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APPENDIX IA - MORPHOLOGICAL DESCRIPTIONS OF THE DOMINANT SOILS.

The colours quoted are for the moist soil based on comparisons with the Munsell Soil Colour Chart. The terms describing structure and consistency follow those described in the USDA Soil Survey Manual 1951.

Soils on the Sedimentary Rocks

Red amphipodzol

Profile No. 534 is from the long gentle slope of an alluvial—colluvial fan in the lower valley of Eurobin Creek. The vegetation is wet sclerophyll forest of narrow-leaf peppermint and manna gum with a tall shrub stratum of burgan.

Depth (inches)

- 0-3/4 dark brown (7.5 YR 3/2); loam; strong, fine crumb; loose; stones up to 1 in occasional; abruptly over
- ³/₄-5½ dark brown (7.5 YR 3/4); clay loam; moderate, fine subangular blocky; crumbly to friable; stones about ½ in common; gradually changing to
- 5½-10 dark reddish-brown (5 YR 4/6); light clay; moderate, fine subangular blocky; friable to slightly hard; stones from ¼ in. to 1 in. common; gradually changing to
- 10-43+ yellow-red (5 YR 4/6); light clay; strong, fine subangular blocky; friable; stones from 1/4 in. to 1 in. and larger abundant.

Cryptopodzol

Profile 367 was described from the side of the fire-access track which takes off from near the 10-mile post on the main road from Porepunkah. This is a broad ridge-top which widens to the south to form a plateau at about 2,300 feet. The parent material appears to be *in-situ* weathered greywackes. The vegetation is wet sclerophyll forest of narrow-leaf peppermint, broad-leaf peppermint and manna gum with tall shrubs of hickory wattle and abundant Austral bracken.

Depth (inches)

- 0-1 very dark brown (7.5 YR 2/2); loam; strong, medium crumb; slightly hard; stones ½ in. to ½ in. common; clear boundary to
- 1-8 very dark brown (7.5 YR 2/2) loam; strong, fine to medium crumb slightly hard; stones up to 2 in. common; clear boundary to
- 8-18 dark brown (7.5 YR 3-4/4); loam to clay loam; moderate, fine subangular blocky tending towards granular; slightly hard; stones up to 2 in. common; gradually changing to
- 18-32+ dark reddish-brown (5 YR 3/4); clay loam; moderate, fine subangular blocky; slightly hard; stones up to 2 in. and larger common.

Soils on the Granite

Acid brown earth

Profile 368 was described from a roadside exposure near the 14-mile post on the main road from Porepunkah. The site is on the side of a steeply sloping gully at about 3,850 feet elevation. The vegetation is wet sclerophyll forest of alpine ash with occasional mountain gum, tall shrubs of catkin wattle and a low shrub stratum of hop bitter-pea.

Depth (inches)

- 0-5 black (10 YR 2/1); coarse sandy loam; strong fine to medium subangular blocky; slightly hard; small stones (4 in.) abundant clear boundary to
- 5-9 very dark greyish-brown (10 YR 3/2); coarse sandy clay loam weak, fine to medium subangular blocky; slightly hard; small stones (4 in.) abundant; clear to gradual boundary to
- 9-24 dark yellowish-brown (10 YR 3/4); coarse sandy clay loam; weak, fine to medium subangular blocky; slightly hard to loose; small stones (4 in.) abundant; gradually changing to

- dark yellowish-brown (10 YR 3/4); coarse sandy clay loam; single grain tending to cohere to fine granular; loose; small stones (4 in.) abundant; abrupt boundary to
- 35+ large granite boulder

Transitional alpine humus soil.

Profile 371 was described from the access track to Keown Ski Lodge and the Dingo Dell ski run. This is rolling topography at about 4,600 feet with relatively free drainage at the site of the description. The vegetation is regrowth snow gum (wet mallee formation) with tall hickory wattle, low shrubs of alpine Oxylobium and ground cover of snow grass.

Depth (inches)

- 0-2 very dark brown (10 YR 2/2); coarse sandy loam; strong, fine crumb loose; small stones (4 in.) common; clear boundary to
- 2-5 very dark brown to greyish-brown (10 YR 2-3/2); coarse sandy loam strong, fine crumb; loose to slightly hard; small stones (4 in.) common; clear boundary to
- 5-18+ brown to dark brown (10 YR 4/3) coarse sandy clay loam; lacking structure; hard; small stones (4 in.) abundant (weathered granite).

Alpine humus soil

Profile 533 is from a moderately sloping site in a small gully to the south-east of the Hump at about 4,800 feet. The vegetation is old regrowth snow gum (tending towards sub-alpine woodland from wet mallee formation) with tall shrubs of hickory wattle and low shrubs of alpine Oxylobium. Ground cover is predominantly snow grass.

