous sands with very slight organic enrichment at the surface.

Mu unstabilised dunes, usually but not always close to the shoreline. The dominant soils are loose pale brown calcareous sands.

Mf flats and gently undulating depressions enclosed by parabolic dunes with swampy elements. The dominant soils are podzols over calcareous sand.

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Mr beach ridges, generally less than 5 m high, and intervening swales. The dominant soils are pale brown calcareous sands, with organic enrichment in the swales.

The coastal swampy terrain consists of the following units:

Blackwater (BW) poorly drained coastal plain with very diffuse drainage patterns, some linear dunes and granitic tors and pavements, developed on unconsolidated sands and clays over mainly granitic substrate. The unit is divided on the basis of soils into:

BWp broad swampy plains with humus and peaty podzols

BW (Bwo) narrow swampy costal plain on fluviatile sediments, with solonetzic soils.

Owingup (O) poorly drained estuarine plains with swamps and lakes, with some included dunes and lunettes. The dominant soil type are solonetzic soils.

Kordabup (KO) broad swampy tracts in lower reaches of stream, often composed of low broad rises and intervening drainage floors on unconsolidated sandy sediments. The dominant soils are humus podzols.

Walpole (Wp) flat to gently undulating benches of unconsolidated sandy sediments and Aeolian sands. The dominant soils are humus podzols.

The broad group of landforms (mapping units) associated with drainage lines (IV) is subdivided into:

Major valleys (V) and
Minor Valleys (S)

The valleys of the south coast and hinterland do no reach the depth of dissection of the valleys in the western margin of the Darling Plateau. The deepest valleys

V1 valleys are only incised 40-60 m into the granitic plateau, and have mainly smooth steep slopes with only occasional rock outcrops. The dominant soils are red earths, but there are also red and yellow duplex soils on slopes and brown sandy loams on terraces.

V2 valleys are generally upstream of V1 and are 20-40 m deep, with moderate smooth slopes largely without rock outcrops. The dominant soils are gravely yellow duplex soils, but there are also red earths on slopes and earthy sands and peaty podzols on valley floors.

V3 valleys traverse belts of hills and are 20-40 m deep, with rocky granitic slopes. The dominant soils are yellow duplex soils.

V4 valleys are courses of major streams traverse traversing swampy terrain, are less than 10 m deep and include terraces. The dominant soils are loamy and silty sands.

V5 valleys occur in the north and are set 40 m into a granitic plateau, with mild smooth slopes. The dominant soils are yellow duplex soils on slopes and yellow solonetzic soils on the floor.

V6 valleys only occur east of this project area.

V7 valleys are incised 20-40 m into sedimentary rocks, have steep and irregular slopes with outcrops and terraced floors. The dominant soils are gravely yellow duplex soils on slopes and deep loamy sands on terraces.

V8 valleys are broad but shallow, incised 20 m into sedimentary rock. The soils range from gravely yellow duplex soils on upper slopes through deep leached sands on lower slopes and yellow solonetzic soils on terraces.

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The Minor Valleys (S) group consist of the following set of units:
S1 valleys set in granitic plateau upstream of V2, less than 20 m deep with mild smooth slopes and swampy floor. The dominant soils are yellow duplex soils on slopes and peaty and humus podzols on the floor.
S2 valleys resemble S1 valleys except that their floors are gently concave and prone to salinity problems.
S3 valleys are shallow valleys with concave floors in swampy terrain, less than 5 m deep, with mild slopes. The dominant soils are peaty podzols and humus podzols.
S4 valleys are broad swampy drainage zones only 5 m deep. The dominant soils are humus podzols.
S5 valleys are narrow incisions in granitic terrain, less than 10 m deep. The dominant soils are sandy yellow duplex soils.
S6 valleys are narrow, often V-shaped valleys incised into sedimentary terrain, less than 10 m deep. The dominant soils are sandy yellow duplex soils on slopes and deep sands on floors.
S7 valleys are open U-shaped valleys with broadly concave or flat floors incised less than 30 m into sedimentary terrain. The dominant soils are deep leached sands on slopes and humus podzols on floors.
S8 valleys are broad shallow valleys and alcoves in undulating sandstone terrain. The dominant soils are deep leached sands or gravely sands on slopes and humus podzols on floors.

