

### 7.17 Koala land system (Ka)

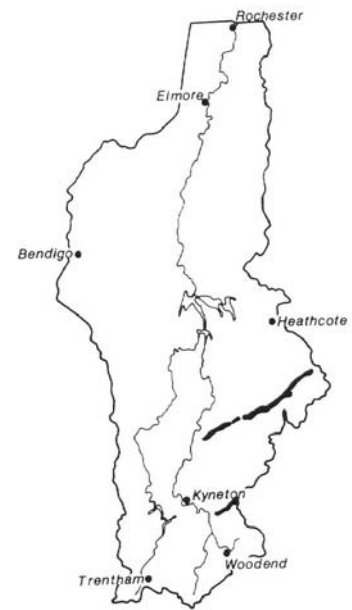
Koala land system occurs on metamorphic aureole ridges fringing the granitic rocks of the Cobaw complex. The main ridge extends south-west from Tooborac and has several gaps, through which some creeks flow northwards. A smaller ridge occurs to the south near Carlsruhe.

The soils are variable, with shallow stony soils where resistant rock is near the surface and pockets of deeper gradational or duplex soils where the rock is fractured or more weathered.

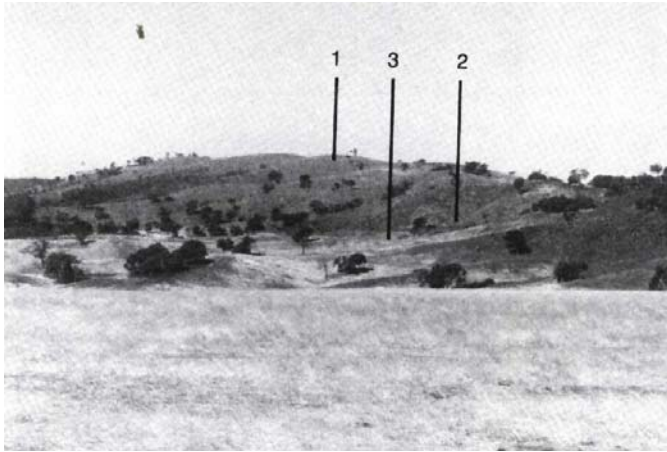
Vegetation differences between the two main areas of this land system reflect climatic differences. The drier northern ridge typically has *E. macrorhyncha*, *E. polyanthemos*, *E. goniocalyx* and *E. microcarpa* on the steeper slopes and crests, whereas *E. obliqua*, *E. rubida* and *E. viminalis* predominate in these positions on the southern ridge. *E. macrorhyncha*, *E. microcarpa* and *E. goniocalyx* dominate on the lower slopes and depressions in the north. *E. melliodora*, *E. viminalis*, *E. obliqua* and *E. rubida* occur throughout on the lower slopes.

On much of the area stability is maintained and off-site deterioration is minimised by retention of the native vegetation. On cleared areas native pastures are grazed, but productivity is severely constrained by steep slopes, shallowness of soils, compaction, sheet erosion and gully erosion.

The slopes and crests with shallow soils of high permeability are intake areas for the local and regional water tables. The removal of the higher-water-usage native vegetation from these areas results in increased infiltration of rainwater through the soil into the bedrock aquifers, the mobilisation of stored salts and the rise of saline water tables.



