

Appendix 1

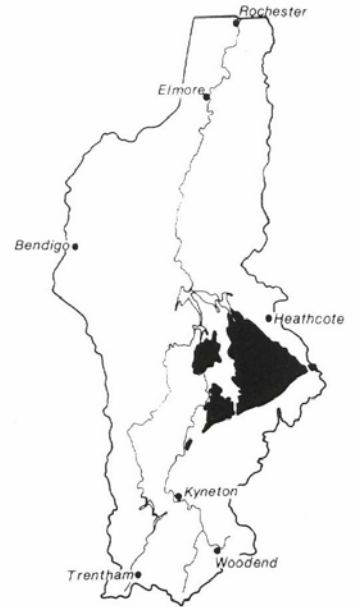
7.34 Wolfscrag land system (Wg)

This areas of relatively steep low hills formed on Ordovician sediments occurs to the south of Heathcote between McIvor Creek and the Campaspe River. The topography is carried, with areas of hills and ridges interspersed with subdued terrain along the major streams. A characteristic feature of the land system in the steeper areas is the presence of outcropping parallel bands of resistant sandstone interspersed with more easily weathered siltstones.

A low woodland or open forest of *E. polyanthemos*, *E. goniocalyx* and *E. macrorhyncha* reflects the low agricultural capability of the shallow stony soils on the crests and upper slopes. *E. camadulensis* and *E. melliodora* are confined to the yellow duplex soils on the lower slopes and to variable soils on alluvium in the major drainage depressions.

Most of the area has been cleared. Agriculture is restricted to grazing native pastures, although phalaris pastures have been established, even on steep slopes. Lucerne and other crops are grown under irrigation on a limited area of alluvial terraces.

Sheet and gully erosion are the most common forms of land deterioration and the problem is accentuated by overgrazing and compaction. Clearing of the native vegetation from the shallow permeable soils of the upper slopes has resulted in the increased accession of rainwater to the groundwater table. This groundwater intersects the surface in some low-lying area, causing dryland salting, the death or retarded growth of trees and pastures in increased erosion.



The rolling hills of the Wolfscrag land system.

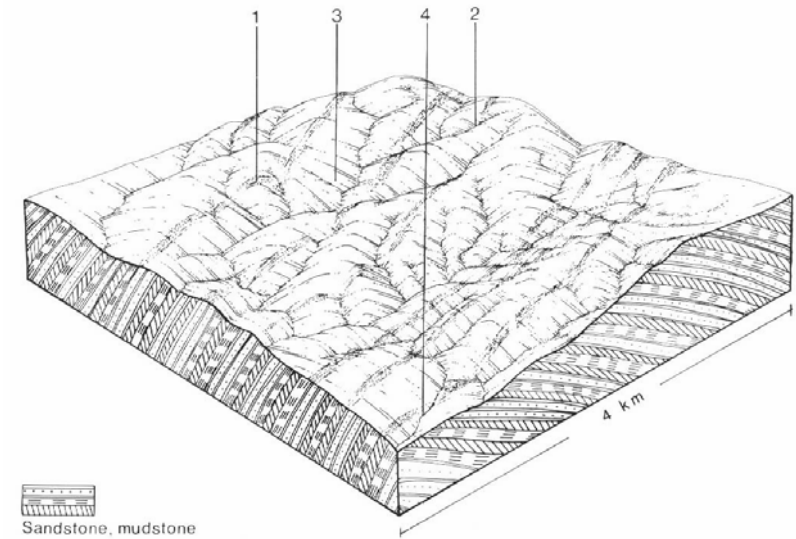
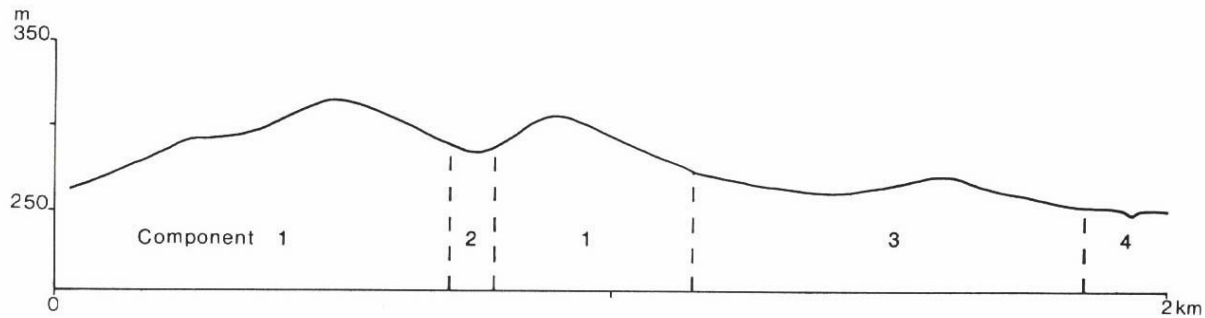
Appendix 1 (continued)



The shallow rocky soils only support native pastures, and the level of animal production is low.



Salting, sheet erosion and gully erosion signify extreme land deterioration and management of the land.



