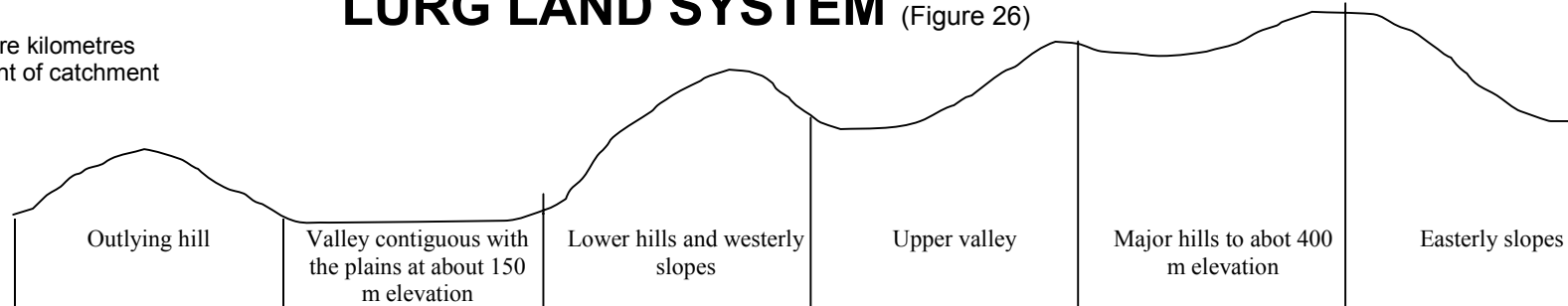


# LURG LAND SYSTEM (Figure 26)

Area: 317 square kilometres  
15 percent of catchment



Topography	Outlying hill	Valley contiguous with the plains at about 150 m elevation	Lower hills and westerly slopes	Upper valley	Major hills to about 400 m elevation	Easterly slopes
Climate	Average annual rainfall about 635 mm in the west to over 760 mm in the east, summers dry. Growing season: March-May and September-December. Estimated average temperatures: Jan 23°C; July 8°C; Year 16°C. Estimated evapotranspiration: Jan 125 mm; July 23 mm; Year 80 mm.					
Parent Materials	Rock, colluvium and redeposited material.	Ordovician and Silurian age sedimentary rocks, mainly shales and mudstones, and materials derived from the.		Rock and colluvium	Rock, colluvium and redeposited soil material.	Rock and colluvium
Soils	Stony loams, reddish duplex soils, some pale gradational soils.	Pale gradational soils and weakly bleached gradational soils; some reddish gradation soils.	Stony loams on upper slopes; truncated reddish clays and deep, stony, pale or weakly bleached gradational soils on lower slopes.	Pale gradational soils.	Stony loams on steep slopes; reddish duplex soils with stony pale gradational soils.	Reddish duplex soils.
Vegetation	Open forest to woodland of red ironbark with red stringybark, red box, yellow box and long-leaf box.	Woodland of red gum and apple box, with red box and yellow box, and grey box in drier areas.	Open forest of red box, long-leaf box, red stringybark with some areas of red ironbark.	Open forest of red stringybark with apple box along depressions.	Open forest of long-leaf box on upper slopes with red box, red stringybark and grass trees.	Open forest of broad-leaf peppermint, blue gum and red stringybark.
Land Use	Much still uncleared; cleared areas are generally unimproved; grazing of sheep.	Grazing of sheep; homestead areas.	Some uncleared areas produce firewood and poles; cleared areas used for grazing; some horticulture (grapes, passionfruit).	Grazing of sheep	Mostly cleared; grazing of sheep.	Grazing of sheep.
Erosion Hazard	High	Moderate	Generally high but lower where rainfall is highest.			
Erosion Status	Some sheet and gully erosion.	Generally sound; some stream-bank erosion.	Some sheet and gully erosion.	Generally sound.	Sheet erosion on hill-tops and steep slopes but generally sound.	Generally sound.
Potential Land Use	Where cleared, permanent pastures should be established; where uncleared, management to maintain ground cover; limited firewood and pole production.	Useful fodder and cropping areas used in conjunction with hills; could be considerably improved.	Permanent pastures on cleared land; uncleared areas should be managed to maintain ground cover; limited firewood and pole production.	Generally these areas should be sown to permanent pastures; perennial species may be suitable in some areas; useful grazing area when combined with drier, lower areas.		

## LURG LAND SYSTEM

(See Fig. 26)

The Lurg land system consists of the lower hilly areas of Ordovician and Silurian Age sedimentary rocks which receive low to moderate annual rainfall. The land system locally rises from the plains of the Benalla land system but it is a common land system in north-eastern Victoria and occurs wherever the folded sedimentary rock foothills run out onto the plains. Within the Broken River catchment it has an area of 317 square kilometres which represents 15 per cent of the catchment. The largest single area is 170 square kilometres around Lurg township. Other major areas are the Reef Hills, the northern foothills of Mt. Pleasant, the western end of the Chesney Hills and a number of smaller areas near Tatong. There are also several small areas in the north-western corner of the catchment.

