

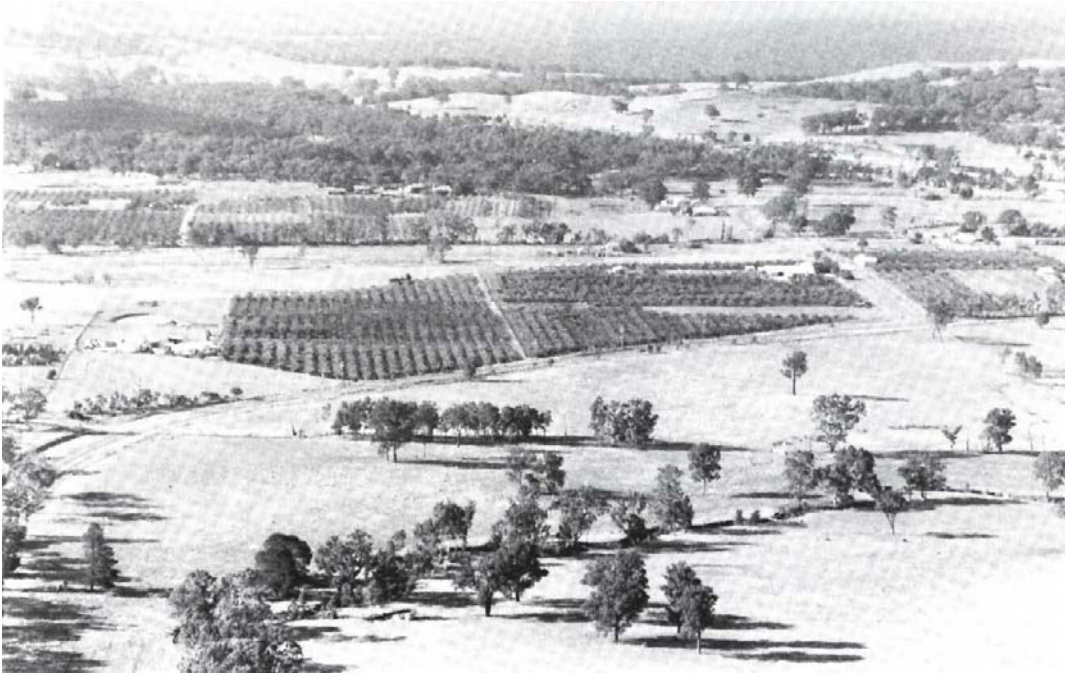
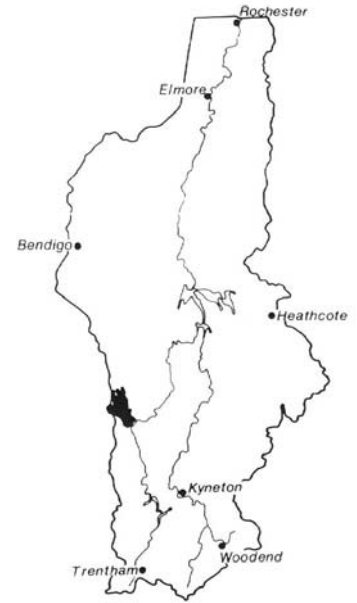
### 7.7 Elphinstone Land System (Ee)

This gently undulating area on granodiorite to the north of Elphinstone has suffered limited stream dissection and remains at a higher elevation than the adjacent, more dissected slopes of Sutton Grange land system. A feature of both land system is the sporadic occurrence beneath the soil of a siliceous hardpan that limits vertical drainage. Increased infiltration following clearing of native vegetation has raised water tables and mobilised salts, which have accumulated in the deeply weathered profiles. Several saline seeps overlie hardpans on the lower slopes and drainage depressions.

