PART V
ACKNOWLEDGEMENTS, REFERENCES AND APPENDICES

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APPENDIX IA - ANALYTICAL DATA FOR SELECTED SOIL PROFILES

Soil Group Profile No. Location.	Horizon.	Depth of Sample.	Field Texture.	Particle Size Analysis					pH	Cl^-	Org. C	Total N	HCl extract.		Free Fe_2O_3	Exchangeable Cations.									
																m. equiv. %					% of C.E.C.				
				Gravel	Coarse Sand	Fine Sand	Silt	Clay					(Total) P	(Total) K		Ca^{++}	Mg^{++}	K^+	Na^+	Cation exch. cap.	Ca	Mg	K	Na	H
		in.		%	% f.e.	% f.e.	% f.e.	% f.e.		%	%	%	%	%	%										
Undifferentiated sandy loam	A1	0– 3	gr. COSL	22	34	33	17	13	6·2	0·007	2·8	0·38	0·032	0·128	1·6	8·2	1·8	0·5	<0·05	15·5	53	12	3	<1	32
235	A2	3– 6	gr. COSL	27	..	..	..	..	6·3	0·004	0·7	0·062	..	..	..	..	..	..	..	..	..	..	..	..	..
Glen Creek	A3	6–15	gr. COSL	34	..	..	..	..	6·7	0·003	0·2	0·027	0·007	0·086	1·1	1·8	0·3	0·2	<0·05	3·1	60	10	5	<1	25
	A4	15–30	gr. COSL	21	49	28	15	8	6·8	0·003	..	..	0·007	0·094	0·9	1·6	0·3	0·2	<0·05	2·8	60	10	5	<1	25
		30–36	gr. COSL	31	..	..	..	..	6·8	0·003	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		36–42	gr. COSL	47	..	..	..	..	6·8	0·002	..	..	..	..	1·2	..	..	..	..	..	..	..	..	..	..
	C	42–48	gr. LCOS	42	57	24	11	8	6·7	0·003	..	..	0·012	0·136	1·4	2·0	0·6	0·2	<0·05	14·9	13	4	1	<1	82
		48–51	gr. COS	39	68	17	8	6	6·8	0·002	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		51–60	gr. COSL	30	..	..	..	..	6·8	0·002	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Undifferentiated sandy loam	A1	3– 6	FSL	tr.	15	61	12	8	4·9	0·029	2·6	0·16	..	..	..	4·8	0·8	0·3	0·05	15·4	31	5	2	<1	62
358	A2	14–18	LFS	tr.	29	57	8	4	5·1	0·020	1·2	0·077	..	..	..	3·1	0·6	0·2	0·04	9·9	31	6	2	<1	61
Tawonga	A3	32–39	LS	1	67	25	4	2	5·1	0·016	0·5	0·027	..	..	..	1·4	0·3	0·1	0·02	5·6	25	5	2	<1	67
Undifferentiated stony loam	A1	0– 3	COS L	2	41	36	13	8	5·4	0·006	1·7	0·13	0·024	0·53	1·0	3·4	1·2	0·7	<0·05	10·1	34	12	7	<1	47
344	A2	3– 8	COS L	6	46	36	12	6	5·1	0·001	0·4	0·033	0·013	0·43	0·8	0·6	0·5	0·3	<0·05	4·6	13	11	7	<1	69
Leneva hills		8–12	COS L	7	44	35	13	9	5·2	0·001	0·3	0·030	0·014	0·56	0·9	0·8	0·4	0·3	<0·05	4·6	17	9	7	<1	67
		12–18	..	10	..	..	..	..	5·2	0·006	..	..	0·017	0·76	..	0·7	0·5	0·2	<0·05	6·8	10	7	3	<1	80
Undifferentiated stony loam	A1	0– 2	FSL	14	16	51	15	11	4·7	0·006	3·4	0·22	0·031	0·74	1·3	1·3	0·5	0·2	<0·05	15·9	8	3	1	<1	88
345	A2	2– 8	FSL	19	16	59	14	10	4·7	0·010	0·9	0·064	0.046	0·57	1·4	0·2	0·4	0·2	<0·05	7·2	3	6	3	<1	88
Leneva hills		8–15½	FSL	20	..	..	..	..	5·0	0·003	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Brown loam on alluvium	A1	0– 3	L	—	8	46	26	16	5·7	0·003	3·7	0·31	0·068	0·47	1·7	3·2	0·9	0·5	<0·05	12·2	26	7	4	<1	63
