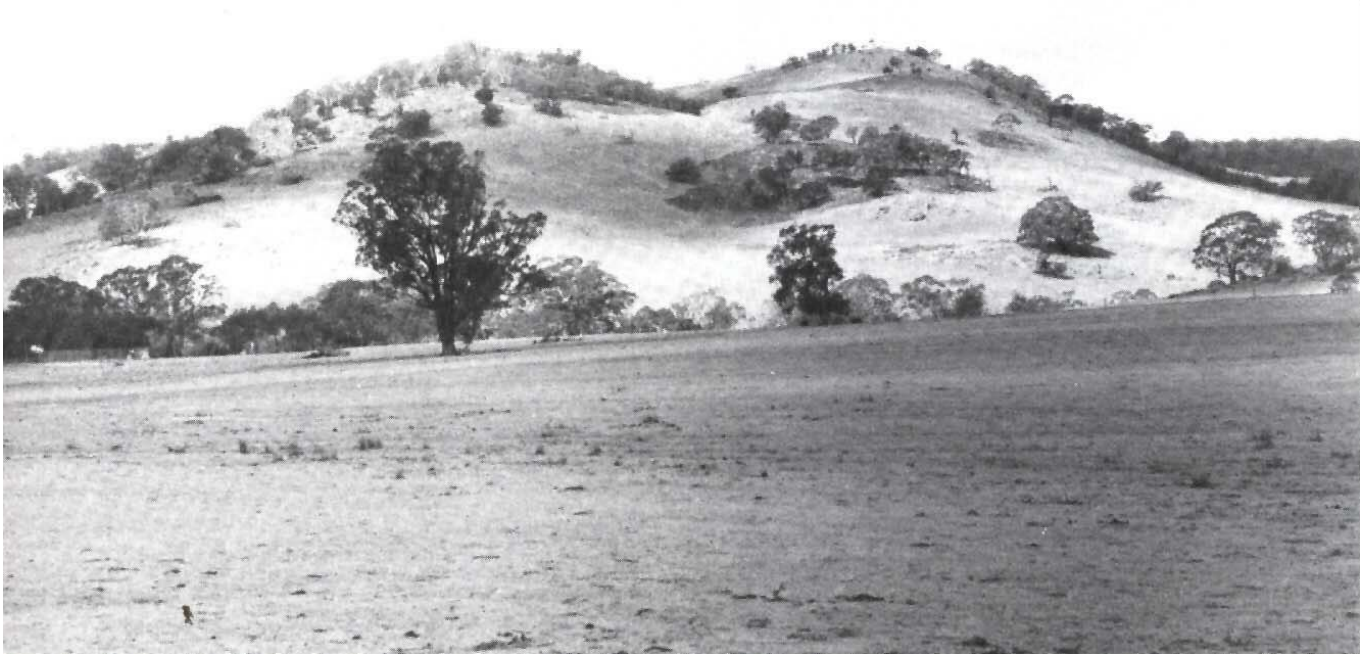
7.30 Theaden Hill land system (TH)

Rolling hills on Devonian granodiorite trending north-south and leading down from the Cobaw land system are characterised by the exposure of large boulders on the upper slopes and crests.

Coarse sandy soils occur on the rocky outcrops, supporting *E. viminalis* and *E. obliqua.* Deeper mottled duplex soils associated with *E. viminalis* predominate on the slopes and saddles. *E. ovata* prefers the coarse sandy alluvial soils of the drainage depressions.

The sandy topsoils are prone to leaching of nutrients and sheet erosion by water and wind, but the pasture cover afforded by moderate rainfall limits the incidence of these hazards. Increased run-off through overgrazing has caused sheet and gully erosion, in places reducing accessibility and also moisture availability through excessive drainage.

