

7.23 *Myola East land system (ME)*

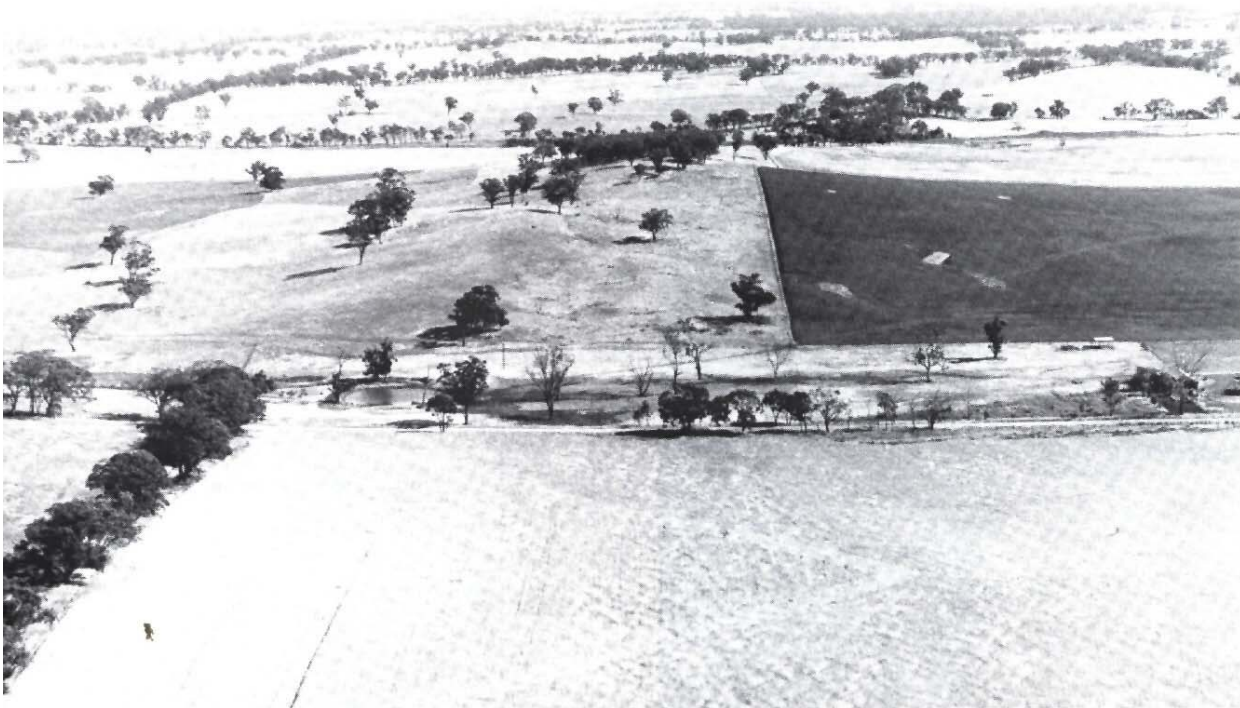
This gently undulating terrain on Ordovician sediments occurs in the north-east of the catchment. It includes a low north-south ridge of lower Ordovician to Cambrian chert just west of the Mount Camel Range.

Shallow stony loam soils occur along the ridgeline and red sodic duplex soils, often with calcareous subsoils, predominate on the gentler slopes. *E. microcarpa* is the dominant original tree species, frequently associated with species such as *E. albens*, *E. melliodora*, *E. leucoxylon* and *Casuarina luehmannii*.

Cereal-cropping is the predominant form of land use, in rotation with grazing of volunteer pastures. Native pastures are grazed on the shallow soils.

The chert ridge forms a barrier to groundwater movement away from the Camel Range, causing saline waters to rise and salting to occur in most drainage depressions within the land system.

Gully erosion is common in many drainage depressions and the shallow soils on the crests and upper slopes are particularly susceptible to sheet erosion.