In his survey of the Manjimup region Churchward (1992) covered the remainder of the Southern Coastal Plain westward up to Black Point. In this study the wetsern edge of the Darling Plateau is used as a dividing point. East of this we have retained the nomenclature of Churchward *et al.* (1988). West of it the nomenclature of Tille and Lantzke (1990), developed for the remainder of the coastal plain westward to Cape Leeuwin, where the Southern Ocean meets the Indian Ocean has beeb used. The primary reason for that is that west of the Darling Scarp the nature of the coast changes, in that granitic and gneissic headlands are absent until the west bank of the Blackwood River at Augusta is reached. The only crystalline headland in that portion of the coast is the Black Point, composed of Bunbury Basalt. The coastal plain behind the dunes is also markedly different, being much swampier and lacking crystalline outcrops. We have benefited greatly by having Churchward's (1992) maps, which straddle the Darling Scarp, in that they enabled us to link Churchward *et al.* (1988) with Tille and Lantzke (1990).

There is one landform (mapping unit) described exclusively by Churchward (1992), namely
Cleave (CV) swampy terrain which represents the shallow (less than 10 m) dissection of the Blackwater swampy plain by minor streams, which are flanked by very gentle slopes. The dominant soils are humus podzols or peaty podzols.

Tille and Lantzke (1990) describe the coastal dunes east of Augusta as the **D'Entrecastaux Dune System (D)** and the coastal plain north of it as the **Scott Coastal Plain (S)**. At its northern margin The Scott Coastal Plain merges almost imperceptibly into the Blackwood Plateau.

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Tille and Lantzke (1990) define the **D'Entrecasteaux** Dune System as beach backed by steeply sloping parabolic calcareous dunes 20-80 m high, which in turn are backed on the landward side by a series of lower siliceous dunes 20-40 m high. They divide the system into the following units:

Db beaches with deep calcareous sand
DE5 south facing calcareous dunes exposed to strong winds from the Southern Ocean
DEm5 blow-outs in Dem5.
In this study Db and Dem5 are combined with the more extensive DE5.
D5 sheltered northern slopes of the calcareous dunes
D interdune flats with deep calcareous sands
Dd5 moderately sloping siliceous dunes
Dd2 gently sloping siliceous dunes
In this study Dd2 with Dd5 has been combined.
Dd flats between the dunes with deep bleached siliceous sands
Dr rocky dunes with calcerinite rubble
Drd rocky flats underlain by calcerinite.

Tille and Lantzke (1990) describe Scott Coastal Plain (S) as a broad poorly drained, level to gently undulating plain rising from sea level to 40 m at its junction with the Blackwood Plateau, formed on Quaternary sediments. They subdivide it into the following units:

Sd poorly drained flats with deep bleached sands
Swd extremely poorly drained flats with organic stained sands
Swi extremely poorly drained with shallow sands over ironstone
Sd2 low sandy rises.
We have combined Sd and Sd2

To the west of the Scott Coastal Plain Tille and Lantzke (1990) define the **Blackwood Alluvial Plain (B)**, described as a level to gently undulating plain formed on Quaternary alluvial floodplains and terraces of the Blackwood river. Most though not all of the soils are sandy, and on the whole the Blackwood Alluvial Plain is better drained than the Scott Coastal Plain, though there are some extensive poorly drained patches. It is subdivided into the following units:

B well drained flats or rises
Bw poorly drained depressions
Bf well drained loamy soils
Bd low rises with deep bleached sands.

The key area surveyed by Tille and Lantzke (1990) was the Leeuwin-Naturaliste region, in particular the Margaret River Plateau composed of granitic-gneissic rocks. The plateau extends from Cape Leeuwin in the south to Cape Naturaliste in the north. In the west its Indian Ocean coast is partially overlain by aeolian sediments (Leewin-Naturaliste Coast), on the eastern, inland side it abuts on to the sedimentary Blackwood Plateau and in the northeast on to the Swan Coastal Plain.

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The Leewin-Naturaliste Coast is subdivided into
Kilcarnup Dunes (K) and
Gracetown Ridge (G).

