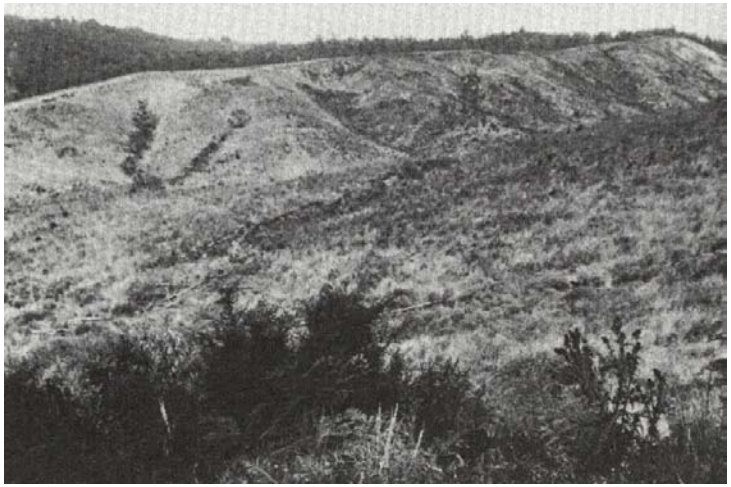
7.28 Mount Mackenzie Land System

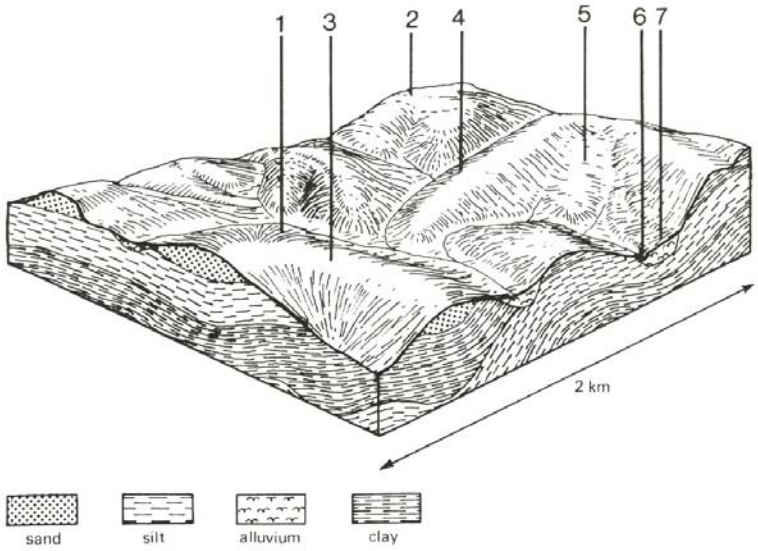
Steeply dissected hills abut either side of the middle and lower reaches of the Gellibrand River. Dissection into Tertiary clay, silt and sand has resulted in steep slopes and narrow drainage lines.

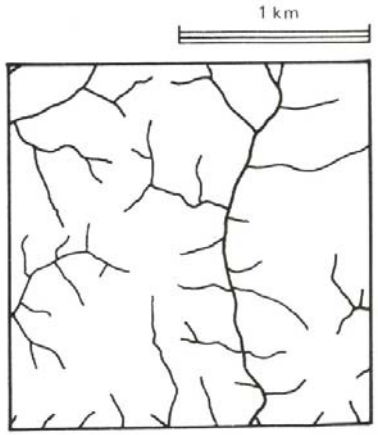
The finely textured Tertiary sediments outcropping in these areas has resulted in heavier-textured soils than those found in the neighbouring Chapple Vale land system. Moisture stress and fertility are not as limiting to plant growth, so open forests of *Eucalyptus obliqua* and *E. baxteri* have developed on most sites. Included in the land system are dissected river terraces along the valley of the Gellibrand River and these possess well-developed soils with coarse-structured subsoils. The higher parts of the landscape may also possess such soils where Kennedys Creek land system is adjacent, or sand soils where the Chapple Vale land system is nearby.