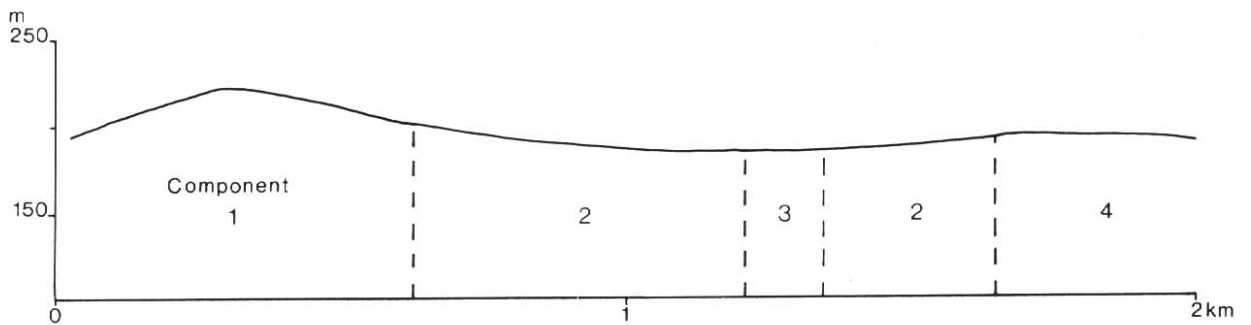
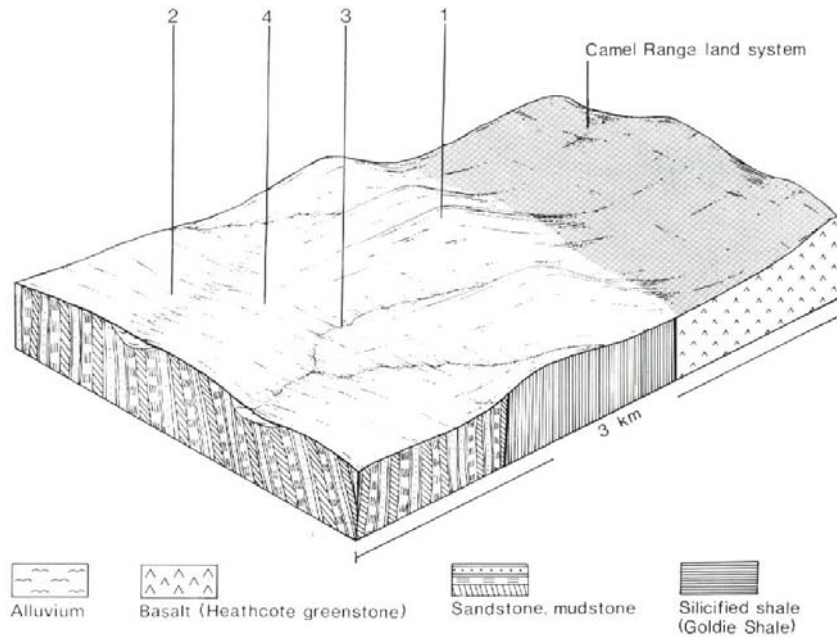
The ridge running from left-hand foreground to right-hand background forms component 1 of this land system.



A sequence of components common in the Myola East land system



Stubble-burning is still a common practice prior to sowing the next season's crop, but it has undesirable effects on soil structure.



