

MLT Melton Land System

Mostly low lying stony plains forming a broad drainage basin

Area: 189.3 km²

Landscape: Mostly low lying stony plains forming a broad drainage basin. Some relatively elevated plains occur, especially in the area directly east and northeast of Paskeville.

Ill-defined drainage ways are common; and some better defined drainage depressions occur. Calcrete (Bakara/Ripon Calcrete: ancient Bridgewater Formation), at shallow to moderate depth, is prevalent over much of the system. This seems to mostly be underlain by older red clayey sediments (Hindmarsh Clay) – in lows where calcrete has been ‘dissolved’ soils are formed in this clay. This clay may be thin or even non-existent in some areas: there is evidence of older sandy sediments underlying some areas (eg CSR sand pit northwest of Kulpara: probably Tertiary age sand). Areas of more recent calcareous loess deposits occur (Woorinen Formation), generally as very slight highs on undulating land. It is possible that relatively recent alluvial deposition of clayey sediments has occurred, especially in the lowest lying areas. The most recently deposited sediments are mallee sands (Molineaux Sand), which occur as dune ridges in the north of the system. Given the sandy nature of many surface soils, it is possible that thin spreads of such sands have affected many areas, or else underlying and older sandy sediments are the source of this sand.

Drainage is toward the north from the centre of the system and above, and then toward the west in the north of the system – toward the Blackoaks land system. Drainage in the south of the system is toward the south.

Annual rainfall: 365 – 405 mm average

Main soils:

B2	<i>shallow calcareous sandy loam on calcrete</i>
A5-A4	<i>(rubbly) calcareous sandy loam</i>
A6	<i>gradational calcareous clay loam</i>
B3	<i>shallow sandy loam on calcrete</i>
D3	<i>sandy loam over red clay</i>
H2	<i>calcareous siliceous sand</i>

Main features: Shallow soil on calcrete with sandy or loamy surfaces are the most common soils in this system. There are some areas where the soils are too shallow to be cropped. Profiles which are shallow and/or contain hard carbonate rubble have limited moisture holding capacity and hence limited production potential. Surface stone also interferes with many farming practices. Fine carbonate in soils limits the availability of certain nutrients. However, this effect depends on the amount of fine carbonate present, especially in the surface soil, and a number of surface soils in this system contain only moderate to minor amounts of fine carbonate. Accumulations of boron and sodium in subsoils is particularly prevalent where clayey subsoils are present. Clayey subsoils usually have relatively poor physical structure, resulting in waterlogging, especially in the lower lying areas where these soils tend to occur. Minor flooding may occasionally occur in some depressions. Some soils have clay loamy surfaces which set hard. Salinity in low lying areas is normally present as raised subsoil levels. Wind erosion potential is a significant factor on sandy soils, especially those situated on dunes.



Soil Landscape Unit summary: Melton Land System (MLT)