237		3– 6	L	—	..	..	..	..	5·8	0·007	2·5	0·20	..	..	1·6	..	..	..	..	..	..	..	..	..	..
Mongan's Bridge	A2	6–12	FSL	—	17	53	20	8	5·9	0·005	1·1	0·090	0·043	0·50	1·4	4·1	0·2	0·3	<0·05	12·0	34	2	3	<1	61
		12–21	FSL	—	..	..	..	..	5·7	0·004	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	C	21–27	LS	tr.	60	31	6	3	5·7	0·002	..	..	0·033	0·45	0·9	1·6	0·3	0·1	<0·05	3·5	46	9	3	<1	42
		27–30	S	tr.	77	16	4	3	5·7	0·002	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Brown loam on alluvium	A1	0– 3½	FSL	tr.	38	33	13	14	5·8	0·004	2·1	0·18	0·050	0·52	1·5	5·3	0·8	0·7	<0·05	14·0	38	6	5	<1	51
238	A2	3½– 6	FSL	2	..	..	..	..	5·8	0·003	0·7	0·065	..	..	1·7	..	..	..	..	..	..	..	..	..	..
Mt. Beauty	A3	6–12	FSL	tr.	37	36	13	13	6·0	0·002	0·4	0·045	0·050	0·49	1·7	2·4	0·8	0·3	<0·05	8·5	28	9	4	<1	59
		12–24	FSL	tr.	..	..	..	..	5·9	0·002	..	..	..	..	1·6	..	..	..	..	..	..	..	..	..	..
	A4/C	24–30	FSL	10	34	42	10	12	5·7	0·002	..	..	0·031	0·49	..	1·1	0·6	0·3	<0·05	6·1	18	10	3	<1	69
Brown loam on alluvium	A1	2– 4	SiL	tr.	15	48	18	14	5·1	0·011	4·3	0·36	..	..	..	8·2	1·3	0·4	0·10	19·9	41	7	2	1	49
359	A2	6–10	FS SiL	1	19	46	23	8	5·3	0·011	2·8	0·22	..	..	..	7·9	1·0	0·2	0·10	18·0	44	6	1	1	48
Tawonga	A3	18–20	FSL	1	28	46	19	5	5·1	0·015	1·4	0·10	..	..	..	2·2	0·4	0·2	0·09	10·3	21	4	2	1	72
Shallow organic loam	A1	0– 3	SL	2	38	16	16	24	4·8	0·005	7·0	0·50	0·058	0·63	1·9	2·0	1·1	0·7	<0·05	23·9	8	5	3	<1	84
231		6– 9	SL	tr.	40	16	13	26	4·7	0·004	5·1	0·39	..	..	2·2	..	..	..	..	..	..	..	..	..	..
Mt. Cope	A2	9–15	SL	tr.	..	..	..	..	4·8	0·003	2·7	0·20	0·051	0·77	2·2	0·2	1·2	0·3	<0·05	16·2	1	7	2	<1	90
	A3/C	15–24	SL	9	46	23	13	16	4·8	0·002	1·3	0·10	0·051	1·12	1·7	0·3	<0·05	0·3	<0·05	13·0	2	<1	2	<1	96
	C	26–30	SL	13	..	..	..	..	5·0	0·002	0·5	0·045	..	..	..	..	..	..	..	..	..	..	..	..	..
Deep organic loam	A1	0– 1	SL	5	..	..	..	..	5·2	0·009	12·5	0·69	0·088	0·34	..	7·6	1·2	0·9	<0·05	39·5	19	3	2	<1	76
232		1– 6	SL	3	41	22	21	9	5·6	0·012	10·0	0·67	0·085	0·30	2·2	5·1	<0·05	0·6	<0·05	27·9	18	<1	2	<1	80
Falls Creek Road		6–12	SL	2	..	..	..	..	5·6	0·004	7·0	0·45	..	..	2·0	..	..	..	..	..	..	..	..	..	..
	A2	12–18	S SiL	2	40	18	25	14	5·5	0·004	3·5	0·22	0·053	0·35	2·4	0·4	0·3	0·2	<0·05	11·9	3	3	2	<1	92
	A3/C	18–30	S SiL	tr.	38	20	24	15	5·4	0·002	1·8	0·12	0·044	0·39	2·2	0·4	0·1	0·3	<0·05	9·2	4	1	3	<1	92
		30–40	SL	tr.	..	..	..	..	5·3	0·002	0·8	0·048	..	..	..	..	..	..	..	..	..	..	..	..	..
	C	40–60	SL	2	45	21	14	12	5·2	0·001	..	..	0·034	0·44	..	0·2	0·1	0·3	<0·05	8·5	2	1	4	<1	93
Reddish gradational soil on	A1	0– 3	FSL	tr.	30	29	21	18	5·5	0·005	2·3	0·21	0·051	0·39	1·8	4·0	0·7	0·6	<0·05	14·1	28	5	4	<1	63
alluvium	B1	3– 6	SCL	tr.	..	..	..	..	5·6	0·003	0·8	0·078	..	..	1·9	..	..	..	..	..	..	..	..	..	..