MYOLA EAST LAND SYSTEM (ME) Area 163 km² 4.0% of catchment

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual, 450-550; lowest December (30-33), highest June, July or August (45-55) Annual, 15; 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			
GEOLOGY Age, rock type	Ordovician, sandstone and mudstone			
PHYSIOGRAPHY Landform pattern Elevation range (m) Relative relief (m) Drainage pattern Channel spacing	Undulating rises to undulating low hills 120-240 20 Dendritic Moderate			
LAND COMPONENT Number Percentage of land system	1 10	2 45	3 10	4 35
PHYSIOGRAPHY Landform. element Slope; modal, range Site drainage	Narrow rocky crest and steeper upper slope 8,3-20 Somewhat excessively drained	Gentle mid to lower slope 3,1-4 Well drained	Drainage depression 1,0-3 Somewhat poorly drained	Broad gentle crest 4,2-8 Well 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 Red, or reddish brown, gradational soils; shallow stony loams on the rocky crests Gn3.7 1, Gn3.13; minor Um1 Loam 0-1-0.6 Very low Low Moderate 0-80 1018	Sandstone and mudstone Red duplex soils, usually with alkaline subsoils Dr2.13, Dr2.23, Dr2.33, Dr2.43 Sandy loam, loam 0.6-1.5 Low, surface, moderate subsoil Low surface, moderate subsoil Moderate surface, slow subsoil 0 1021,1034	Alluvium Variable; red, brown or yellow duplex soils; loamy soils on recent alluvium Dr2.22, Db2A2, Um; minor Gn3.85 Loam, clay loam > 1.5 Moderate Moderate Low to moderate 0 1020	Sandstone and mudstone Red duplex soils, usually with a bleached A2 horizon Dr2.42, Dr2.43; minor Gn3.84 Loam 0.2-0.6 Low Low Moderate surface, slow subsoil 0-5 1019
NATIVE VEGETATION Structure Characteristic species (+ indicates predominant species)	Woodland III Open forest II <i>E. microcarpa</i> +, <i>E. albens</i> , <i>E. melliodora</i>	Woodland II / Open forest II <i>E. microcarpa</i> +, <i>E. albens</i> , <i>E. melliodora</i>	Woodland III Open forest II <i>E. microcarpa</i> +, <i>E. albens</i> , <i>E. leucoxyton</i> , <i>E. melliodora</i> ,	Woodland II / Open forest II <i>E. microcarpa</i> +, <i>E. albens</i> <i>E. leucoxyton</i> <i>Casuarina luehmannii</i>
PRESENT LAND USE	Grazing of native and introduced pastures	Grazing of native and introduced pastures; cropping, predominantly cereals	Grazing of native and introduced pastures	Grazing of native and introduced pastures; cropping, predominantly cereals
OBSERVED SOIL DETERIORATION	Sheet erosion is common and severe	Sheet erosion common, particularly after cultivation	Salting common and locally severe; limited gully erosion	Sheet erosion noted but generally minor

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Myola East

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
1	sheet and rill erosion	high	<ul style="list-style-type: none"> • moderate slopes • hydrophobic topsoil • weak topsoil structure 	<ul style="list-style-type: none"> • sedimentation • increased run-on 	-
	wind erosion	low to moderate	<ul style="list-style-type: none"> • weakly structured loamy topsoil • exposed topographic position 	<ul style="list-style-type: none"> • sedimentation 	the presence of abundant surface stone reduces the hazard
	leaching of nutrients	moderate	<ul style="list-style-type: none"> • moderate soil permeability • low cation exchange capacity • low percentage base saturation 	<ul style="list-style-type: none"> • - 	-
	compaction of topsoil	low to moderate	<ul style="list-style-type: none"> • loamy texture • low organic matter content 	<ul style="list-style-type: none"> • increased run-on 	the presence of abundant surface stone reduces the hazard
2&4	sheet and rill erosion	moderate	<ul style="list-style-type: none"> • gentle slopes • hydrophobic topsoil 	<ul style="list-style-type: none"> • sedimentation • increased run-on 	the hazard is increased when topsoils are cultivated and left without protective vegetative cover
	wind erosion	low to moderate	<ul style="list-style-type: none"> • weakly structured loamy topsoil 	<ul style="list-style-type: none"> • sedimentation 	-
	compaction of topsoil	moderate	<ul style="list-style-type: none"> • loamy texture • low organic matter content 	<ul style="list-style-type: none"> • increased run-on 	-
3	gully erosion	moderate	<ul style="list-style-type: none"> • accumulations of alluvium • subsoils that slake/disperse 	<ul style="list-style-type: none"> • - 	-
	salting	high	<ul style="list-style-type: none"> • saline groundwater table • at shallow depth • salts stored in soil and regolith 	saline stream flow	loss of the protective vegetative cover due to salt toxicity can initiate erosion problems
	compaction of the topsoil	moderate	<ul style="list-style-type: none"> • loamy or clay loamy texture • low organic matter content • topsoil often moist 	<ul style="list-style-type: none"> • - 	-



The dead trees indicate that present land use has contributed to salting in this drainage depression.



Salting and gully erosion account for large areas of unproductive land.