7.31 Pennyroyal Land System

Along the northern periphery of the Range, flat-topped spurs and ridges form an irregular band of foothills from Wormbete Creek to Barwon Downs. The terrain is variable, with steep slopes leading away from these gentle hill crests to wide valley floors. The ridge slopes upwards towards the Range and becomes narrower as the local relief increases.

The gentle parts of the landscape are formed on Tertiary clay, silt and sand. These sediments overlie Cretaceous sandstones and mudstones, which outcrop on steep slopes on the valley sides. Soil and vegetation reflect changes in the parent material, with the soils on the upper parts of the landscape being somewhat deeply weathered with sandy surface horizons in contrast to loam or clay loam soils on the Cretaceous outcrops.

Clearing has been widespread and sheep and beef cattle grazing as well as dairy farming are the main land uses. Some hardwood is logged from forested areas, and softwood plantations have been established in the east. Poor management of these hills can lead to rapid surface run-off along the valleys creating problems of gully erosion, siltation and flooding further downstream.



Upper gentle slopes are formed on Tertiary clay, silt and sand, while Cretaceous sandstones and mudstones outcrop on steep slopes along the valley sides and Recent alluvium is found in the valley floor.





PENNYROYAL	Component and its proportion of land system				
Area: 97 km ²	1	2	3	4	5
	35%	15%	35	12%	3%
CLIMATE Rainfall, mm Temperature, 0°C Seasonal growth limitations	Annual: 700 – 1,050, lowest January (35), highest August (80) Annual: 12, lowest July (8), highest February (18) Temperature: less than 10°C (av.) June – September Precipitation: less than potential evapotranspiration November - March				
GEOLOGY					
Age, lithology	Tertiary unconsolidated clay, silt and sand. Minor remnants of lateritization			Lower Cretaceous sandstone and mudstone	Recent alluvial clay, silt and sand
TOPOGRAPHY Landscape Elevation, m Local relief, m Drainage pattern Drainage density, km/km ² L and form	Steep rolling hills on the northern periphery of the Otway Range 135 - 300 65 Dendritic 1.9 Hill				
Land form element	Gentle crest	Unner slone, crest	Gentle upper slope	Steen lower slone	-
Slope (and range). %	3 (0-15)	7 (0-25)	15 (3-25)	30 (5-45)	1 (0-2)
Slope shape	Convex	Convex	Linear	Linear	Concave
NATIVE VEGETATION					
Structure	Open forest	Open forest	Open forest	Open forest	Tall open forest
Dominant species	E. obliqua, E. ovata, E. radiata, E. aromaphloia, E. nitida	E. obliqua, E. radiata, E. nitida, E. viminalis	E. obliqua, E. viminalis, E. radiata, E. ovata, Acacia melanoxylon	E. obliqua, E. radiata, E. cypellocarpa	E. obliqua, E. cypellocarpa, E. globulus
SOIL					
Parent material	Clay, silt and sand, often deeply weathered	Sand and clay	Clay, silt and sand	In-situ weathered rock	Alluvium
Description	Mottled yellow and red duplex soils	Yellow gradational soils, weak structure	Yellow-brown duplex soils, coarse structure	Brown duplex soils	Grey gradational soils
Surface texture	Sandy loam	Loamy sand	Fine sandy loam	Loam	Sandy loam
Permeability	Moderate	High	Low	Moderate	Low
Depth, m	>2	>2	>2	0.8	>2
LAND USE	Cleared areas: sheep and beef cattle grazing; dairy farming; water supply. Uncleared areas: Hardwood forestry for some sawlogs, posts and poles; softwood plantations; nature conservation; water supply; gravel extraction; passive recreation				
SOIL DETERIORATION	Low inherent fertility and	Low inherent fertility and high	Dispersible clay subsoils on steep	Steep slopes lead to sheet erosion,	High seasonal water table and low
HAZARD	phosphorus fixation lead to nutrient	permeability lead to nutrient	slopes are prone to gully erosion.	particularly on dry aspects. Clay	permeability lead to seasonal
Critical land features, processes,	decline. Weakly structured surface	decline. Weakly structured soils on	Soils of low permeability on steep	subsoils on steep slopes subject to	waterlogging, soil compaction and
forms	soils on steeper slopes are prone to	steepest slopes prone to sheet	slopes are prone to sheet erosion.	periodic saturation are pone to	soil salting. High discharge rates,
	sheet erosion.	erosion.		landslips.	dispersible clay subsoils and
					dispersible sandy clay parent
					material of low mechanical strength
					lead to gully and tunnel erosion.