Most areas remain forested but areas abutting the flood plains have been cleared to provide winter pastures for dairy cattle. Pines have been established on previously forested land. Sheet erosion and landslips have occurred on many of the steeper slopes where the native vegetation has been removed and the rugged nature of the terrain make most land uses difficult.



The steep dissected hills of the Mount Mackenzie land system originally supported open forest communities, but many areas have been extensively cleared for pine conversion and grazing.





MOUNT MACKENZIE Area: 69 km^2	Component and its proportion of land system						
	1 40%	2 8%	3 9%	4 25%	5 8%	6 7%	7 3%
CLIMATE Rainfall, mm Temperature, 0^{o}C Seasonal growth limitations	**Annual**: 950 – 1,100, lowest January (45), highest August (120) **Annual**: 13, lowest July (8), highest February (18) **Temperature**: less than 10^{o}C (av.) June – August **Precipitation**: less than potential evapotranspiration mid November – March						
GEOLOGY Age, lithology	Paleocene unconsolidated marine sand, clay and silt						
TOPOGRAPHY Landscape	Deeply dissected hills in the middle and lower reaches of the Gellibrand River catchment						
Elevation, m	15 –180						
Local relief, m	100						
Drainage pattern	Dendritic with some radial						
Drainage density, km/km^2	3.3						
Land form	Hill					Valley floor	Terrace
Land form element	Slope, crest	Crest, spur, mainly in south	Crest, slope	Slope, crest	Broad slight depression	-	-
Slope (and range), %	33 (4-63)	14 (4-19)	32 (22-45)	37 (31-49)	14 (2-21)	4 (0-7)	5 (1-9)
Slope shape	Convex	Convex	Convex	Convex	Concave	Concave	Convex
NATIVE VEGETATION Structure	Open forest	Open forest	Low woodland	Open forest	Low woodland	Woodland	Open forest
Dominant species	E. baxteri, E. nitida, E. obliqua, E. radiata	E. obliqua, E. baxteri, E. viminalis, E. ovata	E. baxteri, E. nitida	E. baxteri, E. obliqua	E. nitida, E. baxteri	E. obliqua, E. baxteri	E. obliqua, E. ovata, E. baxteri
SOIL Parent material	Clay, silt and sand	Clay, silt and sand	Sand	Clay, silt and sand	Sand, colluvial sand	Plant remains, alluvial sand and clay	Alluvial clay, silt and sand
Description	Yellow gradational sols, weak structure	Yellow-brown gradational soils, coarse structure	Grey sand soils, uniform texture	Red gradational soils, weak structure	Grey sand soils, with hardpans, uniform texture	Black sand soils, uniform texture	Yellow-brown gradational soils, coarse structure
Surface texture	Sandy loam	Fine sandy loam	Loamy sand	Sandy loam	Loamy sand	Loamy sand	Fine sandy loam
Permeability	High	Low	Very high	High	Very low	High	Low
Depth, m	>2	>2	>2	>2	0.6	>2	>2
LAND USE	**Uncleared areas:** Hardwood forestry for sawlogs, posts and poles; water supply; nature conservation; quarrying of ironstone; softwood forestry **Minor cleared areas:** Dairy farming; beef cattle grazing.						
SOIL DETERIORATION HAZARD Critical land features, processes, forms	Weakly structured soils on steep slopes are prone to sheet, rill, scour gully erosion and landslips. Low inherent fertility and high permeability lead to nutrient decline.	Dispersible clay subsoils of low permeability are prone to gully erosion.	Very low inherent fertility and high permeability lead to nutrient decline. Steeper slopes with compacted soils are prone to sheet, rill and scour gully erosion.	Weakly structured soils on steep slopes are prone to sheet and rill erosion and landslips. Low inherent fertility and high permeability lead to nutrient decline.	Hardpans restrict vertical drainage leading to seasonal waterlogging. Very low inherent fertility with leaching of permeable highly acidic surface soils lead to nutrient decline.	High water tables lead to waterlogging and soil compaction. Rapid run-off from adjacent hills lead to flooding and siltation.	Dispersible clay subsoils of low permeability are prone to gully erosion. Low permeabilities and high water tables lead to waterlogging and soil compaction.