227		6–12	SCL	tr.	31	28	19	23	5·8	0·003	0·5	0·048	0·047	0·46	2·3	3·3	0·8	0·3	<0·05	9·9	33	8	3	<1	56
Mongan's Bridge		12–18	SCL	tr.	27	27	17	28	5·9	0·003	..	..	..	..	2·4	..	..	..	..	..	..	..	..	..	..
		18–28	SCL	tr.	26	24	21	27	5·9	0·003	..	..	0·068	0·54	2·4	2·8	1·2	0·4	<0·05	9·5	29	13	4	<1	54
Reddish gradational soil on	A1	0– 3	FSL	tr.	29	40	14	15	5·2	0·004	2·5	0·21	0·042	0·42	1·4	4·7	1·1	0·3	<0·05	12·7	37	9	2	<1	52
alluvium	A2	3– 6	SiL	tr.	15	42	21	21	5·2	0·003	1·7	0·16	0·050	0·56	2·0	5·4	1·0	0·3	<0·05	16·3	33	6	2	<1	59
239		6–12	SiL	—	..	..	..	..	5·6	0·004	1·2	0·11	..	..	2·3	..	..	..	..	..	..	..	..	..	..
House Creek	B1	12–24	CL	tr.	15	38	21	26	6·0	0·004	0·8	0·063	0·038	0·61	2·9	5·1	2·4	0·3	<0·05	14·8	35	16	2	<1	47
		24–26	CL	tr.	..	..	..	..	5·8	0·004	..	..	..	..	2·7	..	..	..	..	..	..	..	..	..	..
		36–48	FSCL	tr.	26	40	14	19	5·7	0·003	..	..	0·021	0·49	..	2·2	2·0	0·2	<0·05	12·1	18	17	2	<1	63
	C	48–54	FSL	tr.	..	..	..	..	5·8	0·003	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Reddish gradational soil on	A1	0– 4	SL	tr.	54	24	11	11	5·6	0·003	1·5	0·14	0·038	0·35	1·4	2·6	0·9	0·2	<0·05	7·3	36	12	3	<1	49
alluvium	A2	4– 8	SL	tr.	50	28	13	9	6·0	0·002	0·7	0·069	0·033	0·36	1·4	2·6	0·5	0·2	<0·05	5·8	45	9	3	<1	43
351	A3	8–14	SL	tr.	51	25	9	14	6·0	0·002	0·3	0·042	0·037	0·41	1·8	2·5	0·6	0·2	<0·05	4·6	54	13	4	<1	29
Little River	B1	18–22	SCL	tr.	39	29	7	24	6·2	0·002	..	..	0·055	0·52	2·0	3·3	1·0	0·2	<0·05	10·5	31	10	2	<1	57
	B2/C	30–34	SCL	7	..	..	..	..	6·4	0·002	..	..	..	..	2·4	..	..	..	..	..	..	..	..	..	..
Yellowish-brown gradational	A1	0– 4	FS SiL	..	6	44	29	21	5·7	0·006	2·4	0·24	0·070	0·60	1·5	9·2	1·8	0·7	<0·05	12·2	75	15	6	<1	4
soil on alluvium	A2	4– 8	SiL	..	4	46	26	24	5·9	0·009	1·1	0·11	0·073	0·59	1·5	7·7	1·5	0·5	<0·05	14·4	53	10	3	<1	34
349	B1	8–12	CL	..	..	..	..	..	6·0	0·019	0·5	0·053	0·080	0·58	1·8	6·3	1·8	0·4	<0·05	12·3	51	15	3	<1	31
Little River		12–18	CL	..	1	52	18	27	6·2	0·030	0·3	0·046	0·086	0·57	2·2	6·5	2·7	0·5	0·1	11·6	56	23	4	1	16
		18–24	CL	..	..	..	..	..	6·3	0·014	..	0·033	..	..	..	..	..	..	..	..	..	..	..	..	..
	B2/C	36–40	FSL	..	5	62	20	15	6·8	0·010	0·2	0·011	..	..	..	..	..	..	..	..	..	..	..	..	..
Friable reddish gradational	A1	0– 2½	FSL	tr.	26	39	14	16	5·6	0·006	3·3	0·19	0·029	0·30	1·2	5·7	0·8	0·7	<0·05	16·9	35	5	4	<1	57
soil	A2	3– 6	SCL	tr.	..	..	..	..	5·6	0·003	0·9	0·063	..	..	1·3	..	..	..	..	..	..	..	..	..	..
228	A3/B1	6–15	SCL	3	22	36	12	29	5·7	0·003	0·6	0·047	0·020	0·38	2·4	3·3	1·3	0·6	<0·05	10·7	31	12	6	<1	51
Redbank Road	B1	15–24	C	4	20	27	9	44	5·5	0·002	..	..	0·025	0·50	3·9	3·1	1·5	0·8	<0·05	13·2	23	11	6	<1	60
		24–52	C	3	19	28	8	44	5·4	0·003	..	..	0·022	0·52	4·3	1·3	1·4	0·9	<0·05	12·2	11	12	8	<1	69

