

TIP Tiparra Land System

Mallee dunefields overlying plains, often somewhat elevated, and with a few areas of rising ground. The major dunefield area occurs south of Moonta. Much smaller areas occur just north of Moonta, and on the coastal plains between Wallaroo Bay and Tickera.

Area: 237.7 km²

Landscape: Plains, often somewhat elevated, with a few low lying plains, and a few rises and slopes. The dominant feature of this system is the presence of mallee dunefields. These dunefields consist of longitudinal sand dunes oriented in approximately a NW-SE direction. The dune sands (Molineaux Sand) overlie older sediments. The dunes are mostly highly calcareous. Red blocky clay (Hindmarsh Clay) underlies most of the system and has near-surface expression in some slight lows in some swales. Calcreted calcareous sediments (Bakara-Ripon Calcrete and ancient Bridgewater Formation) occur in places, especially in low lying swales, and overlie the older clayey sediments. However, the dominant sediments in which swale soils have formed are calcareous loess (Woorinen Formation), which overlies the older Hindmarsh Clay and calcrete. These wind-blown deposits often contain significant amounts of hard carbonate rubble.

Annual rainfall: 335 – 410 mm average

Main soils: **H2** *calcareous siliceous sand*
A4-A5 *(rubbly) calcareous loams*

Minor soils: **B2** *shallow calcareous loam on calcrete*
A6 *gradational calcareous clay loam*

Main features: The land system has mostly arable swales, and arable to semi arable sand dunes. The main soils are moderate depth to deep calcareous siliceous sands on dunes, and calcareous loams over clay loam or loam, often with hard carbonate rubble, in swales. Dune-swale mallee landscapes present considerable management difficulties due to the presence of highly varied soils within the same paddock.

One of the main management issues involves the sandy soils on dunes and sandy rises, which need careful management due to their low fertility and potential for wind erosion. The powdery calcareous loamy surfaces present in most swale soils also have significant potential for wind erosion. Calcareous soils limit the availability of certain nutrients: deficiencies of the major nutrient phosphorus and the trace element zinc are common, while deficiencies of the trace elements manganese and iron are possible. Temporary trace element deficiencies can occur in cold and wet conditions with susceptible crops. Soil with hard carbonate rubble, and shallow soil on calcrete, have reduced effective waterholding capacities, and hence reduced production potentials. Also surface rubble interferes with some farming operations. Toxic accumulations of boron and sodium occur in many lower subsoils or subsoils in swales, especially if a clayey substrate or subsoil which restricts drainage is present. Many swale soils have a slight build up of salinity in their lower subsoils, while significant saline seepage occurs in some low lying swales.



Soil Landscape Unit summary: Tiparra Land System (TIP)