Depth (inches)

- 0-3 black (10 YR 2/1); coarse sandy loam; strong, very fine crumb loose; occasional stones up to 1 in.; clear boundary to
- 3-12 (22) black (10 YR 2/1 2.5 Y 2/0) coarse sandy loam; strong, fine crumb loose; small stones (4 in. to 1 in.) common; abruptly over
- 12(22) + very stoney.

Peat

Profile 535 was described from tube samples taken from a raised bog peat on the Crystal Brook track. The species present were scattered small patches of Sphagnum moss, with dominance of spreading rope-rush and candle heath.

Depth (inches)

- 0-7 black to very dark brown (10 YR 2/1-2); fibrous organic silty loam; clear boundary to
- 7-28 black (2.5 Y 2/0); silty organic loam; amorphous somewhat sticky; breaking to medium angular blocky.

APPENDIX IB - METHODS 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.

Electrical Conductivity (E.C. 25° C.): A 1:5 soil-water suspension was shaken for one hour, and the conductivity was measured with a "Philips" conductivity bridge and dip cell.

Soil reaction (pH): The above suspension was used, with measurements being made with a glass electrode pH meter

Chloride (CI): 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. Carbon/nitrogen ratios should be calculated by use of 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 0.5g is digested in concentrated sulphuric acid, and the ammonia recovered by distillation of the digest in a Markham still.

Hydrochloric acid extract: The extract was prepared by boiling 4g 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 mm. Potassium was determined by flaming a portion of the extract, suitably diluted, in a "Lange" flame photometer.

Free iron oxide (Fe₂O₃): 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.

Exchangeable cations: 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 electro-metric titration. The difference between these two gave the cation exchange capacity.

Structure and porosity: The soil cores were saturated with water from below at zero tension, by standing them in water overnight or longer. They were weighed when saturated and placed on a ceramic suction table which was held at one meter tension of water. When the cores reached equilibrium with the applied tension, they were weighed, oven dried at 105°C. and weighed again. The soil was then washed through a 2 mm sieve. The gravel remaining on the sieve was weighed and its volume was calculated by dividing the weight by 2.65 (the average specific gravity of gravel).

These figures enabled the percentage of water at saturation and field capacity, on a volumetric basis, to be determined, and consequently the volume of pores occupied by air at field capacity was calculated.

The percentage water at wilting-point was measured in the pressure membrane apparatus at 15 atmospheres with a gravel-free, fine-earth sample. This figure has been converted to the volumetric basis. It is necessary to use a gravel-free basis, as one core sample of this size cannot give an accurate estimate of the gravel present in the soil as a whole.

APPENDIX IC – ANALYTICAL DATA FOR SELECTED SOIL PROFILES

MANATICKL DATA FOR SELECTED SOIL PROPERTY Manage Ma			Soil Group Profile No. Parent Material	Red amphipodzol 534 Sedimentary rock	Cryptopodzol 367 Sedimentary rock	Acid brown earth 368 Granite	Transitional alpine humus soil 369 Granite	Transitional alpine humus soil 371 Granite	Alpine humus to transitional alpine humus soil 532 Granite	Alpine humus soil 533 Granite	Peat 535 Plant remains	Dry peat 537 Plant remains alluvium	Humified peat 370 Plant remains alluvium	
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APPENDIX II - COMMON NAMES AND SCIENTIFIC NAMES USED IN THE STUDY

Plants

Eucalypts

Alpine ash ... Eucalyptus delegatensis R. T. Baker

Black sallee .. E. stellulata Sieb. ex. DC.
Bogong gum .. E. chapmaniana A. K. Cameron

Brittle gum .. E. mannifera Mudie Broad-leaf peppermint .. E. dives Schau.

Buffalo sallee .. E. mitchelliana Cambage Candlebark gum .. E. rubida H. Deane and Maiden

Long-leaf box .. E. goniocalyx F. Muell. ex. Miq. (syn. E. elaeophora F. Muell.)

Manna gum ... E. viminalis Labill. Mountain gum (Kindling-bark) ... E. dalrympleana Maiden Mountain swamp gum ... E. camphora R. T. Baker Narrow-leaf peppermint ... E. radiata Sieb. ex. DC.

Red stringybark ... E. macrorhyncha F. Muell. ex. Benth. Snow gum (White sallee) ... E. pauciflora Sieb. ex. Spreng.

Wattles

Alpine wattle ... Acacia alpina F. Muell Blackwood ... A. melanoxylon R. Br.