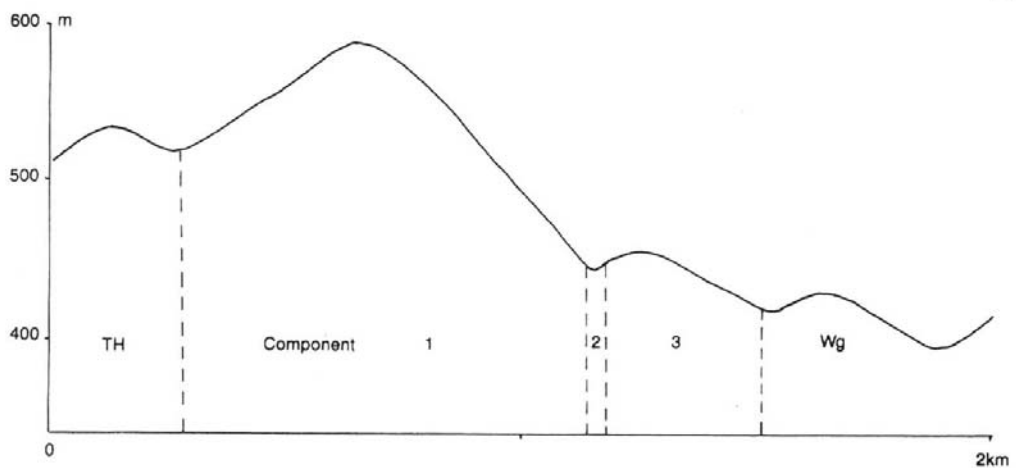
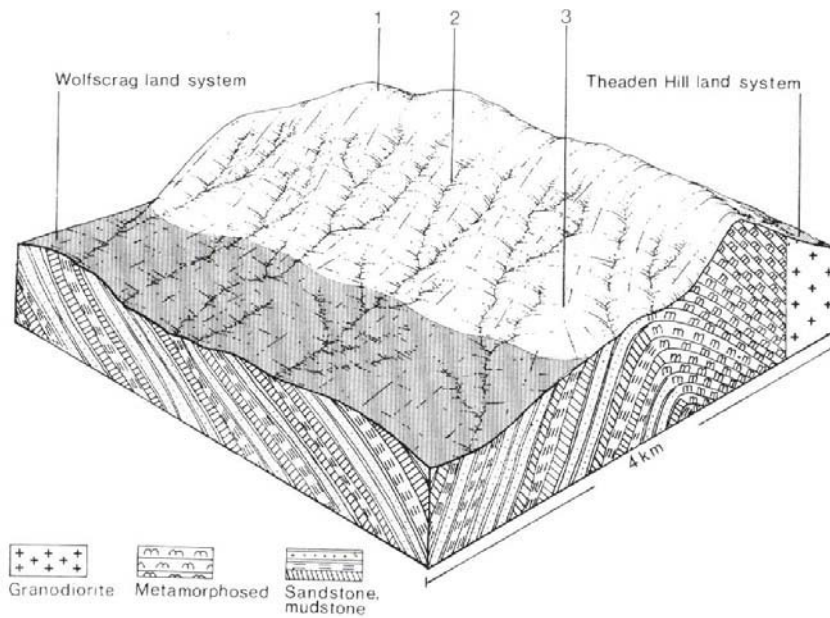
*The prominent ridge of the Koala land system has been mostly cleared of native vegetation*



*The bare hills of the Koala land system contrast with the grassy areas on deeper soils in the foreground*



