7.5 Diogenese Land System (Ds)

This gently undulating area to the north of Woodend has developed a complex mixture of intermediate and basic volcanic rocks ranging from the more acidic trachytes and solvsbergite to the more basic olivine basalts. Several extrusion points, notably Hanging Rock, Camel's Hump and The Jim Jim, are prominent above the plain.

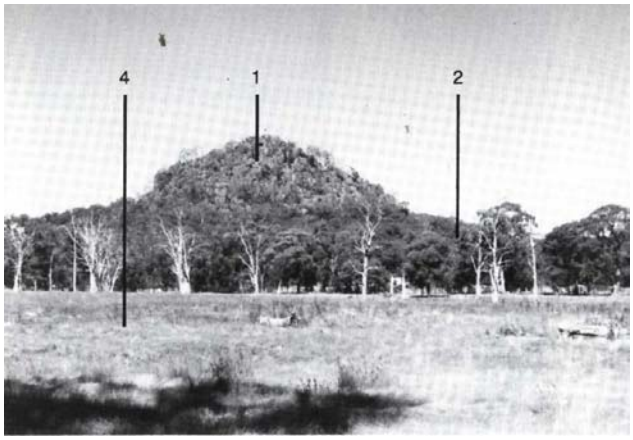
The highly weathered yellow duplex soils of the higher sloping areas frequently contain ferruginous nodules of weathered volcanic rocks, which appear to be derived from the erosion of lateritised materials. Elsewhere on the plains and drainage depressions the dark gradational or duplex soils contain abundant iron-oxide nodules, which may form a dense, cemented layer.

Most of the original forest have been replaced by pastures. *E. viminalis* predominates and *E. ovata* is dominate in the drainage depressions. *E. pauciflora* may have been widespread originally on the plains, but is now occurs mainly on Camel's Hump and The Jim Jim.

Land use is mainly grazing, only the small areas of deeper red soils on the more basic parent material being preferred for crops.

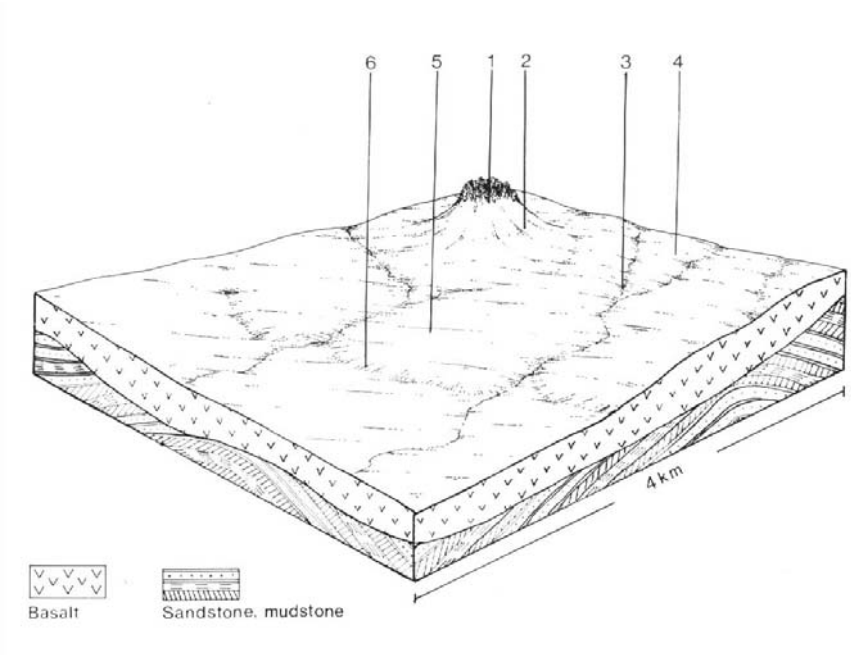
The land is relatively stable. Some gully erosion occurs, usually initiated by ditches cut to assist drainage. However, the low relief and the presence of an ironstone gravel hardpan restricts down-cutting to approximately one metre.

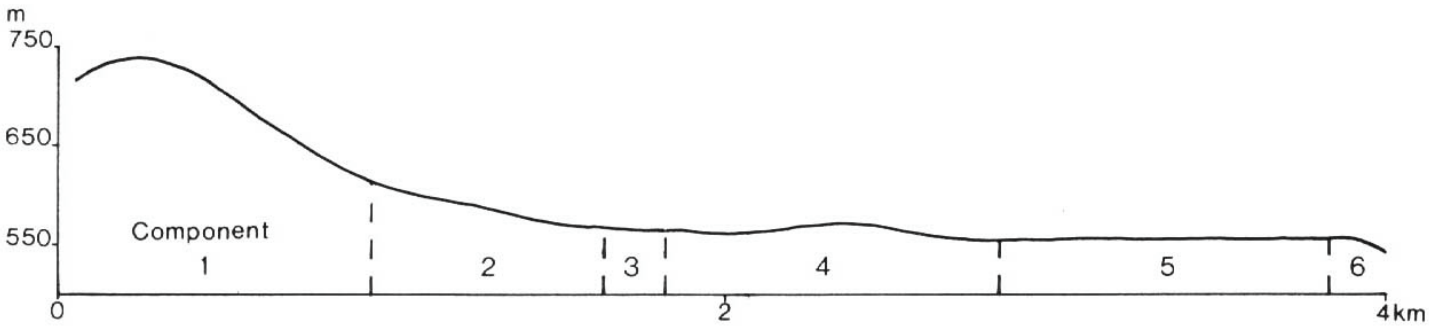
The Diogenes land system has a remarkably gentle topography considering its proximity to the catchment headwaters.