For field texture, C = Clay, COS = coarse sand, FS = fine sand, gr. = gravelly, L = loam, Si = silt. For gravel, tr. = trace = <1%, — = none present. Throughout, .. indicates that no determination was made.

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Soil Group Profile No. Location.	Hori-zon.	Depth of Sample.	Field Texture.	Particle Size Analysis.					pH	Cl⁻	Org. C	Total N	HCl extract.		Free Fe_2O_3	Exchangeable Cations.									
																m. equiv. %.					% of C.E.C.				
				Gravel	Coarse Sand	Fine Sand	Silt	Clay					(Total) P	(Total) K		Ca^{++}	Mg^{++}	K^{+}	Na^{+}	Cation exch. cap.	Ca	Mg	K	Na	H
		in.		%	% f.e.	% f.e.	% f.e.	% f.e.		%	%	%	%	%	%										
Friable reddish gradational soil	A1	0– 3	SiL	6	12	24	44	13	5·3	0·005	2·8	0·16	0·052	0·38	2·8	5·3	1·5	0·6	<0·05	22·4	24	7	3	<1	66
	A2	3– 8	SiL	3	10	24	43	18	5·2	0·003	1·1	0·080	0·037	0·32	3·1	2·7	0·8	0·6	<0·05	14·7	18	5	4	<1	73
343	B1	8–12	CL	5	11	29	27	32	5·3	0·002	0·7	0·061	0·035	0·40	3·6	2·2	0·6	0·6	<0·05	13·4	16	4	4	<1	76
Nine-mile Creek		12–24	CL	8	..	..	..	..	5·3	0·002	..	..	..	..	4·0	..	..	..	..	..	..	..	..	..	..
	B2	24–36	C	11	13	27	22	37	4·9	0·017	0·3	0·040	0·031	0·42	4·4	2·0	0·9	0·7	<0·05	12·4	16	7	6	<1	71
		36–48	C	11	..	..	..	..	4·8	0·019	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Friable reddish gradational soil	A1	0– 3	L	—	..	..	..	..	5·2	0·017	4·0	0·35	..	..	..	6·5	1·4	1·6	0·1	18·6	35	8	9	1	47
	A2	3– 8	CL	4	..	..	..	..	4·9	0·015	2·0	0·15	..	..	..	4·0	0·8	0·8	<0·05	14·3	28	6	6	<1	60
353	B1	8–15	CL	—	..	..	..	..	5·2	0·018	..	..	0·023	0·41	..	5·7	1·8	1·4	0·1	15·7	36	11	9	1	43
Dederang	B2	36–40	C	10	..	..	..	..	5·6	0·011	..	..	..	..	..	6·2	2·5	1·1	0·1	15·3	41	16	7	1	35
Hard reddish gradational soil	A1	0– 3	L	13	11	30	33	20	5·2	0·004	4·3	0·20	0·026	0·26	2·6	5·9	6·6	0·9	<0·05	29·9	20	22	3	<1	55
	A2/B	3– 8	CL	3	7	24	31	30	4·9	0·003	2·2	0·12	0·021	0·27	3·1	2·1	0·7	0·4	<0·05	22·5	9	3	2	<1	86
342	B1	8–14	C	4	6	26	23	43	5·0	0·003	1·1	0·073	0·024	0·27	4·1	1·0	0·7	0·5	<0·05	19·1	5	4	3	<1	88
Stanley		14–24	C	9	..	..	..	..	5·3	0·003	..	..	..	..	4·7	..	..	..	..	..	..	..	..	..	..
		24–36	C	13	8	24	19	47	5·3	0·002	0·5	0·047	0·025	0·31	5·2	0·4	0·4	0·5	0·2	14·5	3	3	3	1	90
		36–48	C	13	..	..	..	..	5·3	0·002	..	..	..	..	5·1	..	..	..	..	..	..	..	..	..	..
	B2	48–60	C	6	11	25	18	45	5·3	0·002	..	..	0·022	0·30	5·0	0·4	0·4	0·2	0·1	11·1	4	4	2	1	89
		60–72	C	10	..	..	..	..	5·1	0·004	..	..	..	..	5·1	..	..	..	..	..	..	..	..	..	..
Friable brownish gradational soil	A1	0– 3	L	12	28	28	21	17	5·3	0·010	6·9	0·36	0·037	0·39	2·7	12·4	1·8	1·1	<0·05	32·2	39	6	3	<1	52
		3– 6	FSL	7	..	..	..	..	5·4	0·003	2·7	0·17	..	..	3·1	..	..	..	..	..	..	..	..	..	..
229	A2	6–10	FSCL	6	25	30	25	16	5·3	0·003	1·4	0·096	0·025	0·38	3·3	1·8	0·5	0·6	<0·05	13·6	13	4	4	<1	79
Mountain Creek	B1	12–18	SCL	9	..	..	..	..	5·2	0·003	0·7	0·060	..	..	3·4	..	..	..	..	..	..	..	..	..	..
		18–36	SCL	9	25	30	15	29	5·2	0·002	0·3	0·038	0·018	0·39	4·1	0·5	0·5	0·6	<0·05	10·2	5	5	6	<1	84
	B2	36–54	SCL	9	..	..	..	..	5·6	0·004	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	C	54–66	gr. SL	22	31	23	22	17	5·1	0·004	..	..	0·015	0·23	..	0·6	0·5	0·4	<0·05	7·3	8	7	5	<1	80
Friable brownish gradational soil	A1	0– 3	L	9	16	42	18	18	4·6	0·007	8·8	0·39	0·029	0·41	2·3	1·8	<0·05	0·8	<0·05	31·6	6	<1	3	<1	91
	A2	3– 6	FSL	5	13	53	19	14	5·0	0·003	3·3	0·17	0·021	0·38	2·6	0·1	0·2	0·3	<0·05	19·8	0·5	1	1·5	<1	97
230	B1	6–12	FSCL	7	..	..	..	..	5·1	0·002	1·3	0·070	..	..	3·0	..	..	..	..	..	..	..	..	..	..
Trapper's Gap	B2	12–24	FSL	14	14	55	13	17	5·1	0·002	0·8	0·046	0·012	0·47	2·7	0·2	0·2	0·3	<0·05	11·6	2	2	3	<1	93
	B3/C	24–36	FSL	16	..	..	..	..	5·1	0·002	0·4	0·028	..	..	1·9	..	..	..	..	..	..	..	..	..	..
	C	36–48	FSL	9	13	65	10	11	5·1	0·002	..	..	0·014	0·76	..	0·1	0·1	0·2	<0·05	9·1	1	1	2	<1	96
Friable brownish gradational soil	A1	0– 3	COSL	11	38	21	21	16	5·2	0·006	4·7	0·22	0·022	0·47	2·6	1·8	0·6	0·6	<0·05	16·6	11	4	4	<1	81
		3– 6	COSL	4	..	..	..	..	5·2	0·005	3·1	0·15	..	..	3·0	..	..	..	..	..	..	..	..	..	..
233	A2	6–12	COSL	7	36	22	21	18	5·3	0·003	1·6	0·079	0·016	0·49	3·1	0·3	0·4	0·6	<0·05	10·0	3	4	6	<1	87
