7.21 Marydale land system (K)

A narrow strip of basalt between Redesdale and Barnadown represents the northern limit of the Newer Volcanics in the Campaspe River catchment. The flow has been dissected and in many places the underlying Ordovician sediments have been exposed. Further north the basalt is overlain by the alluvium of the Riverine Plain, with only small exposures in the Campaspe Riverbed at Barnadown and on the highway north-east of Goornong.

The soils are clayey and of uniform texture, with gilgai microrelief a common feature. Soil depth is extremely variable and difficult to predict, except for shallow soils with abundant rock outcrop on the scarps and the slightly elevated positions of the plain. Deeper soils with less rock occur on most of the plain and on colluvial slopes below the scarps. Major drainage depressions are uncommon except where the Campaspe River has cut through the basalt to form narrow flood-plains with variable alluvial soils.

The native vegetation, now mostly cleared, is dominated by *E. microcarpa,* with *E. melliodora* on the better-drained, sloping areas. *E. albens* occurs sporadically throughout.

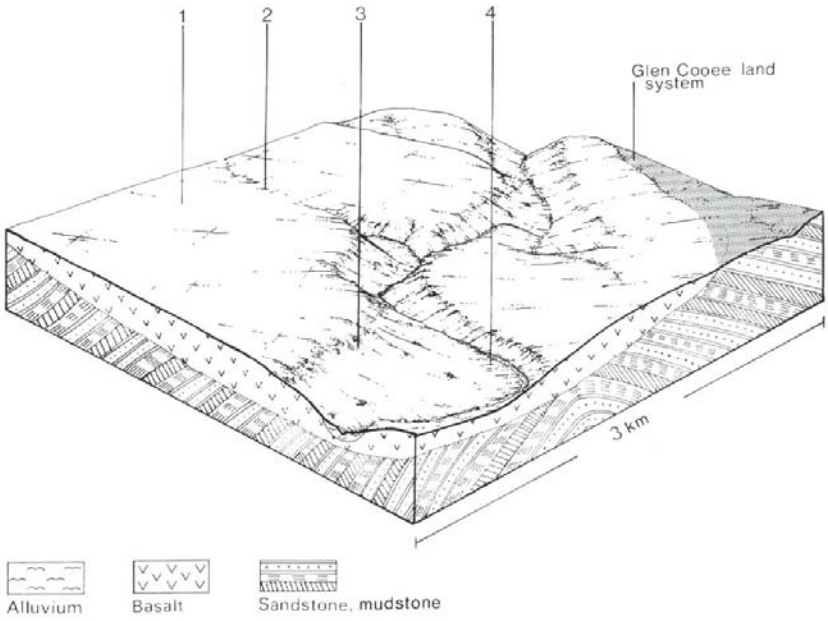
Agricultural land use is restricted by the shallow rocky soils along the margins of the basalt flow, and on the heavy clay plains by poor drainage and deep cracking. Grazing of native and introduced pastures predominates, with some cropping on the deeper soils.

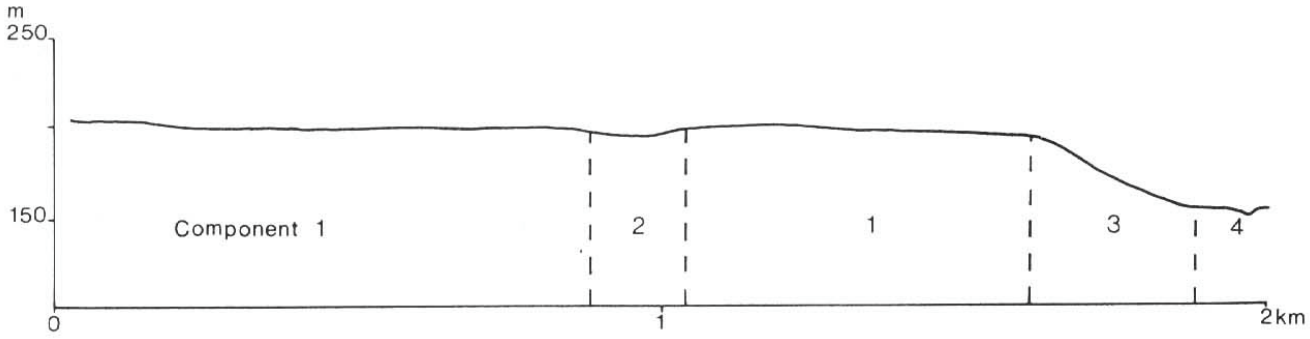
The land is relatively stable, with minor sheet, gully and stream-bank erosion. Excessive cultivation can impair the topsoil structure, resulting in surface crusting by raindrop impact, followed by reduced germination and emergence of seedlings.