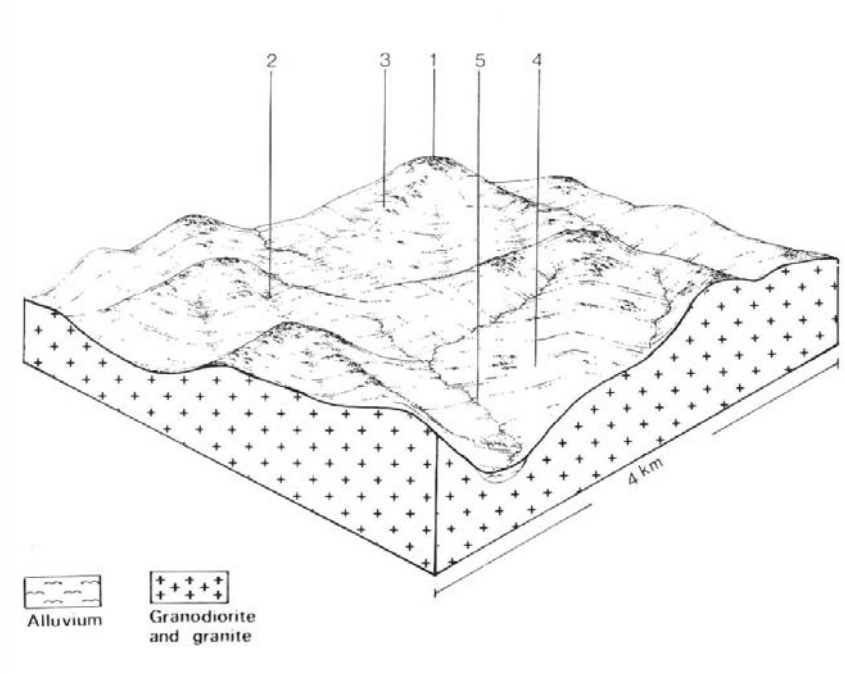
The bulk of the area is used for grazing on native pastures. The more accessible areas are occasionally cropped or sown to introduced pastures.

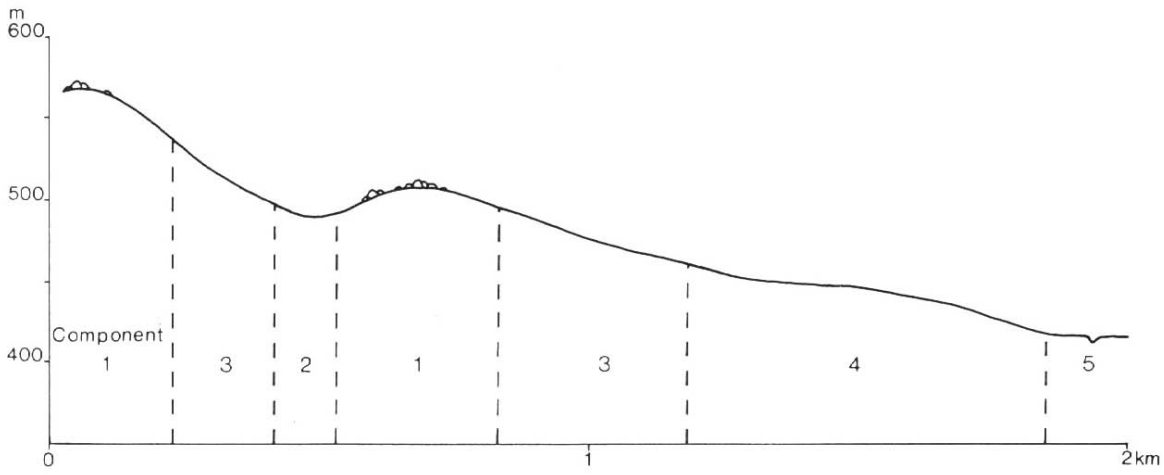


The rolling hills of the Theaden Hill land system present a rugged landscape.

Components in the Theaden Hill land system

A study of trees and rocks.