Kilcarnup Dunes (K) are a discontinuous band of steeply inclined high (up to 200 m) parabolic dunes of calcareous sand overlaying the western slopes of the Gracetown Ridge. The following units are recognised within it:

KE recently formed dunes of pale calcareous sand exposed to strong winds.
Kb beaches and foredunes
KEf older dunes of calcareous sand in which organic matter has accumulated in the topsoil, exposed to winds but vegetated
KEm blowouts in the dune systems, which because of their limited size have been included in KEf
KrE oldest exposed dunes in which aeolinite has began to form and the organic matter in the topsoil has built up to a dark topsoil

There are limited occurrences of Kilcarnup Dunes on the sheltered lee side of the dune system
Kf steep dunes not exposed to seawinds, with organic matter in the topsoil and
Kr dark calcareous sands containing limestone rubble.

The Gracetown Ridge consists of older dunes, rising up to 210 m, which have been lithified to form Tamala Limestone. It has the following component units:

Ge gently undulating crest
GE moderately inclined western sideslopes subject to strong winds from the Indian Ocean
G2 moderately inclined eastern sideslopes sheltered from strong winds, with deep brownish yellow siliceous sands
G3 gently inclined eastern footslopes sheltered from strong winds, with red-brown siliceous sands
Gk karstic topography with caves and sinkholes
Gv deep narrow minor valleys cut into the Gracetown Ridge.

The crystalline Margaret River Plateau is divided into the
Cowaramup Uplands (C)
Wilyabrup Valleys (W) and
Metricup Scarp (M).

The Cowaramup Uplands consist of a gently undulating to undulating plain, rising from 20-80 m in the south to 80-140 m in the north, formed on lateritised granitic-gneissic basement rocks. It is subdivided into the following units:

C flats and gentle slopes with yellow-brown duplex soils and pale grey mottled soils
Ci laterite cap at or near surface (we have included Ci in C)
Cvw shallow drainage depression with broad poorly drained floors
Cv shallow drainage depressions with narrow, v-shaped floors
Cw poorly drained slight depressions (Cv, Cvw and Cw have been mapped as Cw because of scale problem)
Cd2 flats and low rises of deep bleached sand (mapped as Cd)
Cr shallow rocky soils.

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The Wilyabrup Valleys are a valley system moderately deeply incised into the Margaret River Plateau, forming undulating to rolling hills below the upland surface of the plateau. Tille and Lantzke (1990) recognise many subdivisions within it on the base of slopes and soils, many of which are difficult to map at the scale used by us. We have reduced them to:

W sideslopes of the valleys with yellow-brown gravely duplex soils and red-brown gravely gradational soils (earths)
Ww broad drainage depressions with swampy floors
Wr steep rocky slopes with shallow soils and rock outcrops
Wd milder slopes with deep bleached sands

In addition there are localised occurrences of the Wilyabrup system on the southwestern coast, exposed to strong winds.
We have mapped three subsystems

WE granitic headlands with maximum exposure
We coastal well drained low slopes
Wew coastal poorly drained depressions

The Metricup Scarp is the eastern edge of the northern Margaret River Plateau. It has a relatively uniform slope, but has been dissected by small deep valleys. Tille and Lantzke (1990) recognise several subdivisions within it, but just two are mapped:

M even moderate main slope of the scarp with deeper yellow brown gravely soils with some lateritic outcrops
Mv steeper slopes of minor valleys with shallower soils and rock outcrops.

At the southeastern margin of the Margaret River Plateau Tille and Lantzke (1990) delineated a transitional system of

Glenarty Hills (H) which overlaps on to the Blackwood sedimentary plateau. The system consists of undulating rises and rolling low hills formed by dissection of the two plateaux by the McLeod and Glenarty Creeks. Tille and Lantzke (1990) recognised a number of subdivisions which we combined into just three:

H gently inclined valley sideslopes and ridge crests with yellow brown gravely duplex and pale grey mottled soils, with some lateritic outcrops
Hw broad swampy valley floors and poorly drained depressions
Hd low rises of yellow and bleached sands.

Blackwood sedimentary plateau, which occupies the bulk of the land between the Margaret River Plateau in the west and the Darling Plateau in the east, is considered by Tille and Lantzke (1990) to be somewhat more dissected at its western margin. They describe three systems:

Treeton Hills (T) the central higher portion of the plateau
Yelverton Shelf (Y) flanking T in the north
Nilup Plain (N) flanking T in the south.

