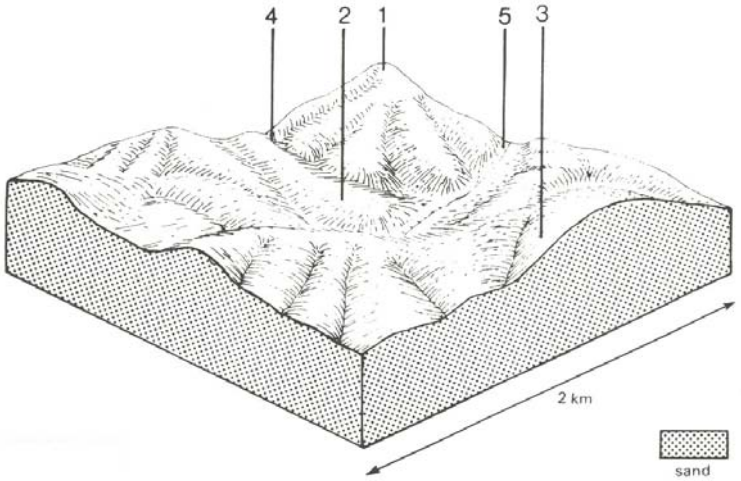
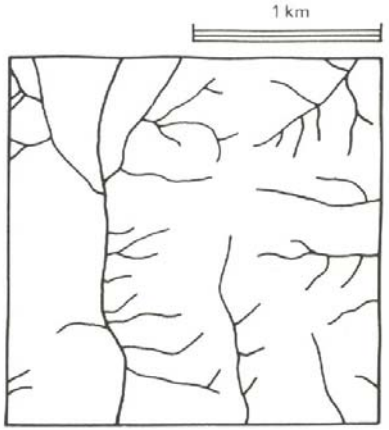
7.13 Chapple Vale Land System

Low woodlands of Eucalyptus nitida with understoreys of *Leptospermum juniperinum, L. myrsinoides* and *Xanthorrhoea australis* characterise these hills on the western periphery of the Otway Range. The soils are mainly deep, infertile and excessively drained sands, which contrast sharply with the adjacent gradational profiles of the Lower Cretaceous outcrops. Thus, although rainfall is high, moisture stress and soil infertility severely restrict plant growth.

Some attempts have been made to clear tracts of this land and establish pastures for cattle grazing. Trial plots of pine species have also been established. Given sufficient fertilizer and soil ameliorants such as lime, pastures or even intensive crops could be successfully grown. However, the rates of such chemicals needed to achieve satisfactory production are high and most of the land remains in its natural state. The main activity has been the opening up of numerous soil and gravel extraction pits, most of which have failed to regenerate naturally and now remain as scars on the landscape.





The components of this land system are well demarcated by the structure and species composition of the native vegetation.

CHAPPLE VALE Area: 115 km^2	Component and its proportion of land system				
	1 15%	2 15%	3 55%	4 10%	5 5%
CLIMATE Rainfall, mm Temperature, 0^{o}C Seasonal growth limitations	**Annual**: 1,000 – 1,350, lowest January (45), highest August (130) **Annual**: 12, lowest July (7), highest February (18) **Temperature**: less than 10^{o}C (av.) June - September **Precipitation**: less than potential evapotranspiration mid November – late March				
GEOLOGY Age, lithology	Paleocene unconsolidated sand and gravel				
TOPOGRAPHY Landscape Elevation, m Local relief, m Drainage pattern Drainage density, km/km^2 Land form	Dissected hills in the western part of the Otway Range 30 - 270 60 Dendritic with some radial areas 4.0 Hill				Valley floor
Land form element	Crest, slope	Broad, slightly depressed areas of impeded drainage	Crest, slope	Steep lower slope	-
Slope (and range), % Slope shape	25 (10-35) Convex	15 (5-20) Linear	20 (5-45) Convex	40 (25-50) Linear	8 (2-12) Concave
NATIVE VEGETATION Structure Dominant species	Tall shrubland *E. nitida, Acacia suaveolens, E. baxteri, Leptospermum juniperinum*	Closed heath *Casuarina littoralis, Xanthorrhoea australis, Leptospermum juniperinum, Leptospermum myrsinoides, Melaleuca squarrosa, Aotus ericoides, Dillwynia glaberrina, Epacris impressa, Epacris lanuginosa*	Low woodland *E. nitida, E. radiata, E. baxteri, E. viminalis* close to valley floor	Woodland *E. baxteri, E. radiata, E. nitida*	Closed scrub *Melaleuca squarrosa, Leptospermum juniperinum, Casuarina littoralis, Gleichenia circinnata, Bauera rubioides, Sprengelia incarnata*
SOIL Parent material Description Surface texture Permeability Depth, m	Quartz sand and gravel White sand soils, uniform texture Coarse sand Very high >2	Quartz sand Grey sand soils with hardpans, uniform texture Sandy loam Very low 0.6	Quartz sand Grey sand soils, uniform texture Loamy sand Very high >2	Quartz sand Yellow sand soils, uniform texture Loamy sand Very high >2	Alluvial sand, plant remains Black sand soils, uniform texture Silty loam Low >2
LAND USE	**Uncleared areas:** Gravel and sand extraction; nature conservation; water supply; active and passive recreation.				
SOIL DETERIORATION HAZARD Critical land features, processes, forms	Very low inherent fertility and high permeability leads to leaching of nutrients. Steeper slopes with compacted soils are prone to sheet, rill and scour gully erosion.	Hardpans restrict drainage leading to seasonal waterlogging. Very low inherent fertility with leaching of permeable acidic surface horizons leads to nutrient decline.	Very low inherent fertility and high permeability lead to nutrient decline. Steeper slopes with compacted soils are prone to sheet, rill and scour gully erosion.	Steeper slopes with weakly structured soils of low water-holding capacity are prone to sheet erosion. Low inherent fertility and high permeability lead to nutrient decline.	High water tables lead to waterlogging and soil compaction. Rapid run-off from adjacent hills leads to flooding and siltation.