THEADEN HILL LAND SYSTEM (TH) Area 178 km^2 4.4% of catchment

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual, 650-800; lowest January (30-35), highest June (70-80) Annual, 13; lowest July (6.5), highest January (20) Temperature less than 10°C (av.): late April-early September Rainfall less than potential evapotranspiration: October-March				
GEOLOGY Age, rock type	Devonian, granodiorite, minor granite				
PHYSIOGRAPHY Landform pattern Elevation range (m) Relative relief(m) Drainage pattern Channel spacing	Rolling hills 320-668 100 Dendritic 1 trellised Moderate				
LAND COMPONENT Number Percentage of land system	1 10	2 5	3 50	4 30	5 5
PHYSIOGRAPHY Landform element Slope; modal, range Site drainage	Rocky crest 5,3-20 Excessively drained	Upper drainage depression 8,6-10 Well drained	Rocky slope, often steep 10-20,540 Excessively drained	Gentle slope and saddle 4,2-12 Well drained	Major drainage depression 2,14 Moderately well drained
SOIL Parent material Description	Granodiorite, minor granite Brown coarse sandy soils	Alluvium and colluvium Brown or grey coarse sandy soils	Granodiorite Mottled yellowish grey duplex soils with bleached A2 horizons; shallow sandy soils	Granodiorite, minor granite Mottled yellow duplex soils with bleached A2 horizons	Alluvium Sandy soils
Classification	Uc3.41	Uc3.41	Dy3.41, Uc3.41	Dy3.41; minor Uc3.41, Uc2.21	Uc3.41, Uc3.42; minor Uf6.32, Dy3
Surface texture	Loamy coarse sand	Sandy loam	Coarse sandy loam	Coarse sandy loam	Sandy loam
Depth to hardpan or bedrock (m)	0,1-0~5	> L5	0.3-0.6	> 1.2	> 2.0
Nutrient status	Very low	Low	Low; moderate for duplex subsoils	Low surface, moderate subsoil	Low
Available water capacity	Low	Low	Low	Low surface, moderate subsoil	Moderate
Permeability	Rapid	Rapid	Rapid; slow for duplex subsoils	Rapid surface, slow subsoil	Moderate to rapid
Exposed rock/stone	20-100	0-5	10-90	0-2	0-5
Sampled site number	1084	1086		729,730,1087	1088
NATIVE VEGETATION Structure Characteristic species (+ indicates predominant species)	Open forest II *E. obliqua*+, *E. viminalis*+ *E. rubida*	Open forest II *E. viminalis* *E. radiata*	Open forest II *E. obliqua*+, *E. viminalis*+ *E. rubida*	Open forest II *E. viminalis*+, *E. melliodora*+	Open forest II *E. ovata, E. viminalis*
PRESENT LAND USE	Grazing of native and introduced pastures	Grazing of native and introduced pastures	Grazing of mainly native pastures	Grazing of native and introduced pastures	Grazing of native and introduced pastures
OBSERVED SOIL DETERIORATION	Minor sheet and wind erosion	Minor gully erosion	Sheet erosion common; minor wind erosion	Minor sheet erosion	Moderate gully erosion

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Theaden Hill

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	sheet and rill erosion	low to moderate	• moderate slopes • rock outcrop	• sedimentation • increased run-on	high soil permeability reduces overland water flow and reduces the erosion hazard
	wind erosion	moderate	• weakly structured sandy topsoil • exposed topographic position • droughty topsoil	• sedimentation	-
	leaching of nutrients	high	• high soil permeability • low organic matter content • low percentage base saturation	• -	added fertilizers are readily leached
2	gully erosion	low	• accumulations of sandy alluvium	• sedimentation	-
	leaching of	moderate to high	• high soil permeability • low organic matter content • low percentage base saturation	• -	-
	compaction of topsoil nutrients	low to moderate	• sandy loam texture • soil often moist	• -	-
3	sheet and rill erosion	moderate to high	• moderate to steep slopes • rock outcrops that shed water • subsoil often clayey and of low permeability	• sedimentation • increased run-on	erosive overland water flow occurs when the highly permeable sandy topsoil is saturated
	wind erosion	moderate	• weakly structured sandy topsoil • exposed topographic position • droughty topsoil	• sedimentation	-
	leaching of nutrients	high	• high topsoil permeability • low organic matter content • low percentage base saturation	• -	added fertilizers are readily leached
	landslip	low	• soil often of high permeability • moderate slopes • impermeable rock or hardpan below • solum	• sedimentation • deposition	
4	sheet and rill erosion	moderate	• gentle slopes • subsoils of low permeability	• sedimentation • increased run-on	erosive overland water flow occurs when the highly permeable sandy topsoil is saturated
	wind erosion	moderate	• weakly structured sandy topsoil • exposed topographic position • droughty topsoil	• sedimentation	-
	leaching of nutrients (topsoil)	high	• high topsoil permeability • low cation exchange capacity • low percentage base saturation	• -	added fertilizers are readily leached
5	gully erosion	low to moderate	• accumulations of alluvium	• sedimentation	-
	leaching of nutrients	moderate to high	• moderate to rapid permeability • low cation exchange capacity • low percentage base saturation	• -	added fertilizers are readily leached
	compaction of topsoil	Low to moderate	• sandy loam texture • soil often moist	• -	-

Shallow sandy soils and a high proportion of exposed rock lead to increased run-off and potential erosion.