SLU	% of area	Main features
IAA	1.5	Plains with soils dominantly formed in clayey sediments. Main soils: <i>gradational calcareous clay loam A6</i> . And limited to common areas of <i>sandy loam over red clay D3</i> to <i>gradational clay loam C4</i> . IAA – depression/low lying plain (slopes <1%).
ICA ICO	3.7 1.6	Plains and depressions with soils dominantly formed in clayey sediments. Main soils: <i>gradational calcareous clay loam A6</i> . With limited to common areas of <i>calcareous sandy loam A5</i> . There may be minor areas of <i>sandy loam over red clay D3</i> or <i>gradational clay loam C4</i> . ICA – low lying plains/depressions (slopes <1%). ICO – depression/drainage depression (slopes <1%).
IIA	0.1	Plains with soils dominantly formed in clayey sediments. Main soils: <i>gradational calcareous clay loam A6</i> . With limited to common areas of <i>rubbly calcareous sandy loam A5</i> . IIA – low lying plain/depression (slopes <1%).
INO	2.5	Depressions with soils dominantly formed in clayey sediments. Main soils: <i>gradational calcareous clay loam A6</i> . With limited to common areas of <i>rubbly calcareous sandy loam A5</i> . With some <i>sandy loam over red clay D3</i> or possibly including some <i>gradational clay loam C4</i> . INO – depression/drainage depression (slopes <1%).
IQE IQO	1.2 0.9	Depressions with soils dominantly formed in clayey sediments. Main soils: <i>gradational calcareous clay loam A6</i> , <i>sandy loam over red clay D3</i> , and possibly including <i>gradational clay loam C4</i> . With limited to common areas of <i>calcareous sandy loam A5</i> , and <i>shallow calcareous sandy loam on calcrete B2</i> (possibly with some <i>shallow sandy loam on calcrete B3</i>). IQE – depressions/drainage depressions (slopes <1%). IQO – depressions/drainage depressions (slopes <1%).
QeA QeAs QeB	16.2 5.3 0.2	Plains and slopes dominated by shallow calcreted soils. Main soils: <i>shallow calcareous sandy loam on calcrete B2</i> to <i>shallow sandy loam on calcrete B3</i> . With limited to common areas of <i>gradational calcareous clay loam A6</i> <i>sandy loam over red clay D3</i> , and possibly <i>gradational clay loam C4</i> , in slight lows; and <i>calcareous sandy loam A5-A4</i> . QeA – gently undulating relatively stony plains, sometimes somewhat elevated, or often relatively low lying with low rises, and with a few ill-defined drainage lows (slopes 0-1.5%). QeAs – low lying gently undulating relatively stony plain with ill-defined drainage lows (slopes 0-1.5%). QeB – stony slopes (0.5-2.5%).
QfA QfB	9.1 1.0	Plains and slopes dominated by shallow calcreted soils. Main soils: <i>shallow calcareous sandy loam on calcrete B2</i> to <i>shallow sandy loam on calcrete B3</i> . With limited to common areas of <i>gradational calcareous clay loam A6</i> , <i>sandy loam over red clay D3</i> , <i>gradational clay loam C4</i> , in slight lows; and <i>rubbly calcareous sandy loam A5-A4</i> . QfA – gently undulating plains, which can be relatively low lying in areas with some ill-defined drainage lows (slopes <1%). QfB – slopes (slopes 1-2.5%).
QIA	3.9	Plains dominated by shallow calcreted soils. Main soils: <i>shallow calcareous sandy loam on calcrete B2</i> to <i>shallow sandy loam on calcrete B3</i> . With limited to common areas of <i>gradational calcareous clay loam A6</i> , <i>sandy loam over red clay D3</i> , or even <i>gradational clay loam C4</i> , in slight lows. QIA – gently undulating plains with some ill-defined drainage lows (slopes 0-1.5%).



QRA QRB QRE	9.3 1.6 9.9	Plains, slopes and depressions dominated by shallow calcreted soils. Main soils: <i>shallow calcareous sandy loam on calcrete</i> B2 . With some <i>shallow sandy loam on calcrete</i> B3 . With minor areas of <i>gradational calcareous clay loam</i> A6 , <i>sandy loam over red clay</i> D3 , or even <i>gradational clay loam</i> C4 , in slight lows. QRA – gently undulating to level stony plains, which can be relatively low lying, with some ill-defined drainage lows (slopes 0-1%). QRB – stony slopes, with a few ill-defined drainage lows (0.5-2.5%). QRE – low lying stony plains/depressions with some ill-defined drainage lows (slopes <1%).
QTA	11.0	Plains dominated by shallow calcreted soils. Main soils: <i>shallow calcareous sandy loam on calcrete</i> B2 . With some <i>shallow sandy loam on calcrete</i> B3 . With limited to common areas of <i>calcareous sandy loam</i> A5-A4 . With minor areas of <i>gradational calcareous clay loam</i> A6 , <i>sandy loam over red clay</i> D3 , or even <i>gradational clay loam</i> C4 , in slight lows. QTA – low lying stony plains, with some ill-defined drainage lows (slopes <1%).
SbA SbBg	2.1 0.7	Plains and slopes dominated by soils formed in rubbly calcareous loess. Main soils: <i>rubbly calcareous sandy loam</i> A5-A4 . With limited to common areas of <i>gradational calcareous clay loam</i> A6 , <i>sandy loam over red clay</i> D3 , or even <i>gradational clay loam</i> C4 , in slight lows. SbA – gently undulating plains (slopes 0-1%). SbBg – slopes with drainage lines (slopes 0.5-2.5%).
SdA SdB SdE	12.5 0.2 0.6	Plains, slopes and depressions dominated by soils formed in rubbly calcareous loess. Main soils: <i>rubbly calcareous sandy loam</i> A5-A4 . With limited to common areas of <i>gradational calcareous clay loam</i> A6 , <i>sandy loam over red clay</i> D3 , or even <i>gradational clay loam</i> C4 , in slight lows; and <i>shallow calcareous sandy loam on calcrete</i> B2 , including some <i>shallow sandy loam on calcrete</i> B3 . SdA – mostly relatively low lying plains with some ill-defined drainage lows (slopes 0-1.5%). SdB – lower slopes (slopes 0.5-2.5%). SdE – depression with ill-defined drainage lows (slopes <1%).
SeO	1.7	Depressions dominated by soils formed in rubbly calcareous loess. Main soils: <i>rubbly calcareous sandy loam</i> A5 . With limited to common areas of <i>gradational calcareous clay loam</i> A6 ; and <i>shallow calcareous sandy loam on calcrete</i> B2 . SeO – depression (slopes <1%).
UCc UCG UCJ	0.7 1.1 0.3	Rises and plains with >30% mallee sand dunes and sandy rises. Dune soils: <i>calcareous siliceous sand</i> H2 to <i>sandy calcareous sandy loam</i> A4 . Swale soils: <i>rubbly calcareous sandy loam</i> A5-A4 . Possibly some <i>sandy loam over red clay</i> D3 . UCc – rise overlain with 60-90% sandy rises. UCG – plains overlain with 60-90% low sand dunes. UCJ – lower slopes and low lying plains overlain with 30-60% broad sandy rises.
UUF	0.3	Plains with >30% mallee sand dunes and sandy rises. Dune soils: <i>calcareous siliceous sand</i> H2 . Swale soils: <i>shallow calcareous sandy loam on calcrete</i> B2 to <i>shallow sandy loam on calcrete</i> B3 . And possibly some <i>rubbly calcareous sandy loam</i> A5-A4 . UUF – low lying plain overlain with 60-90% sand dunes.
U-C U-D	0.2 0.6	Single mallee sand dunes. Dune soils: <i>calcareous siliceous sand</i> H2 and possibly some <i>sandy calcareous sandy loam</i> A4 . U-C – single sand dune (4a). U-D – single low sand dune (3-4a).
-Q-	0.02	Sand quarry