The picturesque Pool is situated on the Campaspe River arm of Lake Eppalock

The narrow basaltic plain separates the Campaspe River (left) from the Coliban River (right). The area is known as Twin Rivers.

Heavy grey clays with their characteristic gilgai microrelief occur on the level plain component.





MARYDALE LAND SYSTEM (M) Area 58 km^2 1.4% of catchment

CLIMATE				
Rainfall, mean (mm)	Annual, 475-600; lowest January (30-40), highest June (50-65)			
Temperature, mean (^{o}C)	Annual, 14; lowest July (8), highest January or February (22)			
Seasonal growth limitations	Temperature less than 10^{o}C (av.): May-August Rainfall less than potential evapotranspiration: September-mid April			
GEOLOGY				
Age, rock type	Pliocene, olivine basalt			
PHYSIOGRAPHY				
Landform pattern	Gently undulating plain			
Elevation range (m)	140-271			
Relative relief (m)	5			
Drainage pattern	Dendritic			
Channel spacing	Sparse			
LAND COMPONENT	1	2	3	4
Number	80	5	10	5
Percentage of land system				
PHYSIOGRAPHY				
Landform element	Gently undulating plain with gilgai microrelief	Minor drainage depression	Scarp and colluvial footslope	Narrow floodplain and alluvial terraces along Campaspe River
Slope; modal, range	1,0-3	1,0-5	6, 4-15; occasionally >50	1,0-1
Site drainage	Somewhat poorly drained	Poorly drained	Well drained	Moderately well drained
SOIL				
Parent material	Basalt	Alluvium and colluvium,	Basalt and colluvium	Alluvium from various sources
Description	Black cracking clay soils with calcium carbonate concretions in subsoil; yellow duplex soils occur in the depressions between puffs	Dark clay soils	Dark cracking clay soils; red gradational soils on steeper slopes	Variable; usually a recent sandy wash over a dark loamy uniform or gradational soil
Classification	Ug5.1, Ug5.2, Ug3.2; minor Dy	Ug5.12	Ug5.1, Ug5.3, Gn3.13	Ucl over Um5.52 or Gn
Surface texture	Clay (puff); loam, clay loam (depression)	Clay loam, clay	Clay loam, clay	Sandy loam
Depth to hardpan or bedrock (m)	>1.2	>2.0	0.1-0.5; occasionally >1.0	>2.0
Nutrient status	Moderate to high	High	Moderate	Low wash, moderate subsoil
Available water capacity	Low	LOW	Low	Low
Permeability	Low	Low	Moderate	Moderate to rapid
Exposed rock/stone	0-40	0	0-90	0
Sampled site number	1063	-	-	1064
NATIVE VEGETATION				
Structure	Woodland II	Woodland II	Woodland II	Woodland II / Open forest II
Characteristic species (+ indicates predominant species)	*E. microcarpa+, E. albens+, E.melliodora*	*E. camaldulensis*	*E. microcarpa+, E. camaldulensis*	*E. camaldulensis*
PRESENT LAND USE	Grazing on native and introduced pastures; cereal-cropping	Grazing on native and introduced pastures	Grazing on native and introduced pastures	Grazing on native pastures; minor cereal-cropping
OBSERVED SOIL DETERIORATION	Nil	Minor gully erosion	Minor sheet erosion on scarps; minor gully erosion on footslopes	Minor stream-bank erosion

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Marydale

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	compaction of topsoil	moderate (depressions)	• loamy or clay loamy texture	• -	-
2	gully erosion	low	• minor accumulations of alluvium	• -	the soils are generally stable and protected by a perennial grass sward
	compaction of topsoil	moderate	• clay loam or clay texture • topsoil frequently moist	• increased run-on	-
3	sheet and rill erosion	low	• gentle to moderate slopes	• sedimentation	-
	landslips	low	• gentle to moderate slopes	• deposition • water turbidity	-
	compaction of topsoil	low to moderate	• clay loam or clay texture	• increased run-on	-
4	compaction of topsoil	high	• sandy loam texture • topsoil often moist • low organic matter content	• -	-
	stream-bank erosion	moderate	• deep deposits of alluvium	• sedimentation • water turbidity	the existing native riparian vegetation usually restricts the actual amount of deterioration

The scarp component is prone to sheet erosion.