

## 7.22 Muskerry land system (My)

Gently undulating rises on Ordovician sandstones and mudstones form a low north-south ridge, which extends north from Toolleen and is flanked by alluvium of the Forest Creek and Mount Pleasant Creek.

The soils have developed on the remnants of highly weathered materials. Red sodic duplex soils predominate, but they vary in the degree of bleaching of the A2 horizon and in a trend from neutral subsoils on the upper slopes to alkaline subsoils further down-slope. Ironstone is always present, as surface stone and gravel or as buckshot gravel in the lower A and upper B horizons.

Cropping is the dominant land use, usually with a pasture and fallow period in the rotation. Eucalypts along narrow road reserves and isolated trees on farms indicate that *E. microcarpa* and *E. albens* were originally common throughout, joined by *E. leucoxydon* in drainage depressions.

Although the slopes are gentle, the susceptibility of soils to sheet and gully erosion is promoted by factors such as sodic clay subsoils and compaction under cultivation. The sandy loam topsoils and dry climate also pose problems of wind erosion, and salting is common in depressions, enhanced by rising saline groundwaters and by saline run-off from the Knowsley land system to the south.



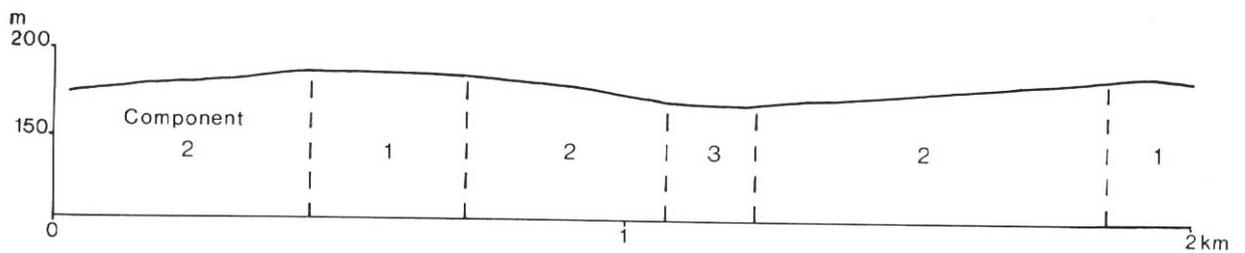
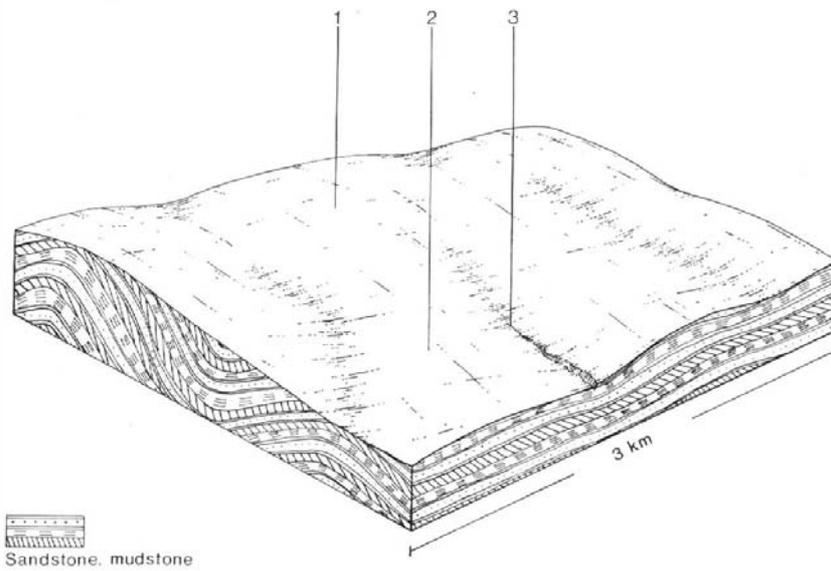
*The gently undulating rises provide a pleasant rural scene*



*The hard-setting nature of the topsoil and incidence of erosion are aggravated by a cropping volunteer pasture rotation.*



*Good crops can be grown and soil deterioration minimised with proper management.*



