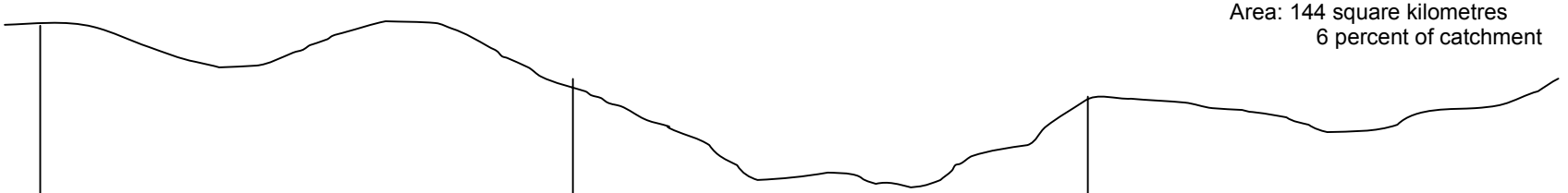
SWANPOOL LAND SYSTEM (Figure 19)

Area: 144 square kilometres
6 percent of catchment



Topography	Rolling hills of low relief at elevations about 230 m to 300 m.	Valley slopes of the Broken River.	Tributary valley areas, many with floors of low gradient and twin streams, at about 150 m elevation.
Climate	Average annual rainfall from about 800 mm to 950 mm. Growing season: April-May and September-December. Estimated average temperatures: Jan 22°C; July 8°C; Year 15°C. Estimated evapotranspiration: Jan 125 mm; July 20 mm; Year 750 mm.		
Parent Materials	Granite	Granite and alluvium from a variety of rocks in the catchment.	Granite and granitic alluvium.
Soils	Yellowish duplex soils and sandy, pale or weakly bleached gradational soils along streams.	Yellowish duplex soils and sandy, pale or weakly bleached gradational soils; Terrace sequence as for *Benalla* land system, but narrow with the terrace predominant.	Yellowish duplex soils on rises, sandy, pale or weakly bleached gradational soils in depressions; gleyed brown or grey loams, some non-calcareous dark clays and coarse sandy loams on the flats.
Vegetation	Open forest of red stringybark, red box and broad-leaf peppermint, with red gum and apple box along drainage lines, and swamp gum in wetter areas.	Open forest of red stringybark and red box on high banks; red gum and some candlebark gum along streams.	Open forest of red stringybark, red box and broad-leaf peppermint, with candlebark gum in wetter areas, and swamp gum along the flats.
Land Use	Grazing of sheep and cattle.	Grazing of sheep and cattle, some dairying.	Dairying, grazing cattle and sheep.
Erosion Hazard	Moderate to high on long, steep slopes.	Moderate generally.	Generally low.
Erosion Status	Generally sound; a few small gullies and eroded streams.	Sound except for stream bank erosion.	Sound
Potential Land Use	Some areas suitable for horticulture, as on lower slopes of the *Warby* land system; otherwise grazing on improved permanent pastures.	Grazing of permanent pasture; irrigation should be possible in some areas.	Dairying and grazing of permanent pastures; much potential for further development of existing cleared land; deep-rooted pasture species could utilise ground-water on the flats through summer; irrigation would be possible from some permanent streams.

SWANPOOL LAND SYSTEM

(See Fig. 19)

This land system consists of granitic areas at low elevation and of low relief which receive moderate rainfall. It occupies about 144 square kilometres (6 per cent) of the catchment and includes the valley of the Broken River from Swanpool to Barjarg, the broad basin of the lower reaches of Moonee-Moonee Creek and the rolling dissected country to the east.

This land system forms part of a topographic sequence on granite, but it differs from the others in the sequence mainly in climate and topography. It consists of a landscape of rolling hills with broad trunk-stream valleys, and a system of mature tributary valleys, many of which have flat floors with twin streams, one on either side of the flats (Plate 15). The whole land system is derived from granite, or from alluvium derived mainly from granite, and most of it lies between 150 m and 300 m elevation.