Mount Diogenes (Hanging Rock)

The rugged, steep slopes of Hanging Rock occupy only a small proportion of the land system.





DIOGENESE LAND SYSTEM (Ds) Area 41 km^2 1.0% of catchment

CLIMATE						
Rainfall, mean (mm)	Annual, 800-900; lowest January (40-50), highest August (90-100)					
Temperature, mean (°C)	Annual, 12; lowest July (6), highest January (18)					
Seasonal growth limitations	Temperature less than 10°C (av.): mid April – September Rainfall less than potential evapotranspiration: October – March					
GEOLOGY						
Age, rock type	Pliocene, intermediate basalts – solvsbergite, anorthoclase trachyte, phonolite, minor olivine basalt					
PHYSIOGRAPHY						
Landform pattern	Gently undulating plain, isolated volcanic cones					
Elevation range (m)	540-1101					
Relative relief (m)	Variable, usually <10					
Drainage pattern	Dendritic					
Channel spacing	Sparse					
LAND COMPONENT						
Number	1	2	3	4	5	6
Percentage of land system	10	5	5	25	50	5
PHYSIOGRAPHY						
Landform element	Volcanic cone	Colluvial slope below component 1	Drainage depression	Undulating higher slope	Flat to gently sloping plain	Minor crest and scarp in plain
Slope; modal, range (%)	Variable 10-60	10, 8-11	1, 0-2	2, 0-4	1, 0-2	3, 2-8
Site drainage	Somewhat excessively drained	Well drained	Somewhat poorly drained	Moderate well drained	Somewhat poorly drained	Well drained
SOIL						
Parent material	Basalt	Colluvium	Alluvium	Kaolinised basalt & colluvium	Basalt & colluvium	Basalt
Description	Brown or reddish brown loamy soils of uniform texture	Yellow duplex soils with mottled subsoils and bleached A_2 horizons	Dark silty gradational or duplex soils, often containing large amounts of pisolitic buckshot	Mottled yellow duplex soils with bleached A_2 horizons and acidic subsoils	Gradational or duplex soils, often grey-coloured with buckshot in the lower A horizon	Red gradational soils with floaters of weathering rock in the lower profile
Classification	Um	Dy3.41	Variable – Gn3.92, Gn3.41, Dd, Db	Dy3.41, minor Um5.52	Variable – Dy3, Db, Gn3; minor Um5.42	Gn3.11, Gn3.12; minor Dr2.11
Surface texture	Silty loam	Silty loam	Silty loam	Silty loam	Silty loam	Silty loam
Depth to hardpan or bedrock (m)	<0.5	>2.0	>0.5	1.0-2.0	1.0-2.0	0.5-1.0
Nutrient status	Low to moderate	Low	Moderate	Low to moderate	Low to moderate	Moderate
Available water capacity	Low to moderate	Moderate	Moderate to high	Moderate	Moderate	Moderate
Permeability	Rapid	Moderate surface, slow subsoil	Moderate	Moderate surface, slow subsoil	Moderate surface, slow subsoil	Moderate
Exposed rock/stone (%)	20-100	0	0	0	0	0-5
Sampled site number	-	1076	-*	-	1123	726, 1077
NATIVE VEGETATION						
Structure	Woodland II/open forest II	Open forest II	Open forest II	Open forest II	Open forest II	Open forest II
Characteristic species (+ indicates predominant species)	*E. viminalis,* *E. pauciflora: Woodland I* *E. pauciflora+ (Camel's Hump)*	*E. ovata,* *E. viminalis*	*E. ovata,* *E. viminalis*	*E. rubida* *E. viminalis,* *E. radiata*	*E. viminalis* *E. ovata*	*E. viminalis+* *E. pauciflora*
PRESENT LAND USE	Nature conservation, recreation, grazing	Grazing of introduced pastures, minor cropping	Grazing of introduced pastures, minor cropping	Grazing of introduced pastures, minor cropping	Grazing of introduced pastures	
OBSERVED SOIL DETERIORATION	Compaction, particularly in moister situations		Compaction, particularly in moister situations		Compaction, particularly in moister situations	
	Minor sheet erosion	Minor gully erosion	Minor gully erosion			

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Diogenes

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	Sheet & rill erosion	Moderate	• moderate slopes • rock outcrops	• sedimentation	-
	Leaching of nutrients	Moderate	• moderate soil permeability	• -	-
	Compaction of topsoil	Moderate	• loamy texture • moderate organic matter content	• -	-
2	Gully erosion	Low	• gentle slopes • accumulation of colluvium	• sedimentation	Severity of gully erosion is restricted by low gradient of drainage depressions and often by the presence of an ortstein hardpan layer
	Compaction of topsoil	Moderate	• loamy texture • moderate organic matter content	• increased run-on	-
3	Compaction of topsoil	High	• loamy texture • soils often moist • moderate organic matter content	• -	-
4	Compaction of topsoil	Moderate	• loamy textures • moderate organic matter content	• increased run-on	-
5	Compaction of topsoil	Moderate to high	• loamy texture • soils often moist	• -	-
6	Leaching of nutrients	Low to moderate	• moderate soil permeability • moderate cation exchange capacity	• -	-
	Compaction of topsoil	Moderate	• loamy texture • moderate organic matter	• increased run-on	-

Increased run-off has scoured out this drainage ditch through a poorly drained area.