APPENDIX VI - METHODS AND EXPLANATION OF LAND SYSTEM DATA

Land system boundaries

Land system map unit boundaries may be based on different criteria. The simplest and most precise boundary is one that marks a sharp physiographic break — for example, between upper and lower sets of terraces, or where the alluvial fan landscape meets the steep hill-slopes.

Changes in rock type may be significant for definition of land systems and may be clear enough to be used as a precise boundary.

Commonly, however, changes in important land characteristics are gradual, and an arbitary choice must be made for the placement of a boundary. For example, the gradual change in rainfall across a region may be great enough to justify sub-dividing the area. It is often convenient to use change in vegetation characteristics as an indicator of where the change is significant for plant growth. The land system boundary that separates such areas obviously indicates a zone of change.

Similarly, gradual changes in presence and/or proportion of land forms may occur — within the broader landscape patterns — that, at the land system scale of mapping, would be considered as separate map units. Placement of map unit boundaries in this case depends on the mapper's skill and the significance placed on the differences. Again, such a boundary represents a zone of change and the map units each contain a range of the defining land characteristic, although a narrower range than would otherwise have been the case.

It is important to realise that, in many cases, the land system boundaries used do not indicate a sharp change in the land but basically separate areas with differences that are described in the land system descriptions. The kinds of land system boundaries used in this study are shown in Table 11.

Data presented in the land system tables have been derived in the following ways.

Climate

Rainfall: Annual average and range were estimated by constructing isohyets for stations within and adjacent to the catchment, based on published data of the Bureau of Meteorology, other records and extrapolation on the basis of these data modified by presumed topographic effects.

Temperature: Annual average and range were estimated on Bureau of Meteorology data for stations within and adjacent to the catchment, with extrapolation using a formula linking temperature and elevation (Rowe 1967).

Seasonal growth limitations: The number of consecutive months with less than a 50% chance of receiving effective rainfall (Central Planning Authority 1949).

Geology

Age and lithology: Details were obtained from the 1:250 000 geological maps Wangaratta SJ 55-2, Tallangatta SJ 55-3, Warburton SJ 55-6 and Bairnsdale SJ 55-7 (Department of Minerals and Energy), together with inspection in the field.

Topography

Elevation: Derived from 1:100 000 topographic maps and sometimes by use of an aneroid barometer in the field.

Relative relief: Derived from field observation, supported by examination of the 1:100 000 topographic maps.

Land form: Derived from commonly used terms, avoiding as far as possible ambiguous or technically highly specific terms.

Position of land form: The components of each land system were classed according to their position in the landscape.

Slope gradient: Estimates were made from the distance between contours on 1:100 000 topographic survey maps and field measurement.

Slope shape: Field observations were made to classify slopes as convex, concave or linear.

Native vegetation

Structure: Height and projected foliage cover were estimated in the field and related to the structural forms of Specht (1970).

Dominant species: Species occurring in each land component were identified in the field and listed in order of their frequency.

Soils

Parent material: Determined by field observation, with prior reference to 1:250 000 geological maps of the area (Department of Minerals and Energy).

Description: Soil profiles were described in general terms compatible with Northcote's (1979) categories based on texture change with depth. A generalised Munsell name was used to describe the dominant colour of the B horizon in its moist state. Note that only the dominant soil in each component is specified. Additional terms used are:

> **Shallow** — less than 0.5 m to rock impenetrable to auger.
>
> **Stony** — the profile contains more than 10% rock fragments greater than 10 cm across.
>
> **Gravelly** — the profile contains more than 10% rock fragments up to 10 cm across.
>
> **Undifferentiated** — the profile does not show vertical segregation of clay, iron oxides or organic matter to produce a B horizon.
>
> **Coarsely structured** — B horizon with blocky peds more than 2 cm diameter.
>
> **Ped fabric** — after Northcote (1979).

Surface texture: Northcote's (1979) texture grades were used.

Permeability: Estimates of how freely water moves through the profile in three broad classes, based on observation and inference.

Depth: Soil depth is an estimate of the modal depth to material impenetrable to the hand auger, generalised for the component. In addition to augering, depth was estimated from road or other cuttings, or by geomorphic evidence.

Land use: Two broad categories — cleared and uncleared — are used, and where a more specific use is important it is identified.

Soil deterioration hazard: The most likely forms of soil deterioration, the processes and the critical land features are listed. These are derived from field observations and inference, based on knowledge of the main processes of deterioration.