

MON Moonta Land System

Plains, low lying plains, and depressions

Area: 67.1 km²

Landscape: Plains, low lying plains and depressions. The lowest lying depressions are highly saline. The system is underlain by bedrock at depth, but this is typically overlain by red blocky clay (Hindmarsh Clay). The clayey sediments in turn are mostly overlain by calcreted calcareous sediments (Bakara-Ripon Calcrete and ancient Bridgewater Formation) and younger calcareous loess (Woorinen Formation). These wind deposited sediments are often relatively thin: less than a metre thick in places. The calcareous loess often includes hard carbonate rubble. The system is largely a drainage area, with many ill-defined drainage ways. Drainage flows toward Moonta Bay. The majority of modern drainage occurs as subsurface flow. A few isolated mallee sand dunes (Molineaux Sand) occur.

Annual rainfall: 350 – 385 mm average

Main soils:

- A5-A4** *rubbly calcareous loams*
- B2** *shallow calcareous loam on calcrete*
- A6** *gradational calcareous clay loam*

Main features: The system is mostly arable. The most common soils are moderate depth rubbly calcareous loams, and shallow calcareous loams on calcrete. Saline seepage occurs in this low lying land system, with some depressions being highly saline, and many soils having raised subsoil or lower subsoil salinity levels. Soils 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. 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. Toxic accumulations of boron and sodium occur in many subsoils or substrates. Toxic elements especially occur where a clayey subsoil or substrate restricts drainage. Clayey subsoils and substrates also limit the internal drainage of many soils; this can result in waterlogged conditions within soils, especially in lower lying areas. The powdery calcareous loamy surfaces present in most soils have potential for wind erosion.

Soil Landscape Unit summary: Moonta Land System (MON)

SLU	% of area	Main features
QBA QBK	6.3 2.9	Low lying plains dominated by shallow calcreted soils and deeper soils formed in calcareous loess. Main soils: <i>shallow calcareous loam on calcrete</i> B2 , and extensive areas of <i>rubbly calcareous loam</i> A5-A4 . Minor areas of <i>gradational calcareous clay loam</i> A6 may occur in slight lows. QBA – relatively low lying plain (slopes 0-1%). QBK – low lying plain (slopes <1%).
QIK QIO	6.3 4.8	Low lying plains and depressions dominated by shallow calcreted soils. Main soils: <i>shallow calcareous loam on calcrete</i> B2 . With limited to common areas of <i>gradational calcareous clay loam</i> A6 .



		QIK – relatively low lying plains (slopes 0-1%). QIO – depression (slopes <1%).
QKO	9.1	Depression dominated by shallow calcreted soils. Main soils: <i>shallow calcareous loam on calcrete</i> B2 . With limited to common areas of <i>calcareous loam</i> A5-A4 . Minor areas of <i>gradational calcareous clay loam</i> A6 may occur in slight lows. QKO – depression (slopes <1%).
SdA	59.2	Plains dominated by soils formed in rubbly calcareous loess. Main soils: <i>rubbly calcareous loam</i> A5-A4 . With limited to common areas of <i>gradational calcareous clay loam</i> A6 , and limited to common areas of <i>shallow calcareous loam on calcrete</i> B2 . SdA – gently undulating plains (slopes 0-1.5%). Ill-defined drainage depressions, mostly with soils formed in clayey sediments, cross this land unit. These have mostly northwest and west flowing courses in the north and centre of this unit, and mostly southwest, west and north flowing courses in the south of the unit.
SkA	7.1	Plains dominated by soils formed in rubbly calcareous loess. Main soils: <i>rubbly calcareous loam</i> A5-A4 . With limited to common areas of <i>calcareous siliceous sand</i> H2 on sandy rises. SkA – relatively low lying plains with 10-30% sandy rises (swale slopes 0-1.5%). Significant wind erosion has occurred since settlement and clearing, with a broadening and lowering of dunes.
U-C U-D	0.4 0.3	Mallee sand dunes. Main soils: <i>calcareous siliceous sand</i> H2 . U-C – mallee dune. U-D – low mallee sand dune.
ZB- ZC-	1.5 0.4	Saline depressions. Main soils: <i>saline soil</i> N2 ZB- – salinised depressions: ranging from marginally saline land to salt lake depressions. ZC- – very highly saline depressions.
-Q- -S-	1.6 0.1	Areas disturbed by mining activities: -Q- – mine areas with some mine spoil heaps. -S- – mine spoil heap.

Detailed soil profile descriptions:

Main soils:

A5-A4 *rubbly calcareous loams* [Regolithic Lithocalcic-Supracalcic Calcarosol]

Grey brown calcareous loamy or occasionally sandy topsoil, grading to clay loamy subsoil with abundant fine carbonate. These profiles contain significant amounts of hard carbonate rubble, and are often very rubbly. Profiles can be underlain by calcrete at moderate depth. Most profiles are underlain by clayey sediments (Hindmarsh Clay) within 120 cm of the surface (soil **A5**). Often found on slight highs in slightly undulating land.

B2 *shallow calcareous loam on calcrete* [Petrocalcic Calcarosol]

Grey brown to brown calcareous loam, sandy loam, or loamy sand, with loamy or clay loamy subsoils, and calcrete at shallow depth. Found on level and gently undulating land.

A6 *gradational calcareous clay loam* [Pedal Hypercalcic-Supracalcic Calcarosol]

Grey brown to red brown calcareous clay loams and loams grading to reddish clay with abundant fine carbonate. This is underlain by red blocky clay (Hindmarsh Clay proper). Profiles often contain some hard carbonate rubble. Typically found in slight lows, including ill-defined drainage ways, on slightly undulating land.

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