Big Hill	B1	12–27	COSCL	16	40	24	15	22	5·4	0·002	0·5	0·033	0·017	0·62	2·8	1·6	0·9	0·6	<0·05	11·2	14	8	5	<1	73
		27–40	COSL	4	44	23	15	18	5·5	0·002	..	..	..	..	2·1	..	..	..	..	..	..	..	..	..	..
Friable brownish gradational soil	A1	0– 3	SL	tr.	41	22	27	6	6·0	0·006	4·1	0·22	0·022	0·25	2·5	5·8	1·0	1·0	<0·05	18·0	32	6	6	<1	56
		3– 6	SL	3	41	23	24	4	6·0	0·005	3·6	0·20	0·021	0·23	2·5	1·0	0·6	0·6	<0·05	13·9	7	4	4	<1	85
234	A2	8–12	SL	3	..	..	..	..	5·8	0·003	1·6	0·10	..	..	2·3	..	..	..	..	..	..	..	..	..	..
West Kiewa fire track	B1	12–18	SCL	tr.	35	23	19	18	5·8	0·003	0·8	0·062	0·015	0·24	2·5	0·2	0·5	0·5	<0·05	8·2	2	6	6	<1	86
		22–28	SCL	tr.	..	..	..	..	5·5	0·002	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	B2	34–40	SL	3	44	33	14	9	5·6	0·002	..	..	0·013	0·42	1·7	0·7	0·3	0·6	<0·05	6·2	11	5	10	<1	74
Reddish duplex soil with acid subsoil	A1	0– 2	FSL	tr.	21	42	19	16	5·3	0·003	3·5	0·27	0·027	0·30	1·3	8·3	1·0	1·0	<0·05	20·2	41	5	5	<1	49
	A2	2– 4	FSL	tr.	..	..	..	..	5·5	0·004	1·7	0·13	..	..	..	..	..	..	..	..	..	..	..	..	..
236		4–10	FSL	tr.	21	42	22	16	5·7	0·003	0·3	0·053	0·016	0·27	1·4	3·7	1·0	1·0	<0·05	10·2	36	10	10	<1	44
Tawonga	B1	10–16	CL	tr.	20	38	17	24	6·2	0·002	..	..	0·015	0·35	1·9	2·3	0·4	0·6	0·1	7·1	32	6	8	1	53
	B2	16–24	C	tr.	..	..	..	..	6·1	0·002	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		24–36	C	tr.	16	27	12	44	6·0	0·002	..	..	0·017	0·51	4·2	2·0	0·4	0·4	<0·05	7·2	28	6	6	<1	60
		36–48	C	4	..	..	..	..	5·5	0·002	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	B3	48–60	C	4	18	27	12	44	5·4	0·003	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Reddish duplex soil with acid subsoil	A1	0– 2	FSL	tr.	25	49	10	13	5·5	0·002	1·5	0·12	0·019	0·21	1·5	2·1	0·7	0·5	<0·05	7·1	29	10	7	<1	54
	A2	2– 4	FSL	tr.	..	..	..	..	5·7	0·002	0·9	0·072	..	..	1·5	..	..	..	..	..	..	..	..	..	..
341		4– 8	FSL	tr.	27	46	13	14	6·0	0·002	0·6	0·049	0·014	0·17	1·7	2·3	0·9	0·3	<0·05	5·8	40	15	5	<1	40
Mitta Junction	B1	8–12	C	—	20	27	7	44	6·2	0·002	0·4	0·049	0·018	0·45	3·6	3·9	3·3	0·8	0·1	12·3	32	37	7	1	23
		12–24	C	—	..	..	..	..	6·2	0·003	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		24–30	C	—	24	21	8	46	6·3	0·003	..	..	0·016	0·47	..	2·5	5·8	0·4	0·3	10·9	23	53	4	3	17
	B2	30–44	C	—	..	..	..	..	6·2	0·004	..	..	..	..	3·9	..	..	..	..	..	..	..	..	..	..
	B3/C	44–48	SCL	—	26	37	14	23	6·2	0·005	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Reddish duplex soil with acid subsoil	A1	0– 1½	COS L	—	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	A2	1½–10	COS CL	—	..	..	..	..	5·3	0·013	0·3	0·027	..	..	..	1·2	0·5	0·2	<0·05	3·9	31	13	5	<1	51
354	B1	15–20	C	—	..	..	..	..	5·1	0·008	..	..	0·022	0·73	..	1·8	4·1	0·6	0·1	15·3	12	27	4	1	56
North of Dederang	B2	25–30	C	—	..	..	..	..	4·8	0·019	..	..	..	..	..	1·1	6·4	0·4	0·1	17·4	6	37	2	1	54
Yellowish duplex soil with acid to neutral subsoil	A1	0– 3	FSL	tr.	27	44	16	11	5·0	0·002	2·6	0·20	0·018	0·12	0·7	3·1	0·6	0·3	<0·05	10·8	29	6	3	<1	62
	A2	3– 9	SL	6	30	46	16	7	5·5	0·003	0·3	0·031	0·009	0·082	0·6	0·8	<0·05	0·1	<0·05	2·9	28	1	3	<1	68
350		9–13	SL	9	31	43	13	12	6·0	0·003	0·2	0·022	0·008	0·10	1·5	1·0	0·3	0·1	<0·05	6·8	15	4	1	<1	80
Bandiana	B1	13–24	C	tr.	18	25	8	49	5·3	0·005	..	..	0·016	0·47	2·3	1·6	4·0	0·3	<0·05	10·5	15	38	3	<1	44
		24–36	C	tr.	..	..	..	..	5·5	0·004	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
	B2	36–48	C	tr.	19	30	9	42	6·1	0·005	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
Yellowish duplex soil with alkaline subsoil	A1	0– 3	SL	tr.	41	27	18	12	5·6	0·003	1·6	0·13	0·019	0·14	1·6	1·6	0·6	0·4	<0·05	7·1	23	8	6	<1	63
	A2	3– 9	SL	tr.	46	25	19	10	5·4	0·002	0·5	0·050	0·013	0·14	1·5	0·9	0·3	0·1	<0·05	4·0	22	7	2	<1	69
340	B1	9–15	SC	tr.	30	17	12	40	5·8	0·002	0·4	0·026	..	..	4·0	2·0	3·3	0·2	0·2	11·5	17	29	2	2	50
Dederang		15–24	SC	7	..	..	..	..	6·8	0·003	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		24–30	SC	7	36	18	12	33	8·4	0·007	..	..	..	..	2·6	2·9	8·2	0·2	1·4	..	23	64	2	11	0*
	B2	30–40	SC	tr.	..	..	..	..	8·8	0·006	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
		40–50	SC	4	38	22	9	29	8·8	0·004	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