The land system is separated from the other sedimentary rock areas mainly by climatic differences. The topography consists usually of well dissected major central hills with steep upper valleys giving way through more rolling, maturely dissected country to the plains. Valley areas connecting with the plains run back into the hills.

There is a rainfall gradient across the land system from just below 635 mm in western areas to more than 760 mm in the east, and while this is not a very large difference numerically it has a significant effect of land use.

The natural vegetation is classified as box-ironbark open forest which has been subdivided into two parts, the red box-long-leaf box forests which occur in the moister climates, and the grey box-ironbark forests in the low rainfall areas, generally to the north. The vegetation structure is generally a woodland to dry open forest, in which the species present vary with topographic position.

On the steep upper slopes, long-leaf box is dominant with red box, red stringybark and grass-trees (*Xanthorrhoea*). In the valleys a mixture of red stringybark and red gum, with apple box along the stream lines, is common. The lower slopes carry red box, long-leaf box, red stringybark and, in patches, red ironbark. The ironbark generally occurs as open forest. The vegetation of the broad valleys contiguous with the plains consists of a woodland of red gum and apple box with red box, yellow box and grey box in the drier areas. It grades directly into the vegetation of the plains.

The soil pattern is also related to topography. Undifferentiated stony soils occur on the ridge tops and steep slopes but otherwise reddish duplex soils and a mantle of stony pale gradational soils are characteristic of the land system. In many places on the steep slopes the reddish duplex soils have lost most of their A-horizons so that the surface soil is a stony, well structured red clay. These sites are often occupied by ironbark. The valleys have pale gradational soils and reddish weakly-bleached gradational soils, and occasionally yellowish duplex soils are present.

The rocks weather irregularly to produce great variability in soil depth. A mantle of rock chips is also characteristic of all the soils of this area. The pale gradational soils of the drainage lines and major valleys are deep and subject to waterlogging in winter. The stony pale gradational soils, which often overlie the red clays on the foothill slopes, are quite well drained and should be suitable for pasture growth. The soils are not inherently fertile but respond well to superphosphate. Molybdenum may be necessary for the establishment of legumes.

The present land use consists mainly of sheep grazing. There are some small vineyards of grapes and passionfruit. Some forest areas are used for gathering firewood and cutting shed poles, and large areas, such as the Reef Hills near Benalla, serve as valuable recreation and flora and fauna conservation areas.

Many of the outlying hill areas are not cleared and it is probably uneconomic at this stage to clear them for pasture production. In any case, they would be best left under forest to supply local requirements for firewood, fence timbers and poles. The steeper and higher areas which receive more rain are generally cleared. However, where areas are still under forest they should be left in this condition. The main potential of the land system lies in improved pastures and improved grazing management on the less steep slopes.

The erosion hazard is fairly high, particularly on the steep slopes and in the steeper valleys where the deep pale gradational soils are readily scoured. However, because of the reasonable standard of land-use in these areas, erosion is not at present a significant problem.

From the point of view of water production the area is not significant. It does yield a little flash runoff from storms and a small amount of steady runoff after heavy winter rain, but its total annual production would probably be no more than 50 mm of useful water. Much of the area does not drain directly to the Broken River but to Lake Mokoan, so that it has little significance from the point of view of the flood problem on the stream. For greatest catchment efficiency the area should be maintained in a well-grassed condition and erosion minimised.

The area which receives most rain, the eastern part, would probably support useful perennial pastures. The hills are a particularly favourable and healthy grazing area and, where already cleared, this would appear to be the most suitable use. Further clearing is however probably not economical and because of the erosion hazard should not be undertaken. The problem of nitrogen build-up

on hilly land where the introduction of improved pastures is not possible, is present in these areas as in others. This problem will limit the development of these hills until a means of establishing high quality grasses is available.



*Plate 20. Sheet erosion occurs when the pastures on steep westerly slopes on poor soils are overgrazed. This slope which has suffered some sheet erosion is in the Wrightley land system.*

The hills are a valuable winter grazing area and should be left ungrazed during the latter portion of the summer to minimise sheet erosion and runoff in summer thunderstorms. The valleys serve a useful function in balancing the use of the hill country, and in providing an area which can be used for the production of conserved fodder. They are capable of considerable improvement. The drier, lower foothills of the western slopes and the outlying western areas, where only annual pastures can be grown, are a doubtful economic proposition for further clearing, and much of this area should be left under forest to supply local timber requirements.

The large forested block near Benalla known as the Reef Hills and other similar areas appear to be well suited to management for conservation of fauna and flora.