

7.18 Kyneton land system (Kt)

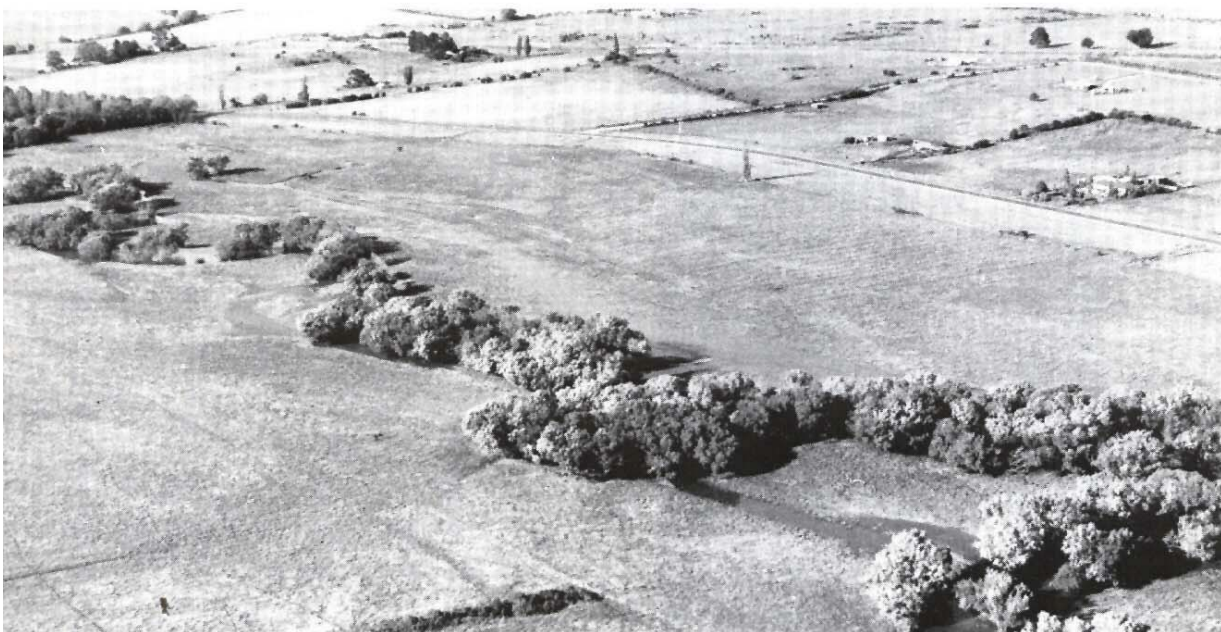
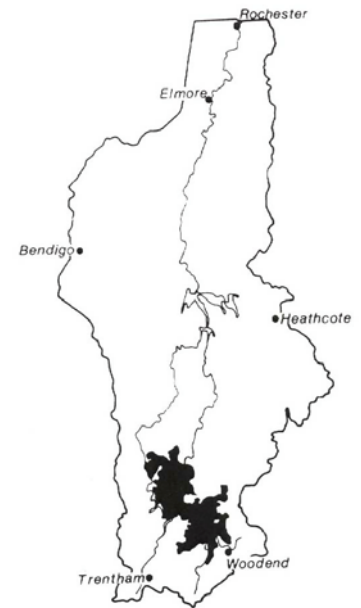
A variably dissected plain on Pliocene olivine basalt extends from Malmesbury to Woodend North. There are a few prominent extrusion points, such as Green Hill. The central parts of the land system are relatively closely dissected, the upper-level plain giving way, via a rocky scarp, to broad gently sloping drainage depressions. In the Malmesbury area the plains are rocky, with shallower soils. Rocky scarps above small alluvial flats are associated with the Campaspe River as it traverses the land system.

Yellow or brown duplex soils, often with highly weathered subsoils and prominent stones of weathered basalt coated with iron oxide, predominate on the plains. Red gradational or shallow uniform loam soils predominate on the rocky plains and scarps, with black cracking or self-mulching uniform clays common on the lower slopes. Dark gradational soils are found on the alluvial flats.

Little remains of the original vegetation. *E. viminalis* is the dominant tree species on the plains, but is replaced by *E. ovata* in the depressions. *E. pauciflora* often grows on the rocky crests and scarps.

Grazing is the major land use, with only small areas being cropped. Soil conditions frequently limit productivity; for example, rock outcrop and shallow soils, poor drainage in the broad plains and depressions and disruption of roots by the cracking clays of the broad depressions. Drainage is frequently assisted by digging channels.