**MUSKERRY LAND SYSTEM (My)      Area 85 km<sup>2</sup>      2.1% of catchment**

<b>CLIMATE</b> Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual, 450-550; lowest December or January (30-35), highest June (50-60) Annual, 14.5; lowest July (8), highest February (22.5) Temperature less than 10°C (av.): mid May-mid August Rainfall less than potential evapotranspiration: September-mid April		
<b>GEOLOGY</b> Age, rock type	Ordovician, sandstone and mudstone		
<b>PHYSIOGRAPHY</b> Landform pattern Elevation range (m) Relative relief (m) Drainage pattern Channel spacing	Gently undulating rises 150-200 is Dendritic Sparse to moderate		
<b>LAND COMPONENT</b> Number Percentage of land system	1 20	2 70	3 10
<b>PHYSIOGRAPHY</b> Landform element  Slope; modal, range Site drainage	Crest and upper slope, often with ironstone rubble on surface 3,1-5 Well drained	Gentle mid to lower slope  2,1-3 Well drained	Broad drainage depression  1,0-1 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	Sandstone and mudstone Red duplex soils, usually with pale or bleached A2 horizons and large amounts of ironstone or ferruginised material in the surface horizons Dr2.41, Dr3.32, Dr2.22; minor Dy2.22 Sandy loam, loam 0.4-0.7 Low Low surface, moderate subsoil Moderate surface, slow subsoil 0-20 1022	Sandstone and mudstone Red duplex soils, usually with A2 horizons that are bleached and contain variable amounts of ironstone gravel; subsoils are alkaline Dr2.23, Dr2.32, Dr2.42, Dr2.43 Sandy loam, loam 0.6-1.2 Low surface, moderate subsoil Low surface, moderate subsoil Moderate surface, slow subsoil 0-5 1023,1040	Alluvium Mottled yellow duplex soils with bleached A2 horizons  Dy3.42, Dy3.43 Loam 1.0-> 2.0 Low surface, moderate subsoil Low surface, moderate subsoil Moderate surface, slow subsoil 0 -
<b>NATIVE VEGETATION</b> Structure Characteristic species (+ indicates predominant species)	Woodland II / Open forest II <i>E. microcarpa+</i> , <i>E. albens</i>	Woodland II / Open forest II <i>E. microcarpa+</i> , <i>E. albens</i>	Woodland II / Open forest II <i>E. microcarpa+</i> , <i>E. Leucoxyton</i>
<b>PRESENT LAND USE</b>	Grazing of native and introduced pastures; cropping, predominantly cereals	Grazing of native and introduced pastures; cropping, predominantly cereals	Grazing of native and introduced pastures
<b>OBSERVED SOIL DETERIORATION</b>	Sheet erosion widespread but minor; minor wind erosion	Sheet erosion widespread but minor; minor wind erosion	Salting and gullyng common

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

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1&2	sheet and rill erosion	moderate	<ul style="list-style-type: none"> <li>gentle slopes</li> <li>hydrophobic topsoil</li> <li>subsoils of low permeability</li> </ul>	<ul style="list-style-type: none"> <li>sedimentation</li> <li>increased run-on</li> </ul>	the hazard is increased when topsoils are cultivated and left without protective vegetative cover
	wind erosion	moderate	<ul style="list-style-type: none"> <li>weakly structured loamy topsoil</li> </ul>	<ul style="list-style-type: none"> <li>sedimentation</li> </ul>	as above
	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>	excessive cultivation leads to severe topsoil compaction
3	gully erosion	moderate	<ul style="list-style-type: none"> <li>accumulations of unconsolidated sediments</li> <li>subsoils that slake/disperse</li> </ul>	<ul style="list-style-type: none"> <li>sedimentation</li> <li>water turbidity</li> </ul>	-
	salting	moderate	<ul style="list-style-type: none"> <li>saline groundwater table</li> <li>at shallow depth</li> <li>salts stored in soil and weathered parent material</li> </ul>	<ul style="list-style-type: none"> <li>saline stream flow</li> </ul>	loss of the protective vegetative cover due to salt toxicity can initiate erosion problems
	compaction of topsoil	moderate	<ul style="list-style-type: none"> <li>loamy texture</li> <li>topsoil often moist</li> <li>low organic matter content</li> </ul>	<ul style="list-style-type: none"> <li>-</li> </ul>	-



*Despite the gentle landscape, run-off is high and the drainage depressions are susceptible to gully erosion.*



*When the shallow topsoils are badly sheet eroded, the stony bare surface has minimum productivity.*