SLU	% of area	Main features
QHA	1.1	Calcreted plains. Main soils: <i>shallow calcareous loam on calcrete</i> B2 . QHA – level plains (slopes <1%).
QPP	0.3	Calcreted plains, with some mallee dunes. Main soils: <i>shallow calcareous loam on calcrete</i> B2 . With limited to common areas of <i>calcareous siliceous sand</i> H2 on low mallee dunes and sandy rises. QPP – low lying plains with 10-30% low sand dunes and sandy rises, and with marginal salinity (swale slopes <1%).
SMA SMB	1.1 0.8	Plains and slopes by soils formed in calcareous loess. Main soils: <i>calcareous loam</i> A4-A5 . SMA – gently undulating plains (slopes 0-1%). SMB – slopes (slopes 1-3%).
SSA SSB	2.1 0.3	Plains and slopes dominated by soils formed in calcareous loess, with some mallee dunes. Main soils: <i>calcareous loam</i> A4-A5 . With limited to common areas of <i>gradational calcareous clay loam</i> A6 , and <i>calcareous siliceous sand</i> H2 on low mallee dunes and sandy rises. SSA – plains with 10-30% low sand dunes and sandy rises (swale slopes 0-1%). SSB – slopes with 10-30% low sand dunes and sandy rises (slopes 1-3%).
SVBg	0.7	Slopes dominated by soils formed in calcareous loess. Main soils: <i>calcareous loam</i> A4-A5 . With limited to common areas of <i>shallow calcareous loam on calcrete</i> B2 . Minor areas of <i>gradational calcareous clay loam</i> A6 occur in slight lows. SVBg – slopes with minor waterways (slopes 1.3-3.5%).
SXA SXB	10.5 1.7	Plains and slopes dominated by soils formed in calcareous loess, with some mallee dunes. Main soils: <i>calcareous loam</i> A4-A5 . With limited to common areas of <i>calcareous siliceous sand</i> H2 on low mallee dunes and sandy rises. SXA – gently undulating plains with 10-30% low sand dunes and sandy rises (swale slopes 0-1.5%). SXB – slopes and low rises with 10-30% low sand dunes and sandy rises (swale slopes 1-3%).
U-Ca U-D	0.2 0.2	Mallee sand dunes. Main soils: <i>calcareous siliceous sand</i> H2 . U-Ca – exposed mallee sand dunes. U-D – low mallee sand dunes.
UIG UII UIJ	3.7 10.2 1.2	Dunefields with >30% mallee sand dunes Dune soils: <i>calcareous siliceous sand</i> H2 . Swale soils: <i>calcareous loam</i> A4-A5 . Minor areas of <i>gradational calcareous clay loam</i> A6 occur in slight lows. UIG – elevated coastal plains overlain with 60-90% low sand dunes and sandy rises (swale slopes <1%). UII – elevated plains overlain with 30-60% sand dunes (swale slopes 0-1.5%). UIJ – elevated coastal plains overlain with 30-60% low sand dunes and sandy rises (swale slopes 0-1%).
UJP UJW	5.5 0.7	Dunefields with >30% mallee sand dunes Dune soils: <i>calcareous siliceous sand</i> H2 . Swale soils: <i>calcareous loam</i> A4-A5 . With limited to common areas of <i>shallow calcareous loam on calcrete</i> B2 . Minor areas of <i>gradational calcareous clay loam</i> A6 occur in slight lows. UJP – relatively low lying plains overlain with 30-60% sand dunes (swale slopes 0-1%). UJW – low lying plains, overlain with 30-60% sand dunes; marginal salinity (swale slopes <1%).
UQI	54.0	Dunefields with >30% mallee sand dunes Dune soils: <i>calcareous siliceous sand</i> H2 . Swale soils: <i>rubbly calcareous loam</i> A4-A5 . With limited to common areas of <i>shallow calcareous loam on calcrete</i> B2 , and <i>gradational calcareous clay loam</i> A6 in slight lows. UQI – elevated plains overlain with 30-60% sand dunes (swale slopes 0-1.5%).
UUJ	5.7	Dunefields with >30% mallee sand dunes Dune soils: <i>calcareous siliceous sand</i> H2 . Swale soils: <i>shallow calcareous loam on calcrete</i> B2 . With minor to common areas of <i>rubbly calcareous loam</i> A4-A5 . UUJ – gently undulating to level plains overlain with 30-60% low sand dunes and sandy rises (swale slopes 0-1%).



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

- H2** *calcareous siliceous sand* [Arenaceous Hypercalcic-Supracalcic-Lithocalcic-Petrocalcic Calcarosol]
Moderate depth to deep light brown calcareous siliceous sand. These soils are often highly calcareous, with high levels of fine carbonate particles (up to 50%). They often have rubbly subsoils, and are often underlain by calcreted sediments at moderate depth or more. Where severe depletion of sand has occurred following numerous wind erosion events, hard carbonate rubble can be exposed at the surface. Found on longitudinal mallee sand dunes and sandy rises. These can grade into non calcareous siliceous sands, especially in the very south/southeast of the system.
- A4-A5** (*rubbly*) *calcareous loams* [Regolithic Hypercalcic-Lithocalcic Calcarosol]
Grey brown calcareous loam and sandy loam, or sometimes loamy sand, grading to clay loamy and loamy subsoil with abundant fine carbonate. These profiles can contain significant amounts of hard carbonate rubble. Profiles are occasionally underlain by calcrete at moderate depth. Some are underlain by clayey sediments within 120 cm of the surface (soil **A5**). Found on undulating land, slopes, and rises; with sandy variants found on some lower dune slopes or adjacent to sand dunes.

Minor soils:

- B2** *shallow calcareous loam on calcrete* [Petrocalcic Calcarosol]
Grey brown calcareous loams, overlying calcrete at shallow depth. Subsoils can be a heavily textured as clay loam. Surface soils can be sandy when adjacent to sand dunes. Found on level and gently undulating land, and on some slopes.
- A6** *gradational calcareous clay loam* [Pedal Hypercalcic-Supracalcic Calcarosol]
Grey brown to red brown calcareous loams and clay loams grading to brown or reddish clay with abundant fine carbonate, and sometimes with some hard carbonate rubble. Typically found in slight lows.

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