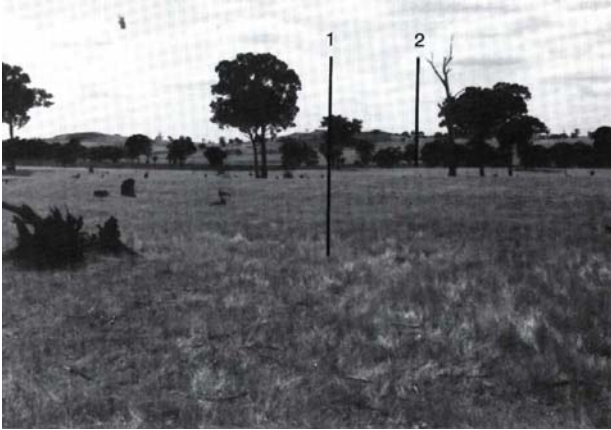
Yellow or yellowish-grey duplex soils predominate, with red mottles in the clayey subsoils, bleached A<sub>2</sub> horizons and deep coarsely textured A horizons of low available water capacity. *E. rubida* and *E. radiata* predominate on the slopes and crests, while *E. camaldulensis* characterises the drainage depressions.

Land use is restricted to the grazing of sheep or cattle on native or introduced pastures with minor cropping and some orcharding where irrigation water is available. Potential uses are restricted by the droughty nature of the upper soil horizons.

The land is relatively stable, although the sandy topsoils are eroded by wind and water if left exposed, and gully erosion occurs in some depressions. Salt seeps are common on the lower slopes and drainage depressions.



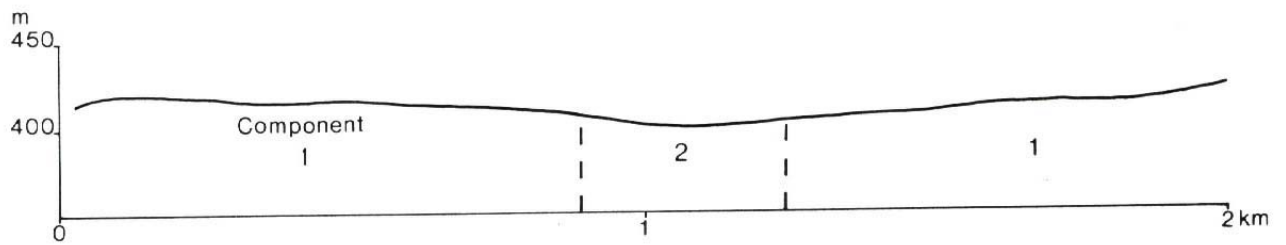
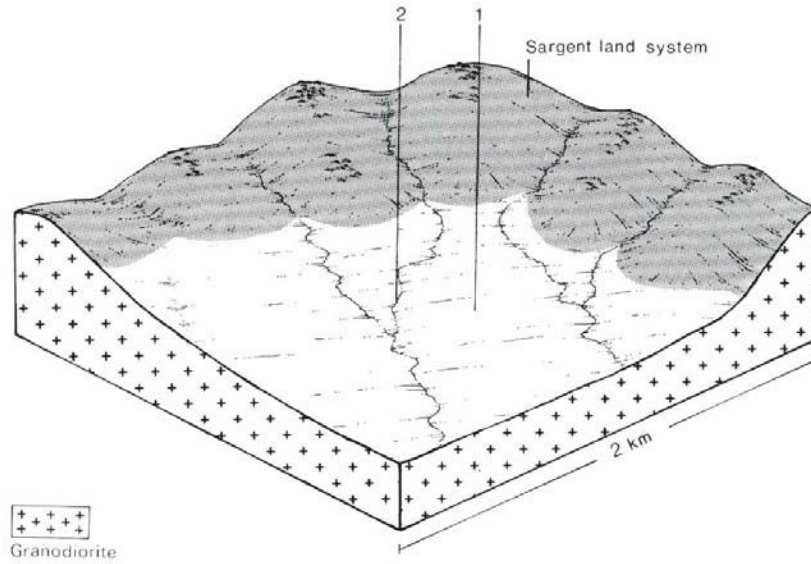
*Grazing and horticulture are the main forms of land use in this granitic landscape.*



*The gentler slopes are flanked by steeper hills with outcropping granitic rock.*