* Free lime present; assume C.E.C. is saturated.

APPENDIX IB - METHOD OF SOIL ANALYSIS

All results are expressed in terms of the oven-dry soil passing a 2 mm sieve (fine earth) except that of gravel, which is expressed as a percentage of the air-dry field sample.

Particle size analysis -The plummet balance method of Hutton (1956) was employed, with organic matter and carbonate removal where necessary. The hand decantation method of Piper (1942) was used to separate the sand from the finer fractions.

Soil *reaction (pH).* -A 1:5 soil-water suspension was used, with measurements being made with a "Jones" glass electrode pH meter.

Chloride (Cl-). -The electrometric silver nitrate titration technique of R. J. Best was used, as detailed in Piper (1942).

Organic carbon (Org. C). -The method used was the wet combustion technique of Walkley and Black, as in Piper (1942). No recovery factor has been applied to the results listed, but carbon/nitrogen ratios were calculated with the factor 1.3 C/N.

Total nitrogen (N). -Nitrogen was determined by the semi-micro method described by Metson (1956), in which a finely-ground sample of soil weighing 0.2 to 0.5 g is digested in concentrated sulphuric acid, and the ammonia recovered by distillation of the digest in a Markham still.

Free iron oxide (Fe_2O_3). -The method of Haldane (1956) was employed, in which a ground sample of soil is extracted with an oxalic acid-ammonium oxalate buffer and powdered zinc, and the ferrous iron in the treated extract titrated with potassium dichromate.