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The Treeton Hills are undulating rises and rolling hills developed on lateritised sedimentary rocks of the Perth Basin through the dissection by Margaret and Carbanup Rivers and Chapman Brook. The hills range in height from 20 to 120 m. Tille and Lantzke (1990) recognise a number of subdivisions which in this study are reduced to just three:

T gently inclined ridges and hill crests with moderately inclined hill slopes with yellow-brown duplex soils and pale grey mottled soils with some lateritic outcrops
Td areas of deep leached sands
Tw valley floors and depressions, often poorly drained.

The Yelverton Shelf is considered by Tille and Lantzke (1990) to be the remnant of an ancient plain or plateau, forming gently inclined slopes rising from the Swan Coastal Plain to the Treeton Hills. Tille and Lantzke (1990) recognise a number of subdivisions which for our maps we reduced to just three:

Y gently inclined slopes with yellow-brown duplex soils and pale grey mottled soils with some lateritic outcrops
Yd areas of deep leached sands
Yw valley floors and depressions, often poorly drained.

The Nillup Plain is considered by Tille and Lantzke (1990) to be the transition, in the form of a level or gently undulating plain, between the Scott River Plain and the Treeton Hills. Tille and Lantzke (1990) recognise a number of subdivisions which we reduced to just three:

N flats with pale grey mottled soils
Nd areas of deep leached sands
Nw shallow open drainage lines and depressions, often poorly drained.

The Swan Coastal Plain within the region mapped by Tille and Lantzke (1990) is only its southernmost extremity. It is subdivided by them into:

Abba Plain (A)
Ludlow Plain (L)
Quindalup Coast (Q).

The Abba Plain is a gently undulating plain formed on Quaternary alluvium. It lies between 10-40 m a.s.l. and contains extensive areas of poor drainage. It is essentially a patchwork of shallow depressions and low rises. Tille and Lantzke (1990) recognise a number of subdivisions which for our maps we reduced to just five:

A low rises with sandy grey-brown gradational and duplex soils
Ad low rises and dunes of deep bleached sand
Adw depressions with sandy soils
Af well drained flats sandy grey gradational soils and red-brown sandy loams
Aw deeper depression with clay soils.

The Ludlow Plain is a narrow strip of land between the Abba plain and the Quindalup Coast. It is level to gently undulating and is formed on the aeolinite and calceranite of the Tamala limestone. Only one of the several units described by Tille and Lantzke (1990) falls into the project area, namely:

Lw shallow depressions with seasonal waterlogging.

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Similarly, only one of the subdivisions of the Quindalup Coast system is mapped, namely:

Qw defined by Tille and Lantzke (1990) as wet flats, with poor subsoil drainage in winter.

In addition to the land systems, subsystems and mapping described above there is a significant area in the east and southeast of the project area for which published information is either limited or lacking. However even in these areas information is available in the form of maps and informal descriptions.

In the Blackwood catchment east of the area surveyed by Tille (1996) published information is available down to the level of zones and systems (Grein 1995), and unpublished information to the level of subsystems. In the Eastern Darling Zone there are two land systems not covered by Tille (1996), namely Boscabel and Darkan, which are considered by Grein (1995) to be dissected lateritic terrain.

Boscabel (Bo) gently undulating rises and small alluvial plains with sandy and gravely soils, subdivided into

Bo1 crests and slopes with duricrust and shallow sandy gravels
Bo1s mid and lower slopes with deep sandy duplex soils or deep loose sands

Darkan (Dk) gently undulating to undulating rises with sandy gravels on divide crests, and sandy or loamy duplex soils on weathered granite or dolerite on slopes, subdivided into

Dk1 divide crests with duricrust and loamy gravels
Dk2 moderate valley slopes with gravely yellow duplex soils
Dk3 steep valley slopes with loamy duplex soils, shallow skeletal soils and rock outcrops
Dk4 ??
Dk5 near level broad depressions and valley floors with lunettes, with solonetzic soils on floors and deep sands on lunettes
Dk5f ??

Immediately east of the Eastern Darling Zone is the Zone of Rejuvenated Drainage, described by Grein(1995) as rolling terrain between 240and 380 m a.s.l., in which the dissection of the lateritic profile generates moderately to gently inclined rises and hills which are either rounded or with breakaways below lateritic remnants. Locally there are steeper slopes with exposed basement rock. The drainage lines may be sluggish but the streams flow in clearly incised courses.