Appendix 1 (continued)

WOLFSCRAG LAND SYSTEM (Wg) Area 237km 2 5.8% of the catchment

CLIMATE Rainfall, mean (mm) Temperature mean (C) Seasonal growth limitations	Annual, 550-700; lowest January (30-35) highest June or August (60-70) Annual, 14; lowest July (8), highest February (22) Temperature less than 10 C (av): May-august Rainfall less than potential evapotranspiration: October-early April			
GEOLOGY Age, rock, type	Ordovician, sandstone and mudstone			
PHYSIOGRAPHY Landform pattern Elevation range (m) Relative relief (m) Drainage pattern Channel spacing	Rolling low hills 200-450 50 Dendritic Moderate to close			
LAND COMPONENT Number Percentage of land system	1 55	2 5	3 35	4 5
PHYSIOGRAPHY Landform element Slope; modal, range (%) Site drainage	Steep crest and slope with outcropping Rock strata 20, 10-40 Excessively drained	Minor drainage depression 4, 1-6 Moderately well drained	Gentle lower crest and slope 5, 1-12 Well drained	Major drainage depression 1, 0-2 Somewhat poorly drained
SOIL 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 Reddish brown or brown gradational soils, frequently stony; minor loams Gn3.14, Gn3.71, UM; minor Dy2.11 Gn3.17 Loam 0.1-0.7 Very low Low Moderate 10-80 1090,1093	Alluvium and colluvium Yellowish brown duplex soils with bleached A2 horizons Dy3.41; minor Gn3.04, Gn4.51 Loam 1.0-1.5 Low to moderate Low surface, low to moderate subsoil Moderate surface, slow subsoil 0 1092	Sandstone and mudstone Yellowish brown duplex soils with bleached A2 horizons; occasional red duplex or red or yellowish brown gradational soils Dy3.41; minor Dy3.21, Gn3.14, Gn3.84, Dr2.41 Loam 0.5-1.5 Low surface, moderate subsoil Low surface, moderate subsoil Moderate surface, slow subsoil 0-10 1091	Alluvium Variable; commonly mottled yellow Duplex soils overlain by a loamy wash Dy3.41, Um over Dy3.41L minor Um Sandy loam >2.0 Low surface, moderate subsoil Low surface, moderate subsoil Moderate to rapid surface, slow subsoil 0 1089
NATIVE VEGETATION Structure Characteristic species (+ indicates predominant species)	Open forest I/II <i>E.polyanthemos</i> +, <i>E.goniocalyx</i> +, <i>E.macroorhyncha</i> +, <i>W. microcarpa</i> +, <i>E.melliodora</i> , <i>E.radiata</i> (west)	Open forest II <i>E.camaldulensis</i> + <i>E.melliodora</i> , <i>E.microcarpa</i> +, <i>E.polyanthemos</i> , <i>E.macroorhyncha</i> , <i>E.goniocalyx</i>	Open forest II <i>E.microcarpa</i> +, <i>E.polyanthemos</i> , <i>E.goniocalyx</i> , <i>E.macroorhyncha</i> , <i>E.melliodora</i> , <i>E.albens</i>	Open forest II <i>E.camaldulensis</i> +, <i>E.melliodora</i> , <i>E.rubida</i>
PRESENT LAND USE	Grazing on native introduced pastures	Grazing on native and introduced pastures	Grazing on native and introduced pastures; minor cropping	Grazing on native and introduced pastures
OBSERVATION SOIL DETERIORATION	Sheet erosion common and locally severe	Gully erosion and salting common	Minor sheet erosion and salting	Gully erosion common and often severe. Salting common

Appendix 1 (continued)

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Wolfscrag

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	Sheet and rill erosion	high	- moderate to steep slopes - hydrophobic topsoil	- sedimentation	Numerous rock outcrops impede overland flow, thereby increasing the infiltration of water; the shallow topsoils have a low tolerance of erosion
	Leaching of nutrients	moderate	-moderate soil permeability -moderate cation exchange capacity -low percentage base saturation	-	-
	Compaction of topsoil	moderate	-loamy texture -low organic matter content -weak topsoil structure	-increased run-on	-
2	Gully erosion	moderate	-minor accumulations of alluvium -subsoils that slake/disperse	-sedimentation -turbid run-on	-
	Compaction of topsoil	Moderate	-loamy texture -topsoil often moist		
	salting	moderate	-saline groundwater table at shallow depth	-saline stream flows water turbidity	Loss of the protective vegetative cover due to salt toxicity can initiate erosion problems
3	Sheet and rill erosion	moderate	-gentle slopes -hydrophobic topsoil -clayey subsoils of low permeability	-sedimentation	-
	Compaction of topsoil	moderate	-loamy texture -low organic matter content	-increased run-on	-
	salting	moderate	-saline groundwater table at shallow depth -stored salts in soil and parent material	-saline stream flows -water turbidity	As for component 2
4	Stream-bank erosion	moderate	-accumulations of alluvium -subsoils that slake/disperse	-sedimentation -turbid stream flows	-
	salting	high	-saline water table at shallow depth -stored salts in soil and parent material	-saline stream flows	As for component 2
	Compaction of topsoil	moderate	-loamy texture -topsoil often moist low-moderate organic matter content	-	-



The dry, rocky slopes contrast with the west, saline drainage depressions; only the low productivity is common