Hydrochloric acid extract. -The extract was prepared by boiling 4 g of soil with 20 ml concentrated hydrochloric acid for four hours with refluxing, with subsequent filtration and dilution to 200 ml. Phosphorus was determined on an aliquot of this extract by a colorimetric method (molybdenum blue) with ascorbic acid as the reducing agent (Hutton et. al., priv. comm.). Absorbance measurements were made with a "Unicam" SP600 spectrophotometer at wavelength 825 mμ. Potassium was determined by flaming a portion of the extract, suitably diluted, in a "Lange" flame photometer.

Exchangeable cations. -Non-calcareous samples were treated by the proposed method of Hutton and Bond (unpublished data), in which N/1 ammonium chloride is used as the leaching agent for the individual cations, and cation exchange capacity is determined by subsequent leaching of the ammonium-ion saturated soils with N/1 sodium sulphate.

Sodium and potassium were determined by direct flaming of the ammonium chloride leachate in the "Lange" flame photometer, and calcium and magnesium by titration with E.D.T.A. with Eriochrome Black T as a visual indicator for calcium plus magnesium, and Murexide as indicator in the colorimetric titration for calcium, in an "Eel Titrator". Ammonium ion in the sodium sulphate leachate was determined by the Nessler method, and chloride ion by electrometric titration. The difference between these two gave the cation exchange capacity.

For calcareous soils the method of Tucker (1954) was used, which uses a leaching solution of normal ammonium chloride in 60 per cent ethanol of pH 8.5 to restrict the solubility of calcium and magnesium carbonates. Leachates were evaporated to dryness and re-dissolved in distilled water to remove the ethanol and excess ammonia before the individual cations were determined.

APPENDIX IIA - COMMON NAMES AND BOTANICAL NAMES OF PLANTS REFERRED TO IN THE TEXT.

Alpine ash	*Eucalyptus delegatensis* R. T. Baker
Alpine bottlebrush	*Callistemon sieberi* DC.
Alpine everlasting	*Helichrysum hookeri* Druce
Alpine Grevillea . .	G*revillea australis* R. Br.
Alpine mint-bush	*Prostanthera cuneata* Benth.
Alpine Phebalium	*Phebalium podocarpiodes* F. Muell.
Alpine rice-flower	*Pimelia alpina* F. Muell.
Alpine star-bush	*Pleurandropsis trymalioides* F. Muell.
Alpine sunray	*Helipterum incanum* DC. var. *alpinum* F. Muell.
Apple box	*Eucalyptus bridgesiana* R. T. Baker
Bitter-pea	*Daviesia corymbosa Srn.* var. *laxiflora J.* H. Willis
Black cypress-pine	*Callitris endlicheri* (Parl.) F. M. Bailey
Black sallee	*Eucalyptus stellulata* Sieb. ex DC.
Blanket-leaf	*Bedfordia salicina* DC.
Blue gum	*Eucalyptus bicostata* M. Bl. & S.
Bogong gum	E. *chapmaniana* A. K. Cameron
Bracken fern (Austral bracken)	*Pleridium esculentunt* (Forst. f.) Nakai
Brittle gum	*E. mannifera* Mudie
Broad-leaf peppermint	*Eucalyptus dives* Schau.
Brown edelweiss	*Ewartia nubigena* Beaur.
Candlebark gum	*E. rubida* H. Deane & Maiden
Candle heath	*Richea continentis* B. L. Burtt.
Common buttercup	*Ranunculus lappaceus* Sm.
Common Cassinia	*Cassinia aculeata* (Labill.) R. Br.
Coral heath	*Epacris microphylla R.* Br.
Dock	*Rumex crispus* L.
Elderberry panax	*Tieghemopanax sambucifolius* (Sieber ex DC.) R. Viguier
Forest red gum	*Eucatyptus blakelyi* Maiden
Golden guinea flower	*Hibbertia sp.*
Golden Oxylobium	*Oxylobium ellipticum* R. Br.
Gorse bitter-pea	*Daviesia ulicifolia* Andr.
Ground feirns	*Blechnum spp.*
Handsome flat-pea	*Platylobium formosum* Sm.
Hazel Pomaderris	*Pomaderris apetala* Labill.
Hickory wattle	*Acacia obliquinervia* M. D. Tindale
Holly Lomatia	*Lomatia ilicifolia* R. Br.
Hop bitter-pea	*Daviesia latifolia* R. Br.
Kangaroo grass	*Themeda australis* (R. Br.) Stapf.
Knot weed	*Polygonum minus* Huds.
Leafy Bossiaea	*Bossiaea foliosa* A. Cunn.
Long-leaf box	*Eucalyptus goniocalyx* F. Muell. ex Miq.
Long-leak Hovea (Rusty Pods)	*Hovea longifolia R.* Br.
Manna gum	*Eucalyptus viminalis* Labill.
Manuka	*Leptospermum scoparium* R, and G. Forster
Monterey pine	*Pinus radiata* D. Don
Mountain beard-heath	*Leueopogon hookeri* Sond.
Mountain gum	*Eucalyptus dalrympleana* Maiden
Mountain Orites	*Orites lancifolia F.* Muell.
Mountain plum-pine	*Podocarpus lawrencei* Hook. f.
Musk daisy-bush	O*learia argophylla* (Labill.) Benth.
Narrow-leaf peppermint	*Eucalyptus radiata* Sieb. ex DC.
Prickly bush-pea	*Pultenaea juniperina* Labill.
Prickly currant-bush	*Coprosma quadrifida* Robinson
Purple coral-pea . .	*Hardenburgia violaceae* Steam.
Red box	*Eucalyptus polyanthemos* Schauer.
Red stringybark	E. *macrorhyncha F.* Muell. ex Benth.
Reed	*Phragmites communis* Trin.
River red gum	*Eucalyptus camaldulensis* Dehn.
Rough Coprosma	*Coprosma hirtella* Labill.

