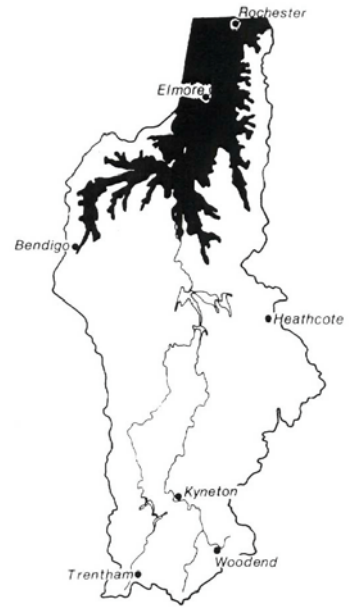


7.26 Runnymede land system (Re)

The southern part of the vast riverine plain extends southwards into the valleys formed by the Campaspe River and by the Bendigo, Forest and Mount Pleasant creeks.

Remnants of the original vegetation are dominated by *E. microcarpa*, *E. melliodora*, *E. leucoxyton* and *Casuarina luehmannii* on red sodic duplex soils. Small areas of heavy cracking clays with *E. microcarpa* flank the adjacent higher land. Young alluvial soils with *E. camaldulensis* are confined to the narrow terrace of the present flood-plain.

Land use is predominantly cropping in rotation with pasture and fallow. Soil compaction and surface sealing are widespread, particularly on the duplex soils, and enhanced by frequent cultivation. Wind erosion is also a problem on the widespread sandy loam topsoils. Gullies occur in drainage depressions, which periodically carry large quantities of water from the nearby hills.



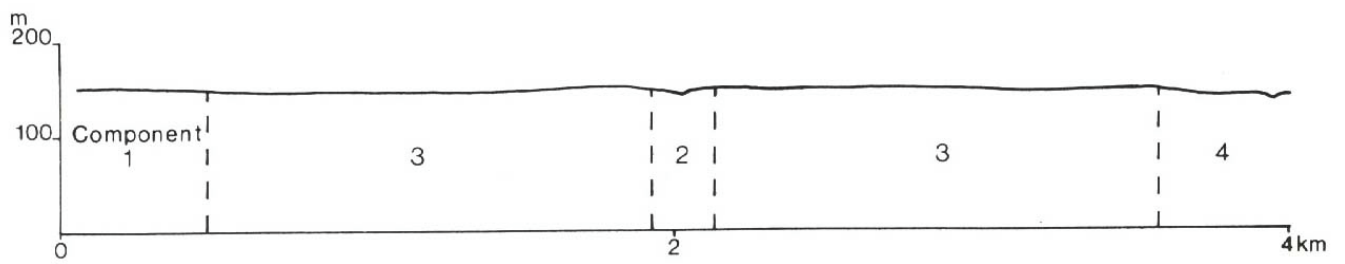
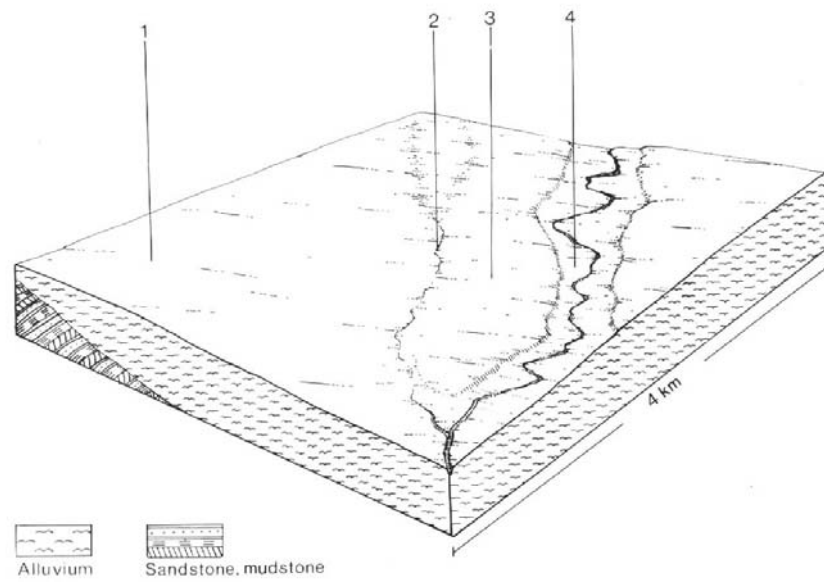
Mount Pleasant Creek joins the Campaspe River to meander northwards across the plain to the Murray River.



The alluvial plain and lower terrace represent 90% of the Runnymede land system.



The Campaspe River is lined with red gums and incised into the land terrace.