Detailed soil profile descriptions:**Main soils:**

- B2** *shallow calcareous sandy loam on calcrete* [Petrocalcic Calcarosol]
All of these soils have calcrete at shallow depth. Profiles are calcareous throughout. Surface textures are typically loamy sands or sandy loams; loams and clay loams may occur. Subsoil textures range from loamy sands to clay loams. The heavier textured and less calcareous variants tend to occur in lower lying areas. Abundant hard carbonate rubble is a common feature of many profiles. Some soils are very shallow and non arable.
- A5-A4** (*rubbly*) *calcareous sandy loam* [Regolithic Hypercalcic-Lithocalcic Calcarosol]
Grey brown, brown or red brown calcareous loamy sand to sandy loam topsoil, with some loams and possibly a few clay loams grading into clay loamy subsoil with abundant fine carbonate. Profiles often contain significant amounts of hard carbonate rubble, and can be underlain by calcrete at moderate depth. Usually underlain by a clayey substrate within 120 cm of the surface (soil **A5**). Often found on slight highs on undulating land.
- A6** *gradational calcareous clay loam* [Pedal Hypercalcic-Supracalcic-Lithocalcic-Petrocalcic Calcarosol]
Grey brown to red brown calcareous sandy loams to clay loams grading to a reddish clayey subsoil with abundant fine carbonate. This is underlain by a substrate of blocky red heavy clay. Hard carbonate rubble occurs in some profiles. Mostly found in low lying areas/depressions. Clay loamy variants of these soils grade toward *gradational clay loams* **C4** which have hard non calcareous to slightly calcareous surfaces.
- B3** *shallow sandy loam on calcrete* [Petrocalcic Tenosol to Petrocalcic Red Chromosol-Sodosol]
Red brown loamy sand to sandy loam, overlying a subsoil with textures ranging from loamy sand to light clay. Calcrete underlies this at shallow depth. Surfaces can be slightly calcareous; or more if profile is texture contrast.
- D3** *sandy loam over red clay* [Red Chromosol-Sodosol]
Red brown to brown sandy loam or loamy sand overlying red to red brown clay, which grades to clay with abundant fine carbonate. This is underlain by a substrate of blocky red heavy clay. Surface soils can be calcareous. Found in low lying areas.
- H2** *calcareous siliceous sand* [Arenic Calcarosol]
Brown calcareous sandy topsoils grading into subsoils of loamy sand to sandy loam. Found on mallee dunes and sandy rises.

Further information: [DEWNR Soil and Land Program](#)