Rush	*Juncus spp.*
Scaley buttons	*Leptorrhynchus squamatus* Less.
Sedge	*Carex breviculmis* R. Br.
Sedge (Tufted sedge)	C. *gaudichaudiana* Kunth.
Shield fern	*Polystichum proliferum* (R. Br.) C. Pre.
Silver wattle	*Acacia dealbata* Link.
Smart weed	*Polygonum hydropiper* L.
Snow daisy	*Celmisia longifolia* Cass.
Snow grass	*Poa australis* sp. agg.
Snow gum	*Eucalyptus pauciflora* Sieb. ex Spreng.
Sorrel	*Rumex acetosella* L.
Sphagnum moss	*Sphagnum cristalum* Hpe.
Spreading rope-rush	*Calorophus lateriflorus* (R. Br.) *F.* Muell.
Swamp gum	*Eucalyptus camphora* R. T. Baker
Swamp heath	*Epacris paludosa* R. Br.
Tall rice-flowcr	*Pimelia ligustrina* Labill.
Thyme heath	*Epacris serpyllifolia* R. Br.
Tree violet	*Hymenanthera dentata* R. Br. ex DC.
Tussock grass	*Poa australis sp.* agg.
Wallaby grass	*Danthonia spp.*
White box	*Eucalyptus albens* Miq.
Woolly teatree	*Leptospermum lanigerum* Sm.
Yellow box	E. *melliodora A.* Cunn. ex Schau.
Yellow Kunzea	*Kunzea muelleri* Benth.

APPENDIX IIB - VEGETATION CLASSIFICATION FOR THE KIEWA CATCHMENT

Formation	Floristic unit	Other Species often or usually present
Feldmark	*Ewartia mubigena* association	*Helipterum incanum var alpinum; kunzea muelleri, Epacris microphylla*
Alpine herbfied	*Celmisia longifolia-Poa australis* alliance	*Leptorrhynchus squamatus; Rumex acetosella, Ranuculus lappaceus, Carex breviculmus*
Alpine shrub community	*Epacris serpllifolia* association	*Kunzea muelleri*
	Hovea longifolia-Oxylobium ellipticum alliance	*Leucopogon hookeri, Grevillea australia, Prostanthera cuneata, Bossiaea foliosa, Phebalium podocarpoides, Pimelia alpina*
Alpine (Sod-tussock) grassland	*Poa australis* association	Members of herbfield or shrun communities
Bog	*Sphagnum cristatum* assocation	*Richea continetis, Calorophus lateriflorus, Carex gaudichaudiana, Epacris paludosa, Calistemon sieberi*
Fen	*Carex gaudichaudiana* association	
Sub-alpine woodland	*E. pauciflora* aossication	Members of the alpine herbfield, shrub and grassland communities
Wet sclerophyll forest	*E. dalrympleana-E. pauciflora* assocation	Shrubs and herbs, including grasses
	E. delegatensis association	*E. dalrympleana*, occasionally near upper elevation limit of association. Shrubs and herbs
	E. radiata-E. rubida-E. dives assocation	*E. viminalis, E. bicostata, E. chapmaniana.* Shrubs and herbs
Dry sclerophyll forest	*E. macrorhyncha* alliance	*E. polyanthemos, E. dives, E. gonicalyx, E. rubida, E. melliodora, E. bridgesiana, E. albens.* Low shrubs and grasses.
Tall woodland	*E. camphora-E. albens-E. bridgesiana* association	*E. polyanthemos*. Grasses
	E. camaldulensis assocation	Grasses and hygrophilous herbs

APPENDIX III - TABLE OF CONVERSION FACTORS

To convert miles	To kilometres	Multiply by	1.6094
To convert feet	To metres	Multiply by	0.3048
To convert inches	To centimetres	Multiply by	2.540
To convert square miles	To square kilometres	Multiply by	2.590
To convert acres	To hectares	Multiply by	0.4047
To convert acre feet	To cubic metres	Multiply by	1,233.5
To convert temperature ^{o}F	To ^{o}C	$T^{o}C = 5/9 (T^{O}F - 32)$	