The land is relatively stable, and soil deterioration consists largely of compaction of the silty loam topsoils of the plains. Slight gully erosion occurs in the drainage depressions where they drop away to the Campaspe River, and some sheet erosion occurs on the steeper slopes of the volcanic soils.

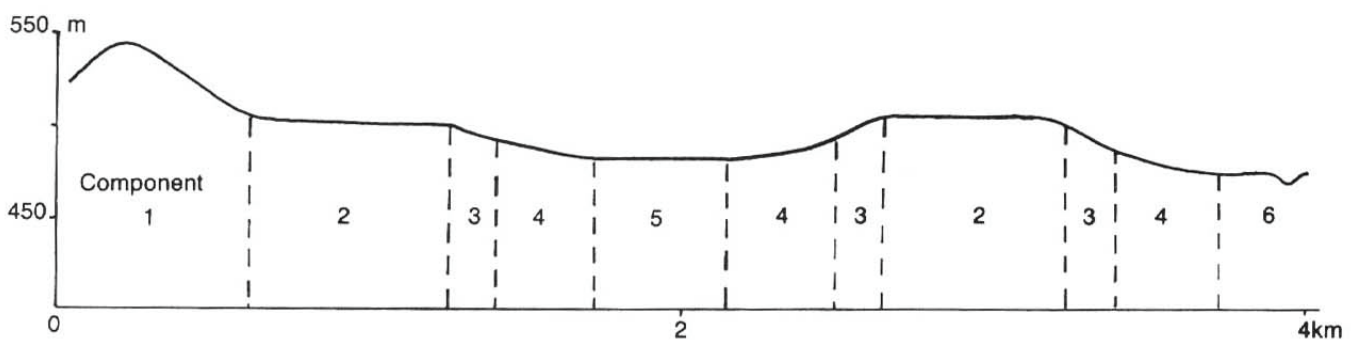
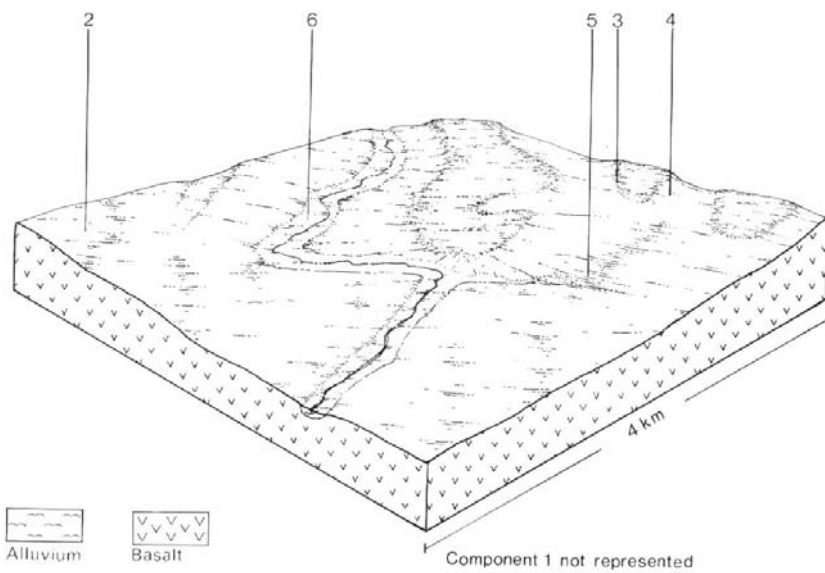


The flooded Campaspe River overflows its banks in the valley component of gently undulating basaltic plains.



The rocky scarp, gentle slopes and broad flat depression form a common landscape sequence.

Green Hill is one of several extrusion points in this land system.



