

7.12 Heathcote Land System (He)

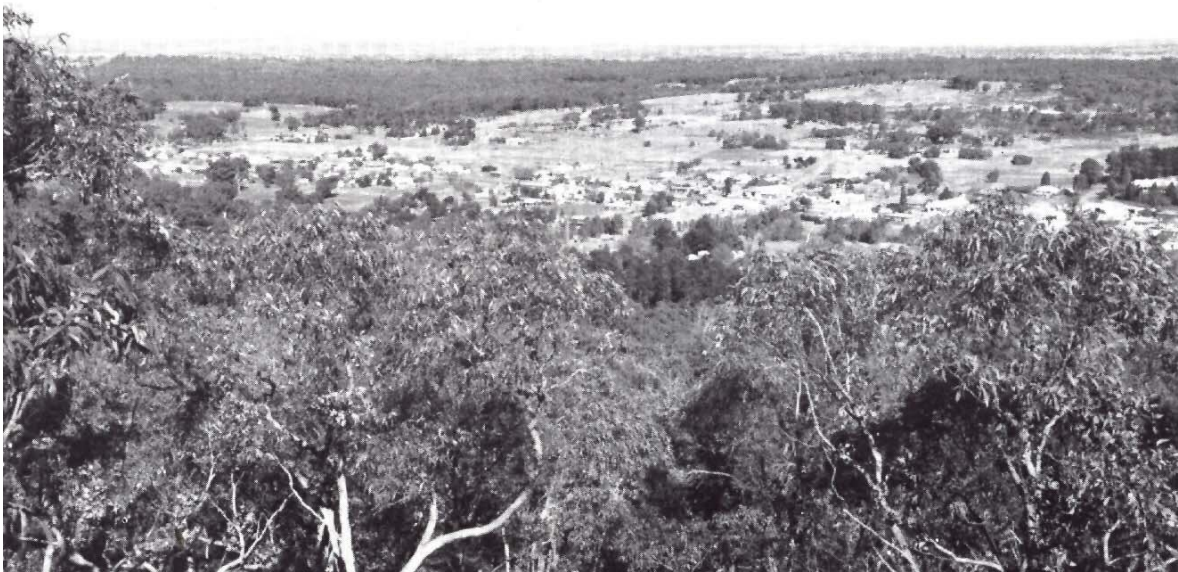
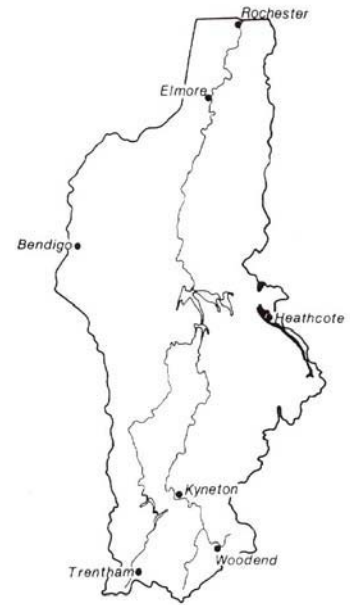
This small area of undulating rises, gentle slopes and narrow alluvial flood-plains is located along the McIvor Creek between Heathcote and Tooborac. The geology is complex, the Heathcote and McIvor Faults having caused the exposure of Cambrian volcanics and sediments and Devonian granodiorite. McIvor Creek has formed a narrow alluvial flood-plain between these various rocks and Devonian sediments to the east.

The soils are variable, with shallow red gradational profiles on the Cambrian rocks and mottled duplex profiles on the granite. The lower colluvial slopes have yellow or brown duplex soils and in many drainage depressions a sandy loam wash layer reflects the extensive clearing and sheet erosion that have taken place since the gold-rush last century. The older alluvial terraces have duplex profiles, whereas the present flood-plain has young variable alluvial soils, often overlying older soils and gravel deposits.

E. camaldulensis is the dominant tree of the alluvial flats, and is mixed with *E. melliodora* on the older terraces and lower slopes. *E. microcarpa* dominates on the slopes and crests, associated with *E. albens*, *E. melliodora* and *E. leucoxyton*.

The native vegetation has been almost totally cleared and the main use is grazing of native and introduced pastures. Vineyards are located on some of the slopes, especially on soils derived from the Cambrian volcanics. Urban development and mined areas occupy a significant proportion of the land system.