*The shallow topsoils have been eroded from most of the cleared areas.*



**KOALA LAND SYSTEM (Ka) Area 32 km<sup>2</sup> 0.8% of catchment**

<b>CLIMATE</b> Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual, 650-800; lowest January (30-35), highest June or August (70-75) Annual, 13; lowest July (6), highest February (20) Temperature less than 10°C (av.): May-August Rainfall less than potential evapotranspiration: October-March		
<b>GEOLOGY</b> Age, rock type	Ordovician, sandstone and mudstone - variously metamorphosed		
<b>PHYSIOGRAPHY</b> Landform pattern Elevation range (m) Relative relief(m) Drainage pattern Channel spacing	Rolling hills forming prominent ridge 380-602 120 Parallel Close		
<b>LAND COMPONENT</b> Number Percentage of land system	1 85	2 5	3 10
<b>PHYSIOGRAPHY</b> Landform element Slope; modal, range Site drainage	Steep slope and narrow crest 30,15-50 Excessively drained	Minor drainage depression 5,1-10 Moderately well drained	Gentler lower slope 10,5-15 Somewhat excessively drained
<b>SOIL</b> Parent material Description Classification Surface texture Depth to hardpan or bedrock (m) Nutrient status Available water capacity Permeability Exposed rock/stone Sampled site number	Sandstone and mudstone Shallow stony soils of uniform or gradational texture; yellow duplex soils in deeper pockets Gn3, Ucl.23, Um; minor Dy3.41 Sandy loam, loam 0.1-1.0 Low Very low Moderate to rapid 0-20 -	Alluvium and colluvium Variable soils; usually sandy soils or mottled yellow duplex soils Uc, Um, Dy Sandy loam, loam 0.5-2.0 Low Low Moderate 0 -	Sandstone and mudstone Yellowish or reddish brown gradational or duplex soils Gn3, Dy3.41 Sandy loam, loam 0.3-1.5 Low Low surface, moderate subsoil Moderate 0-10 -
<b>NATIVE VEGETATION</b> Structure Characteristic species (+ indicates predominant species)	Open forest I / II <i>E. macrorhyncha</i> +, <i>E. polyanthemos</i> +, <i>E. gonicalyx</i> +, <i>E. microcarpa</i> ; east of Carlsruhe: <i>E. obliqua</i> , <i>E. rubida</i> , <i>E. viminalis</i>	Open forest II Mixed eucalypts including; <i>E. gonicalyx</i> , <i>E. macrorhyncha</i> , <i>E. microcarpa</i> , <i>E. melliodora</i> , <i>E. viminalis</i> ,	
<b>PRESENT LAND USE</b>	Grazing on native pastures	Grazing on native pastures	Grazing on predominantly native pastures
<b>OBSERVED SOIL DETERIORATION</b>	Sheet erosion common and often severe	Gully erosion common in the lower depressions	Sheet erosion common

## SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Koala

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	sheet and rill erosion	high	<ul style="list-style-type: none"> <li>steep slopes</li> <li>hydrophobic topsoil</li> </ul>	<ul style="list-style-type: none"> <li>sedimentation</li> <li>increased run-on</li> </ul>	-
	wind erosion	low to moderate	<ul style="list-style-type: none"> <li>weakly structured loamy topsoil</li> <li>exposed topographic position</li> </ul>	<ul style="list-style-type: none"> <li>increase run-on</li> </ul>	hazard limited by the large number of stones in the topsoil
	compaction of topsoil	low to moderate	<ul style="list-style-type: none"> <li>loamy texture</li> <li>weak topsoil structure</li> <li>low organic matter content</li> </ul>	<ul style="list-style-type: none"> <li>accession of soluble salts, particularly NaCl, to the groundwaters</li> </ul>	hazard limited by the large number of stones in the topsoil
	leaching of nutrients	moderate	<ul style="list-style-type: none"> <li>moderate to high soil permeability</li> </ul>	<ul style="list-style-type: none"> <li>sedimentation</li> </ul>	this component is a recharge area for local or regional groundwater tables
2	gully erosion	moderate	<ul style="list-style-type: none"> <li>channelised run-on</li> <li>minor accumulations of alluvium</li> </ul>	<ul style="list-style-type: none"> <li>increased run-on</li> </ul>	gully erosion is limited by shallow alluvium or rock bars
	compaction of topsoil	moderate	<ul style="list-style-type: none"> <li>loamy texture</li> <li>weak topsoil structure</li> <li>topsoil often moist</li> </ul>	<ul style="list-style-type: none"> <li></li> </ul>	-
3	sheet and rill erosion	moderate	<ul style="list-style-type: none"> <li>moderate slopes</li> <li>hydrophobic topsoil</li> </ul>	<ul style="list-style-type: none"> <li>sedimentation</li> <li>increased run-on</li> </ul>	-
	compaction of topsoil	moderate	<ul style="list-style-type: none"> <li>loamy texture</li> <li>weak topsoil structure</li> <li>low organic matter content</li> </ul>	<ul style="list-style-type: none"> <li>increased run-on</li> </ul>	-



*Debris trapped by fences indicates the extent of overland water flow and the potential sheet erosion hazard.*



*The movement of topsoil from these steep, bare slopes into the drainage depressions is clearly visible.*