KYNETON LAND SYSTEM (Kt)
Area 180 km² 4.4% of catchment

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual, 700-850; lowest January (35-40), highest (80-90) 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, olivine basalt					
PHYSIOGRAPHY Landform pattern Elevation range (m) Relative relief (m) Drainage pattern Channel spacing	Gently undulating plain, isolated volcanic cones 400-622 5-10 Dendritic Sparse					
LAND COMPONENT Number Percentage of land system	1 5	2 40	3 20	4 15	5 15	6 5
PHYSIOGRAPHY Landform element Slope; modal, range Site drainage	Volcanic cone and colluvial apron 18, 10-30 Somewhat excessively drained	Gently undulating plain 1, 04 Well drained	Rocky crest and scarp 5, 1-20 Somewhat excessively drained	Slope below scarp, 2, 1-8 Moderately well drained	Broad drainage depression sometimes rocky 1,0-3 Poorly drained	Narrow flood-plain and terrace 1,0-1 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 and colluvium Red gradational soils with silty textures; red duplex soils on gentler slopes Gn3.11, Gn4.11; minor Dr2.12 Silty loam 0.1-1.0 Low Low to moderate Moderate to high 0-60 -	Basalt Mottled brown or yellowish brown duplex soils, often with buckshot in the upper horizons Db2.1, Db2.2, Dy3.1, Dy3.2; minor Gn3.94, Dr1.21 Silty loam 1.0-2.0 Low surface, moderate subsoil Moderate Moderate surface, slow subsoil 0 -	Basalt Red, or less commonly brown, gradational soils Gn3.11, Gn3.12, Gn3.14, Gn4.12 Gn4.14, Gn3.22, Gn3.24; minor Um Silty loam, silty clay loam 0.2-1.0 Low Low to moderate Moderate to high 0-80 1078, 1079	Basalt and colluvium Dark clay soils of uniform texture, which have a friable surface consistence Uf6.32; minor Ug5.1 Silty clay loam, light clay 1.0-2.0 Moderate Moderate Moderate 0-1 -	Alluvium Black cracking clay soils of uniform texture, often with buckshot in the B horizons Ug5.1, Ug6 Light to medium clay > .0 High Low Slow 0 1057	Alluvium Dark grey gradational or duplex soils, often with buckshot in the B horizons Gn3.95, Gn3.96, D3.13; minor Uc5.11 Silty clay loam >2.0 Moderate to high Moderate Moderate surface, slow subsoil 0 1058
NATIVE VEGETATION Structure Characteristic species (+ indicates predominant species)	Open forest II <i>E. viminalis</i> , <i>E. melliodora</i> <i>E. ovata</i>	Open forest II <i>E. viminalis</i> +, <i>E. ovata</i>	Open forest II <i>E. viminalis</i> +, <i>E. pauciflora</i> , <i>E. ovata</i>	Open forest II <i>E. ovata</i> , <i>E. viminalis</i>	Open forest II <i>E. ovata</i>	Open forest II <i>E. ovata</i>
PRESENT LAND USE	Grazing introduced pastures; minor cropping	Grazing introduced pastures; cropping-cereals and legumes	Grazing introduced pastures	Grazing introduced pastures; cropping-cereals and legumes	Grazing introduced pastures	Grazing introduced pastures
OBSERVED SOIL DETERIORATION	Minor sheet erosion	Compaction	Minor sheet erosion	Nil	Minor gully erosion	Minor stream-ban

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Kyneton

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	sheet and rill erosion nutrient loss by leaching compaction of topsoil	low to moderate low to moderate moderate	<ul style="list-style-type: none"> • moderate slopes • high soil permeability • moderate to high soil permeability • loamy texture • low-moderate organic matter content 	<ul style="list-style-type: none"> • sedimentation • - • increased run-on 	high soil permeability reduces overland water flow and reduces the erosion hazard - -
2	compaction of topsoil	high	<ul style="list-style-type: none"> • loamy texture • topsoil frequently moist 	<ul style="list-style-type: none"> • increased run-on 	-
3	sheet and rill erosion leaching of nutrients compaction of topsoil	low to moderate low to moderate moderate	<ul style="list-style-type: none"> • gentle to moderate slopes • moderate to high soil permeability • moderate to high soil permeability • loamy texture • moderate organic matter contents 	<ul style="list-style-type: none"> • sedimentation • - • increased run-on 	moderate-high soil permeability reduces overland flow and reduces the erosion hazard - -
4	sheet and rill erosion compaction of topsoil	low moderate	<ul style="list-style-type: none"> • gentle slopes • moderate soil permeability • clay loam to light clay texture • topsoil often moist 	<ul style="list-style-type: none"> • - increased run-on 	- -
5	gully erosion compaction of topsoil	low moderate	<ul style="list-style-type: none"> • channelised run-on • accumulations of clayey alluvium • clayey texture • topsoil often moist 	<ul style="list-style-type: none"> sedimentation • increased run-on • increased flash flows 	the soils are generally very stable and protected by a dense sward of perennial introduced grasses -
6	stream-bank erosion compaction of topsoil	low high	<ul style="list-style-type: none"> • accumulations of alluvium • loamy texture • topsoil often moist 	<ul style="list-style-type: none"> • sedimentation • turbidity of water • - 	- -



Sheep grazing on the fertile black clay of the broad depression components.



The more fertile soils are suitable for cultivation once the area has been cleared of rocks and boulders.