The more common forms of land deterioration include sheet erosion on the cleared hills, gully erosion and stream-bank erosion along McIvor Creek. There are also small areas of salting on the terraces and lower slopes.



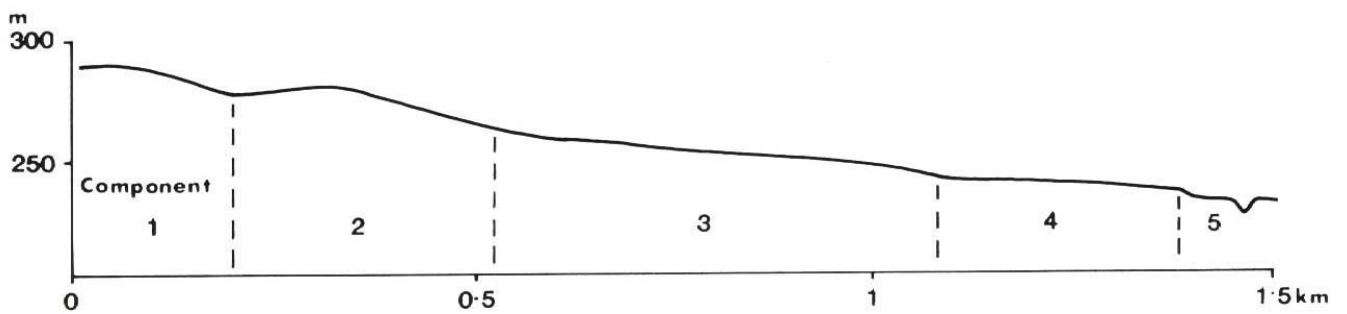
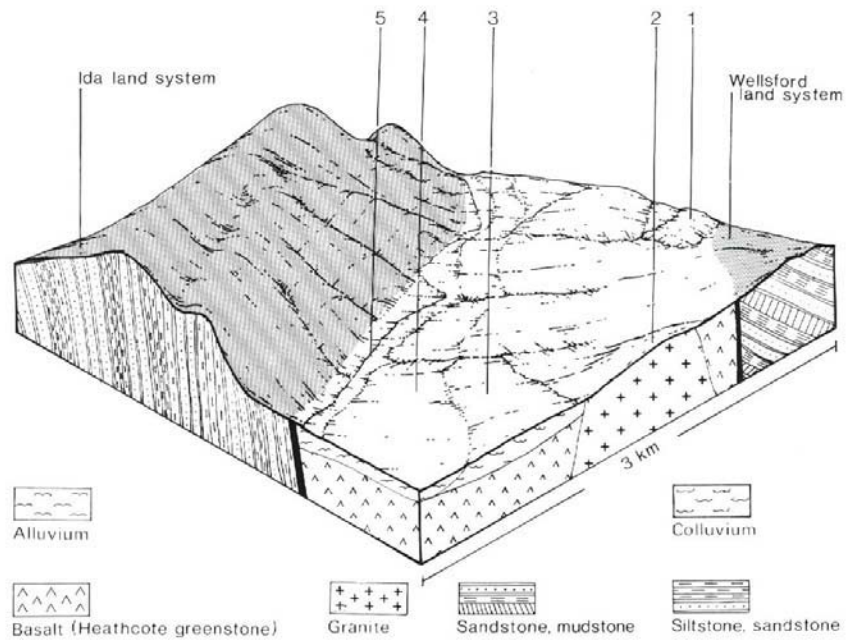
The township of Heathcote sprawls along the valley created by the Heathcote and McIvor Faults.



The gentle cleared landscape of the Heathcote land system with the wooded slopes of the McIvor Range (Ida land system) in the background.



Evidence of mining activity that took place during the gold rush, more than 120 years ago, is still visible today.