*An apple orchard on granitic soils near Elphinstone*



**ELPHINSTONE LAND SYSTEM (Ee) Area 25 km<sup>2</sup> 0.6% of catchment**

<b>CLIMATE</b> Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual, 625-700; lowest December (35-40), highest August (65-70) Annual, 13.5; lowest July (7) highest February (21) Temperature less than 10°C (av.): May – August	
<b>GEOLOGY</b> Age, rock type	Devonian, granodiorite	
<b>PHYSIOGRAPHY</b> Landform pattern Elevation range (m) Relative relief (m) Drainage pattern Channel spacing	Gently undulating rises 300-440 10 Dendritic Sparse	
<b>LAND COMPONENT</b> Number Percentage of land system	1 85	2 15
<b>PHYSIOGRAPHY</b> Landform element Slope; modal, range (%) Site drainage	Gentle slope and rounded, rock-free crest 2, 1-5 Well drained	Drainage depression 2, 1-3 Somewhat poorly 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	Weathered granodiorite Yellow or yellowish-grey duplex soils with well-structured red mottled clayey B horizons and bleached A <sub>2</sub> horizons.  Dy3.41 Coarse sandy loam >2.0 Low surface, moderate subsoil Low surface, moderate subsoil Rapid surface, slow subsoil 0 -	Alluvium Yellow or yellowish-grey duplex soils with red mottled subsoils and bleached A <sub>2</sub> horizons; frequently overlain by sandy alluvium Dy3.41, Uc1 over Dy3.41 Sandy loam or sand >2.0 Low surface, moderate subsoil Low surface, moderate subsoil Rapid surface, slow subsoil 0 -
<b>NATIVE VEGETATION</b> Structure Characteristic species (+ indicates predominant species)	Woodland II/open forest II <i>E. radiata</i> +, <i>E. rubida</i> +, <i>E. melliodors</i> , <i>E. obliqua</i> , <i>E. dives</i> , <i>E. camaldulensis</i>	Woodland II/open forest II <i>E. camaldulensis</i>
<b>PRESENT LAND USE</b>	Grazing of sheep and cattle on mainly introduced pastures; minor cropping; irrigated apple or pear orchards	Grazing on native and introduced pastures.
<b>OBSERVED SOIL DETERIORATION</b>	Minor sheet erosion	Minor gully erosion; saline seeps

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

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	Sheet & rill erosion Wind erosion Leaching of nutrients (topsoil)	Low to moderate Moderate High	<ul style="list-style-type: none"> <li>gentle slopes</li> <li>low subsoil permeability</li> <li>weakly structured sandy topsoil</li> <li>droughty topsoil</li> <li>high topsoil permeability</li> <li>low cation exchange capacity</li> <li>low percentage base saturation</li> </ul>	<ul style="list-style-type: none"> <li>sedimentation</li> <li>sedimentation</li> <li>-</li> </ul>	<p>High topsoil permeability reduced overland water flow and reduces the erosion hazard.</p> <p>-</p> <p>Added fertilisers are readily leached; subsoils have low permeability</p>
2	Compaction of topsoil Leaching of nutrients (topsoils) Salting Gully erosion	Low Moderate to high Low Low to moderate	<ul style="list-style-type: none"> <li>sandy or loamy texture</li> <li>occasionally moist</li> <li>low organic matter content</li> <li>high topsoil permeability</li> <li>low cation exchange capacity</li> <li>saline water table may be at shallow depth</li> <li>stored salts in soil and weathered parent material</li> <li>deep accumulation of alluvium</li> </ul>	<ul style="list-style-type: none"> <li>-</li> <li>-</li> <li>saline stream flow</li> <li>sedimentation</li> <li>water turbidity</li> </ul>	<p>-</p> <p>Added fertilisers are readily leached; subsoils have low permeability.</p> <p>The weathered granodiorite often contains enough stored salts to cause major salting problems</p> <p>-</p>



*Spiny rush (Juncus acutus) and dead trees along the drainage depressions indicate a salting problem.*