

7.24 *Pastoria East land system (PE)*

This small area north-east of Kyneton is dominated by low basaltic hills formed during the extrusion of lava during Pliocene times. Associated with the hills are colluvial footslopes and outwash fans.

Red gradational soils predominate, and are shallow and rocky on the upper hill slopes. The neighbouring granitic slopes have influenced the texture of low lying soils, coarse sand being present throughout the profile on the lower slopes, and recent sandy wash often overlying soils in the drainage depressions.

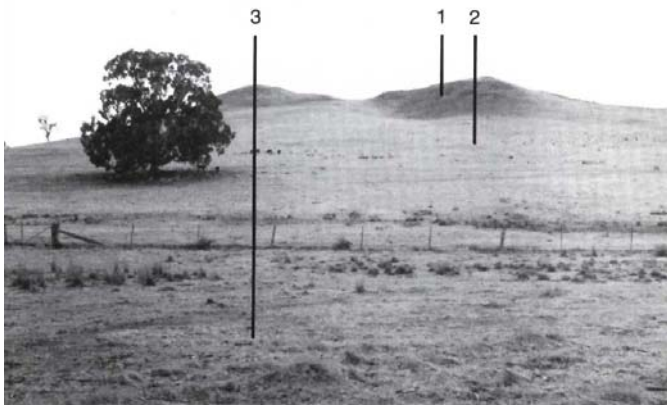
The native vegetation, now mostly cleared, comprises *E. viminalis* and *E. ovata*, the latter being restricted to the lower slopes and depressions. Historical records indicate that the slopes once supported stands of *Casuarina stricta*.

Land use on the steeper rocky slopes is limited to grazing, but the deeper, colluvial soils are also cropped.

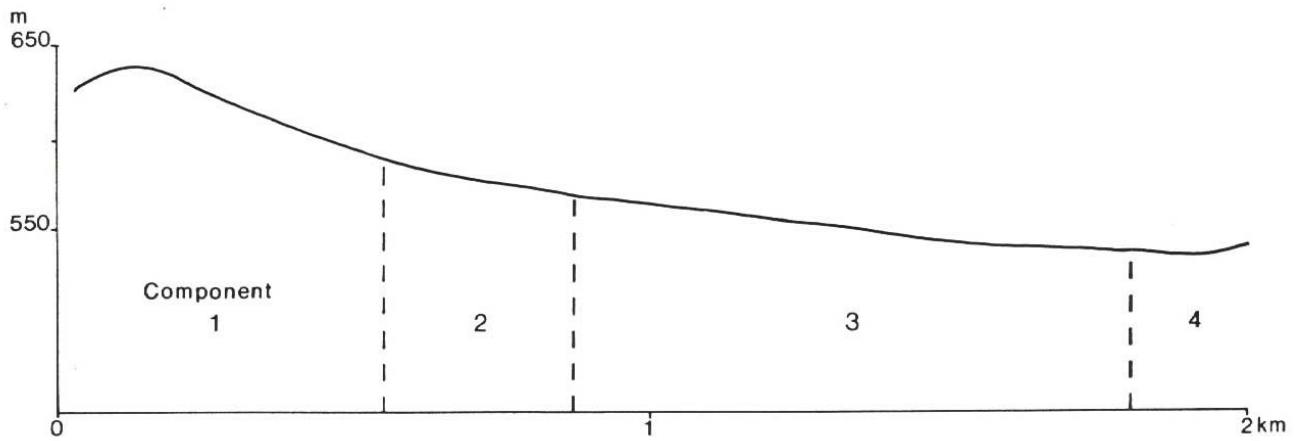
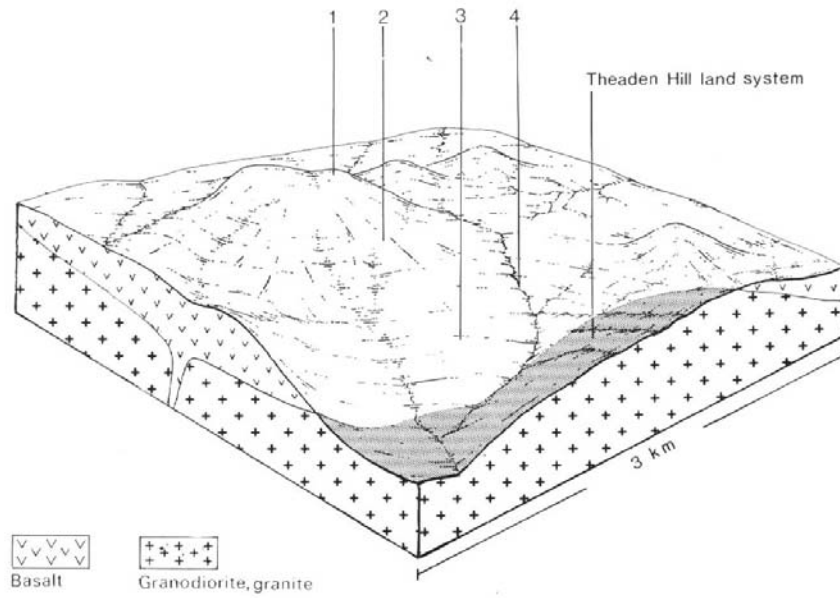
The moderately fertile soils and relatively high rainfall result in good pasture growth and a low erosion hazard; however, sheet erosion does occur on the slopes if they are overgrazed or cultivated and subjected to intense or prolonged rainfall. The permeable soils and high rainfall also pose problems with leaching of nutrients.