HEATHCOTE LAND SYSTEM (He) Area 23 km² 0.6% of catchment

| | | | | | |
|---|---|---|---|---|---|
| CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations | Annual, 550-650, lowest January (30-35), highest June or August (60-65) 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 | Devonian granodiorite, Cambrian greenstone, shale and chert; Quaternary alluvium | | | | |
| PHYSIOGRAPHY Landform pattern Elevation range (m) Relative relief (m) Drainage pattern Channel spacing | Undulating rises 240-300 25 Fault trellis Moderate | | | | |
| LAND COMPONENT Number Percentage of land system | 1 5 | 2 15 | 3 40 | 4 30 | 5 10 |
| PHYSIOGRAPHY Landform element Slope; modal, range (%) Site drainage | Upper slope and crest 6, 4-12 Somewhat excessively drained | Upper slope and crest 6, 4-12 Somewhat excessively drained | Gentle lower slope 4, 2-10 Well drained | Upper terrace 2, 0-6 Moderately well drained | Floodplain 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 | Granodiorite Mottled yellow duplex soils Dy3.41, Dy3.42 Loamy sand 0.5-1.0 Low surface, moderate subsoil Low surface, moderate subsoil Rapid surface, slow subsoil 0-5 - | Greenstone shale and chert Red gradational soils Gn3.12, Gn4.12 Loam >2.0 High Moderate Moderate 0-5 - | Colluvium Mottled yellow or whole coloured brown duplex soils with bleached A ₂ horizons Dy3.42m Db1.43, often with sandy was on surface Loam >2.0 Low surface, moderate subsoil Low surface, moderate subsoil Moderate surface, slow subsoil 0 - | Alluvium Mottled yellow or brown duplex soils with bleached A ₂ horizons Dy3.42, Dy3.43, Db2.31, Dy3.23 Sandy loam >2.0 Low surface, moderate subsoil Low surface, moderate subsoil Rapid surface, slow subsoil 0 - | Alluvium Young sandy soils, often overlying mottled yellow duplex or black gradational soils. Uc1.1 over Gn3.43 or Dy3.43 Sandy loam Moderate Moderate Rapid 0 1120 |
| NATIVE VEGETATION Structure Characteristic species (+ indicates predominant species) | Woodland II/open forest II <i>E. microcarpa</i> +, <i>E. melliodora</i> , <i>E. albens</i> | Woodland II/open forest II <i>E. microcarpa</i> +, <i>E. melliodora</i> , <i>E. albens</i> | Open forest II <i>E. microcarpa</i> +, <i>E. albens</i> , <i>E. melliodora</i> , <i>E. leucoxyton</i> | Woodland II/open forest II <i>E. camaldulensis</i> <i>E. melliodora</i> | Woodland II/open forest II <i>E. camaldulensis</i> + <i>E. melliodora</i> |
| PRESENT LAND USE | Grazing of native and introduced pastures | Grazing of native and introduced pastures; minor quarrying | Grazing of introduced pastures; urban development | Grazing of introduced pastures; urban development; minor cropping | Grazing of native pastures |
| OBSERVED SOIL DETERIORATION | Sheet erosion common | Minor sheet erosion | Minor gully erosion and salting | Gully erosion common, minor salting | Stream-bank erosion |

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Heathcote

| Compt. | Process | Susceptibility | Critical land factors | Off-site effects | Comments |
|--------|--|--|--|--|---|
| 1 | Sheet & rill erosion Wind erosion | Moderate Moderate | <ul style="list-style-type: none"> gentle to moderate slopes clayey subsoil of low permeability weakly structured topsoil weakly structured sandy topsoil | <ul style="list-style-type: none"> sedimentation deposition | - - |
| 2 | Sheet & rill erosion Compaction of topsoil | Low to moderate Moderate | <ul style="list-style-type: none"> gentle to moderate slopes loamy texture | <ul style="list-style-type: none"> sedimentation increased run-on | The moderate permeability of the soil reduces the erosion risk - |
| 3 | Sheet & rill erosion Gully erosion Compaction of topsoil | Low to moderate Low to moderate Moderate | <ul style="list-style-type: none"> weakly structured topsoil clayey subsoil of low permeability gentle slopes accumulations of colluvium subsoil that slake/disperse loamy texture | <ul style="list-style-type: none"> sedimentation sedimentation increased run-on | Clearing on adjacent areas increases run-off and the risk of gully erosion - |
| 4 | Gully erosion Salting Compaction of topsoil | Moderate Moderate Moderate | <ul style="list-style-type: none"> accumulation of alluvium subsoils that slake/disperse saline groundwater table at shallow depth stored salts in soil and parent material loamy texture | <ul style="list-style-type: none"> sedimentation water turbidity saline stream flows - | - - - |
| 5 | Stream-bank erosion Compaction of topsoil | Moderate Moderate to high | <ul style="list-style-type: none"> deep accumulations of alluvium loamy texture topsoil frequently moist | <ul style="list-style-type: none"> sedimentation water turbidity - | - - |



The hard-setting soils contribute to excessive run-off and erosive water flows into drainage depressions.



Stream-bank erosion only becomes significant during flood periods.