The climate is fairly uniform over the area and most places within the land system receive rainfall of between 800 mm and 950 mm per annum with a pronounced winter incidence. The growing season, which is limited by low temperatures in the winter and by lack of water in the summer, is April to May and September to December. A water budget has been constructed for Lima East which is within this land system (see Fig. 10).

The native vegetation of the area is a dry open forest of red stringybark, yellow box, red box and broad-leaf peppermint, with red gum and apple box along the drainage lines and swamp gum in wetter areas. On the higher rainfall fringe the red gum is replaced by candlebark gum. Most of the land system is now cleared.

Yellowish duplex soils are characteristic of the whole land system but sandy gradational soils occur in hollows and on stream terraces. Gleyed brown and grey loams and non-calcareous dark clays occur on the broad alluvial flats between the twin streams.

The yellowish duplex soils have a shallow A-horizon and do not hold very much water available to plants. As a result, the rises where these soils occur dry off fairly early in summer. The flats however have a high potential for pasture growth.

The present land uses are mainly based on permanent pasture. They consist of the grazing of sheep and fat cattle, and some dairying. The area has a high potential for grazing, particularly where irrigation is possible. Some parts of the lower hill slopes would be suitable for horticulture, as in the Warby land system.

This land system is a significant source of water. Runoff can be expected to commence between mid-May and mid-June and to continue until the end of October with the maximum yield in July or August. Average annual runoff is estimated to be about 300 mm.

MOONEE-MOONEE LAND SYSTEM

(See Fig. 20)

The Moonee-Moonee land system consists of dissected granite slopes of high relief with high rainfall (Plate 18). It is located between the plateaux of the Strathbogie land system and the plains. Within the catchment it occupies about 202 square kilometres (9 per cent), but there are similar areas around most of the granite mountain masses in eastern Victoria. This land system is separated from the other land systems on granite, partly because it receives higher rainfall and is cooler, but mainly because of the topography. It is an area of high relief in a fairly advanced stage of riverine dissection. It rises gradually from the plains at about 230 m, through the foothills into a region of residual peaks or ridges which give way near the plateau to a series of rolling ridge, tops, with steep rocky upper-valley slopes. There are numerous "perched" basins with moderate slopes. There is a fairly sharp and well defined rim to the edge of the Strathbogie plateau at about 610 m.

The average annual rainfall increases from 780 mm in the foothills to 1115 mm at the plateau edge, and average temperatures decrease with height. As a result the growing season varies considerably within the land system. In the foothills it extends from August to December and from March to May. Near the plateau rim it is from September to January and February to April. Lack of soil moisture limits plant growth in mid-summer but this is much less pronounced at the higher elevations. Severe frosts occur in winter, particularly in clearings, and even on the steep slopes.

The native vegetation follows the trend in the climate from a dry open forest of broad-leaf peppermint with red stringybark, red box, and long-leaf box in the foothills to an open forest of narrow-leaf peppermint with candlebark gum, messmate and blue gum at the higher elevations. Occasionally these wetter forests may be almost dense enough to be classed as closed forest, and usually have a ground-cover of grass and litter, with very little soil exposed.