The only system of this zone that occurs within the project area on the eastern margin of
Farrar (Fa), described as undulating hills and rises drained by the Balgarup River, developed over granitic or doleritic country rock. Only a small proportion of the system remains covered in laterite, in the form of small plateaux with sandy gravels separated from the slopes by breakaways. It is subdivided into

Fa1 upper slopes, ridges and minor plateaux with sandy gravels
Fa2 moderate slopes with red or yellow duplex soils
Fa3 steep valley slopes with loamy duplex soils, shallow skeletal soils and rock outcrops
Fa4 footslopes and lower slopes with grey sandy duplex soils
Fa5 near level broad depressions and valley floors with solonetzic soils.

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The systems for which no published information is so far available occur at the eastern margin of the project area, east of the Manjimup survey of Churchward (1992), south of the Wellington-Blackwood survey of Tille (1997) and north of the south coast hinterland survey of Churchward *et al.* (1988).

The unpublished survey of Smolinski defines the following systems:

Frankland Hills (FH)
Gordon Flats (GD)
Unicup Flats (UC)
Wingewelup (Wg)
Jingalup (Jp)
Nuniup Nu)
Mallawillup (Mm).
Pumpareena (Pu).
Yarraleena (Ya)

The Frankland Hills system is described as low hills east of the Perup Plateau with lateritic gravels, yellow brown gravely sands and gravely yellow duplex soils. We have utilised only five of the subsystems defined, namely:

FH1 lateritic crests and upper slopes including isolated low gravely rises, with yellow brown gravely duplex soils and gravely sands, with lateritic boulders

FH2 upper to lower slopes, with gravely yellow mottled duplex soils and pale yellow and bleached sands

FH3 minor valleys with moderately deep to deep sandy duplex soils and deep pale yellow sands

FH4 lower slopes and flats including swampy depressions, with moderately deep grey sandy duplex soils

FH5 saline valley floors with shallow to moderately deep yellow and gleyed mottled duplex soils, usually with grey or bleached topsoil

The Gordon Flats system consists mainly of poorly drained alluvial flats and benches with some gravely and sandy rises. The system is characterised by strong development of sodic soils. Within the project area it is surrounded by Frankland Hills and merges into Unicup Flats in the south. Of the six subsystems described only three have been described:

GD1 broad swampy flats and drainage lines, with shallow gravely duplex soils and sodic clays

GD2 low sandy rises with moderately deep to deep grey sandy duplex soils. Included within this study is

GD3 low gravely rises with loamy and gravely duplex soils

GD4 swampy terrain with shallow to moderately deep yellow sodic duplex soils with conspicuously leached A2 horizon over clay. We have included in it

GD5 saline drainage lines and flats.

APPENDIX C: SUMMARY OF LANDFORM AND SOIL CLASSIFICATIONS FOR SOUTH WEST FOREST REGION

Review of Linkages with Landform and Soil Mapping

The Unicup Flats consists mainly of poorly drained flats with lakes, swamps and low gravely and sandy rises.

The system is subdivided as follows:

UC1 generally flat terrain with intermittent lakes and swamps. The dominant soils are pale sands overlying bog iron hardpans or gravels with mottled clay within 2 m.
UC2 low sandy rises with deep pale sands which may overlie gravel layers
UC3 gravelly rises yellow brown gravelly duplex soils on crests and gravelly sands over laterite or bog iron ore
UC4 swamps with pale sands over bog iron ore, seasonally waterlogged

The Jingalup system was represented only very marginally in the project area, the bulk of the system being to the north and east. It consists of gently undulating rises drained by the Tone River. The only sub-system mapped by us was

JP2 simple to convex lower slopes with moderately deep gravely duplex soils and grey sandy duplex soils.

The Nuniup system is only marginally represented in the project area by

Nu gently undulating plains developed on bog iron ore, with sandy gravely duplex soils

The Wingewelup system consists of

Wg swampy valley floors with minor rises and lunettes, with solonetzic soils and sands

The Yarraleena system is only marginally represented in the project area by

Ya raised alluvial terrace with fine sands over blocky clay

The Pumpareena system consists of

Pu gently undulating plain with low rises, with sandy gravels over clay or deep sands

The Mallawillup system consists of

Mm low rises developed on bog iron ore, with gravely duplex soils.

Some of the smaller sub-systems were combined for mapping reasons as the polygons were difficult to detect in some areas of the south west forest region. The range of communities in these systems is illustrated wherever possible in Appendix D.