RUNNYMEDE LAND SYSTEM (Re) Area 672 km² 16.5% 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 January or February (22.5) Temperature less than 10°C (av.): mid May-mid August Rainfall less than potential evapotranspiration: mid September-mid April			
GEOLOGY Age, rock type	Quaternary, alluvium			
PHYSIOGRAPHY Landform pattern Elevation range (m) Relative relief (m) Drainage pattern Channel spacing	Level plain 120-180 0-5 Dendritic Sparse			
LAND COMPONENT Number Percentage of land system	1 5	2 5	3 80	4 10
PHYSIOGRAPHY Landform element Slope; modal, range Site drainage	Upper terrace, usually flanking slopes on Ordovician sediments 1,0-2 Somewhat poorly drained	Minor drainage depression 1,0-1 Somewhat poorly drained	Alluvial plain 0,0-1 Moderately well drained	Narrow lower terrace and floodplain 0,0-1 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	Alluvium Grey cracking clays with carbonate concretions in alkaline subsoils; Gilgaied Ug5.15 Clay, clay loam > 2.0 High Moderate Slow 0 1035	Alluvium Sandy wash layer/s over buried, mottled yellow or red duplex soils Uc over Dy3.42 or Dr2.43 Sandy loam > 2.0 Low surface, moderate subsoil Low surface, moderate subsoil Rapid surface, slow subsoil 0 1017	Alluvium Red duplex soils with bleached A2 horizons and neutral to alkaline subsoils Dr2.42, Dr2.43; minor Dr2.41, Dy3.42 Sandy loam > 2.0 Low surface, low to moderate subsoil Low surface, moderate subsoil Rapid surface, slow subsoil 0 707,1015	Alluvium Brown duplex soils on terraces; Brown loamy soils on flood-plains Um1.43, Dbl.43; minor Ucl.22 Sandy loam, loam > 2.0 Moderate Moderate Moderate 0 1016
NATIVE VEGETATION Structure Characteristic species (+ indicates predominant species)	Open woodland II / Woodland II <i>E. microcarpa</i> +, <i>Casuarina luehmannii</i>	Woodland II <i>E. microcarpa</i> +, <i>E. leucoxydon</i> <i>E. melliodora</i> , <i>Casuarina luehmannii</i>	Woodland II <i>E. microcarpa</i> +, <i>E. leucoxydon</i> <i>E. melliodora</i> , <i>Casuarina luehmannii</i>	Woodland III/Open forest II <i>E. camaldulensis</i>
PRESENT LAND USE	Grazing on introduced pastures; cereal-cropping	Grazing on introduced pastures	Grazing introduced pastures; cereal-cropping minor irrigated pasture and horticultural crops	Grazing on introduced pastures; minor irrigated pasture and horticultural crops
OBSERVED SOIL DETERIORATION	Nil	Minor gully erosion	Compaction and sealing of surface soil is common; minor wind erosion	Minor stream-bank erosion

SUSCEPTIBILITY OF LAND TO PROCESSES OF SOIL DETERIORATION – Runnymede

Compt.	Process	Susceptibility	Critical land factors	Off-site effects	Comments
2	gully erosion	low to moderate	<ul style="list-style-type: none"> • sodic subsoil • unconsolidated sediments • channelised run-on from nearby 	<ul style="list-style-type: none"> • sedimentation • turbid run-on 	the large depth of alluvium allows deep gully incision
	compaction of topsoil	moderate	<ul style="list-style-type: none"> • slopes • loamy texture • weak topsoil structure • low organic matter content 	<ul style="list-style-type: none"> • - 	the macroporosity of the weakly structured topsoil is easily reduced, especially by cultivation
3	wind erosion	moderate	<ul style="list-style-type: none"> • sandy loam topsoil • weak soil structure 	<ul style="list-style-type: none"> • sedimentation 	although the topsoils usually set hard, they are readily wind-eroded when exposed and dry
	compaction of topsoil	moderate	<ul style="list-style-type: none"> • sandy loam texture • weak soil structure • low organic matter content 	<ul style="list-style-type: none"> • increased run-on 	the macroporosity of the weakly structured topsoils is easily reduced
	leaching of nutrients (topsoil)	moderate	<ul style="list-style-type: none"> • high topsoil permeability • low organic matter content • low cation exchange capacity 	<ul style="list-style-type: none"> • - 	subsoils of low permeability limit the vertical movement of water
4	wind erosion	low to moderate	<ul style="list-style-type: none"> • sandy loam or loam texture 	<ul style="list-style-type: none"> • sedimentation 	the topsoils usually set hard and are usually protected by retained riparian native vegetation
	leaching to nutrients	low to moderate	<ul style="list-style-type: none"> • moderate soil permeability • low organic matter content • moderate cation exchange capability 	<ul style="list-style-type: none"> • - 	nutrients leached from these soils may enter the adjacent major streams
	stream-bank erosion	moderate	<ul style="list-style-type: none"> • deep deposits of unconsolidated sediments 	<ul style="list-style-type: none"> • sedimentation • turbid run-on 	the existing native riparian vegetation restricts this form of deterioration
	compaction of the topsoil	moderate	<ul style="list-style-type: none"> • loamy textures • low organic matter content • weak soil structure 	<ul style="list-style-type: none"> • - 	the limited macroporosity is easily reduced



Severe gully erosion occurs when excessive run-off from adjacent sloping land is channelled into these gentle drainage depressions.



The rill erosion on this scarp is the direct result of heavy rain on cultivated, unprotected soil.