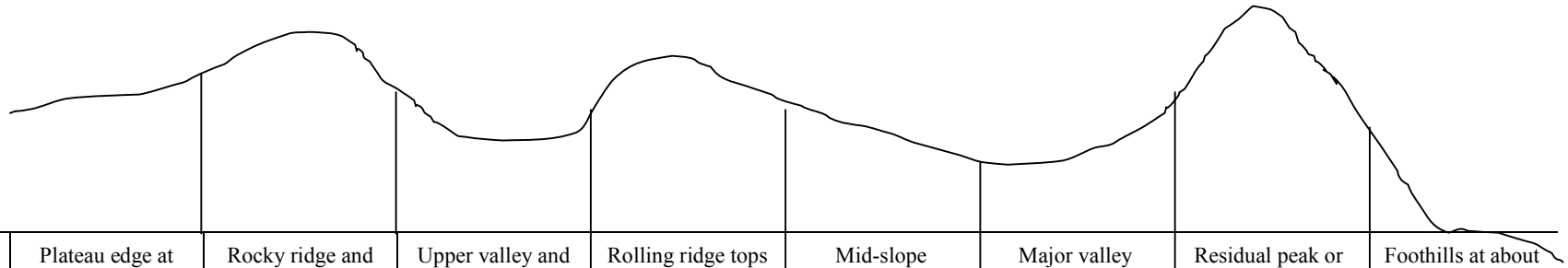
The soils also follow the climatic trend with elevation. They range from reddish and yellowish duplex soils, often with deep A-horizons of coarse, pale sands in the foothills, to friable reddish and brownish gradational soils in the higher rainfall areas. These in turn give way to reddish duplex and gradational soils on the Strathbogie Plateau.

Very little of the land system is cleared, nor is much directly used. The better quality forests in the higher rainfall areas are managed for hardwood timber production. There are a few clearings on ridge tops which are grazed. The area could be valuable for flora and fauna conservation.

The erosion hazard is fairly low under the natural forest vegetation but the slopes are generally too steep to be stable if cleared. For this reason the area should remain under forest.

MOONEE-MOONEE LAND SYSTEM (Figure 20)

Area: 202 square kilometres
9 percent of catchment



Topography	Plateau edge at about 610 m elevation.	Rocky ridge and steep slope	Upper valley and rocky creek	Rolling ridge tops	Mid-slope	Major valley	Residual peak or ridge	Foothills at about 230 m elevation.
Climate	Average annual rainfall from 780 mm to 1 115 mm. Growing season: August-December and March-May in lower areas to September-January and February-April at upper elevations. Estimated average temperatures: Jan 20°C-23°C; July 6°C-7°C; Year 13°C-15°C. Estimated evapotranspiration: Jan 110-125 mm; July 15-18 mm; Year 70-75 mm.							
Parent Materials	Granite		Granite or granite sand	Porphyritic grey granite of upper Devonian age			Hill-wash and granite	Granite with mantle of hill-wash
Soils	Reddish duplex soils; friable reddish gradational soils	Stony loams	Gritty pale gradational soils over red clay or rock	Gritty, friable brownish or reddish gradational soils	Reddish duplex soil with dark A horizons.	Gritty, friable brownish and reddish gradational soils	Gritty, pale gradational soils over red clay or rock; Stony loams on ridges	Reddish or yellowish duplex soils, often with deep A horizons of pale coarse sand
Vegetation	Open forest of narrow-leaf peppermint and candlebark gum, some swamp gum.	Open forest of blue gum and broad-leaf peppermint	Open forest of messmate and blue gum	Open forest of narrow-leaf peppermint and candlebark gum with messmate; sometimes closed forest.	Open forest of narrow-leaf peppermint and candlebark gum.	Open forest of narrow-leaf peppermint, candlebark gum and blue gum; limited wet-gully flora.	Open forest of broad-leaf peppermint, candlebark gum and red stringybark.	Open forest of broad-leaf peppermint, red stringybark, red box and long-leaf box.
Present Land Use	Grazing on permanent pastures.	Protection forestry	Timber production	Timber production; some cleared areas used for grazing.	Some timber production; protection forestry.	Timber production	Protection forestry, some timber production.	Mostly protection forestry; some cleared areas used for grazing.
Erosion Hazard	Low to moderate		Low to moderate		Moderate to high in drier areas			Moderate
Erosion Status	Sound		Generally sound; some erosion from intensively logged areas.		Sound		Generally sound; some sheet erosion following fires.	
Potential Land Use	Most of this land system is too steep for extensive clearing. Should be managed for catchment protection, timber production and the maintenance of habitat for wild life. Forest grazing may be practical but may not be compatible with maintenance of wild life habitat.							