The cleared basaltic hills of Pastoria East contrast with the wooded granitic Cobaw Range in both soil type and land use.



A sequence of components in this Pastoria East land system A rocky plunge-pool at the edge of the basalt flow.



PASTORIA EAST LAND SYSTEM (PE) Area 15 km² 0.4% of catchment

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual, 700-800; lowest January (35-40), highest June (85-90) Annual, 12; lowest July (6), highest January (18.5) Temperature less than 10°C (av.): mid April-mid September Rainfall less than potential evapotranspiration: October-March			
GEOLOGY Age, rock type	Pliocene, oligoclase basalt			
PHYSIOGRAPHY Landform pattern Elevation range (in) Relative relief (m) Drainage pattern Channel spacing	Undulating to rolling low hills 430-637 60 Dendritic Moderate			
LAND COMPONENT Number Percentage of land system	1 40	2 15	3 40	4 5
PHYSIOGRAPHY Landform element Slope; modal, range Site drainage	Crest and upper slope of hill 20,5-30 Somewhat excessively drained	Colluvial slope below hill 12,5-20 Well drained	Gentle lower slope 4,1-8 Well drained	Drainage depression 2,1-3 Somewhat poorly drained
SOIL Parent material Description Classification Surface texture Depth to hardpan or bedrock (m) Nutrient status Available water capacity Permeability Exposed rock/stone Sampled site number	Basalt Red stony gradational soils Gn3.11 Loam 0.2-0.5 Moderate to high Moderate Moderate to rapid 10-50 1106	Colluvium Deep red gradational soils Gn4.11 Loam >2.0 Moderate High Moderate 0 1108	Basalt Red gradational soil or duplex soils Gn3.1, Dr2.42; minor Dy3.4 Loam >1.0 Moderate surface, high subsoil Moderate to high Moderate 0 1107	Alluvium Variable; commonly dark gradational soils overlain by a sandy granitic wash layer Uc over Gn3.42, Gn3.42 Loam, sandy loam >2.0 Moderate High Moderate 0 -
NATIVE VEGETATION Structure Characteristic species (+ indicates predominant species)	Open forest II <i>E. viminalis</i>	Open forest II <i>E. viminalis</i>	Open forest II <i>E. viminalis</i> +, <i>E. ovata</i>	Open forest II <i>E. ovata</i>
PRESENT LAND USE	Grazing on introduced pastures	Grazing on introduced pastures; cropping, predominantly oats for grain or hay	Grazing on introduced pastures; cropping, predominantly oats for grain or hay	Grazing on introduced pastures
OBSERVED SOIL DETERIORATION	Minor sheet erosion, usually on sleeper slopes when cultivated		Nil	Minor gully erosion

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Pastoria East

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	sheet and rill erosion compaction of topsoil	low moderate	<ul style="list-style-type: none"> • moderate slopes • loamy texture • moderate organic matter content 	<ul style="list-style-type: none"> • sedimentation • increased run-on 	high soil permeability and a perennial vegetation cover usually limits this process of deterioration -
2	sheet and rill erosion compaction of topsoil	low moderate	<ul style="list-style-type: none"> • gentle to moderate slopes • loamy texture • moderate organic matter content 	<ul style="list-style-type: none"> • sedimentation • increased run-on 	high soil permeability limits this process of deterioration -
3	sheet and rill erosion compaction of topsoil	low moderate	<ul style="list-style-type: none"> • gentle slopes • clayey subsoils that impede infiltration • loamy textures • moderate organic matter content 	<ul style="list-style-type: none"> • sedimentation • increased run-on 	- -
4	gully erosion compaction of topsoil	low moderate to high	<ul style="list-style-type: none"> • minor accumulations of alluvium (basaltic and granitic) • loamy texture • topsoil usually moist • moderate organic matter content 	<ul style="list-style-type: none"> • sedimentation • - 	a perennial vegetation cover usually precludes this process of deterioration



Soil accumulation on this fence is the result of sheet erosion and cultivation downthrow.