Buffalo sallow wattle .. A. phlebophnlla (F. Muell.) E. C. Andrews

Catkin wattle .. A. dallachiana F. Muell. Hickory wattle .. A. obliquinervia M. D. Tindale

Other shrubs

Alpine Baeckea

Alpine Grevillea

Alpine Oxylobium

Alpine Pepper

Alpine Pepper

Box Micrantheum

... Baeckea gunniana Schau.

... Grevillea australis R. Br.

... Oxylobium alpestre F. Muell.

... Drimys xerophila Parment

... Micrantheum hexandrum Hook. f.

Burgan ... Leptospermum phylicoides (A. Cunn. ex. Schauer) Cheel

Candle heath ... Richea continentis B. L. Burtt.
Cherry ballart Exocarpos cupressiformis Labill.
Common Cassinia ... Cassinia aculeata (Labill.) R. Br.

Common fringe-myrtle ... Caltrix tetragona Labill.

Derwent speedwell ... Veronica derwentia Andr.

Elderberry panax .. Tieghemopanax sambucifolius (Sieber ex. DC.) R. Viguier

Fern-leaf Baeckea
Gorse bitter-pea
Hakea
Handsome flat-pea
Hop bitter-pea
Leafy Bossiaea

. Baeckea crenatifolia F. Muell.
. Daviesia ulicifolia Andr.
. Hakea lissosperma R. Br.
. Platylobium formosum Sm.
. Daviesia latifolia R. Br.
. Bossiaea foliosa A. Cunn.

Lemon bottle-brush ... Callistemon pallidus (Bonpl.) DC. Long-leaf Lomatia ... Lomatia myricoides (Je. Gaertn.) Domm.

Monkey mint-bush

Mountain beard-heath

Mountain plum-pine

Musk daisy-bush

Myrtle tea-tree

... Prostanthera waited F. Muell.

... Leucopogon hookeri Sond.

... Podocarpus lawrencei Hook. f.

... Olearia argophylla (Labill.) Benth.

... Leptospermum myrtifolium Sieb. ex. DC.

Rosy heath-myrtle .. Baeckea ramosissima A. Cunn
Rough Coprosma .. Coprosma hirtella Labill.
Rusty pods .. Hovea longifolia R. Br.
Shiny Cassinia .. Cassinia longifolia R. Br.
Short-flower heath .. Epacris breviflora Stapf.

Shrubby Platysace ... Platysace lanceolata (Labill.) Norman

Small-flower Grevillea ... Grevillea parviflora R. Br.
Swamp heath ... Epacris pahrdosa R. Br.
Victorian Christmas bush ... Prostanthera lasianthos Labill.

Violet Kunzea ... Kunzea parvifolia Schau.

Woolly tea-tree ... Leptospermum lanigerum (Ait.) Sm.

Yellow Kunzea ... Kunzea maelleri Benth. - ... Baeckea crenatifolia

Grasses

Alpine spear grass ... Stipa nivicola J. H. Willis Snow grass (Tussock grass) ... Poa australis Sp. agg.

Other herbaceous plants

Common billy-buttons ... Craspedia glauca (Labill.) Spreng.
Common fringe-lily ... Thysanotus tuberosus R. Br.
Ivy Goodenia ... Goodenia hederacea Sm.

Mountain gentian .. Gentianella diemensis (Griseb.) J. H. Willis Pale vanilla-lily .. Arthropodium milleflorum (DC) Macbride

Prickly starwort .. Stellaria pungens Brongn.

Spreading rope-rush .. Calorophus laterflorus (R. Br.) F. Muell.

Sedge ... Carex gaudichaudiana Kunth.
Tall spike-rush ... Eleocharis sphacelata R. Br.
Tasman flax-lily ... Diane/la tasmanica Hook. f.

Moss

Sphagnum moss .. Sphagnum cristatum Hpe.

Ferns

Austral bracken ... Pteridium esculentum (Forst. f.) Nakai

Austral king fern .. Todea barbara (L.) T. Moore Hard water-fern .. Blechman procerum (Forst. f.)

Animals

Insects

Bogong moth ... Agrotis infirsa Boisd.
Casemoth ... Plutorectis caespitosa Oke.
Phasmatid (Stick insect) .. Didymuria violescens Leach
Swift moth ... (Fam. Hepialidae)

Birds

Australian raven .. Corvus coronoides V. and H. Black-backed magpie .. Gymnorhina tibicen La. Grey currawong .. Strepera versicolor La. Laughing kookaburra .. Dacelo gigas Bodd. Pied currawong .. Strepera graculina Shaw Red wattle-bird .. Anthochaera carunculata Shaw .. Menura novae-hollandiae La. Superb lyrebird Yellow-tailed black cockatoo .. Calyptorhynchus firnereus Shaw

Mammals

Rabbit Oryctolagus cuniculus L. Wombat Vombatus hirsutus Perry