WIN Winninowie Land System

Gentle slopes and plains abutting the western escarpment of the Flinders Ranges between Nectar Brook and Port Augusta

Area: 169.6 km^2

Annual rainfall: 300 - 375 mm average

Geology: Stony clay, sandy clay and silty sediments derived from the ranges to the east. The stone content (mainly quartzite and less commonly siltstone, depending on the source rock type) decreases in a westerly direction. Greatest concentrations are in and adjacent to modern streams. There are minor areas of drift sand superimposed on the sediments.

Topography: Gently to very gently inclined outwash fans extending from the foot of the South Flinders Ranges towards Spencer Gulf. Slopes are generally in the range 1-10%, steepest adjacent to the ranges and becoming gentler towards the west. In minor areas, slopes abutting the ranges are up to 18%. All slopes have a more or less westerly aspect. There is a large number of watercourses emanating from the ranges, with spacings of 100 to 700 m. These converge into several larger watercourses including Gum, Catninga, Woolundunga, Spear, Horrocks, Tattiwa, Winninowie and Cudnia Creeks and Nectar Brook. However, these dissipate on the gentler slopes and rarely reach the sea. All watercourses are characterized by boulder beds.

Elevation: 10 m where the land system is less than a kilometre from the sea in the south near Yatala Harbour, to 350 m on upper slopes near Catninga in the north east.

Relief: The slopes in east - west section are even, despite a marked decrease in grade from east to west. Maximum relief in north - south section is 10 m, the maximum depth of dissection of the watercourses.

Soils: The soils are all deep, with loamy surfaces. Slightly more than half are non calcareous, with red clayey subsoils; the rest are calcareous throughout with gradational loamy profiles.

Main soils

A3	Calcareous loam
D4	Loam over red crumbly clay
D2	Loam over red clay

Minor soils

M3	Deep stony sandy loam
A4	Rubbly calcareous loam
M2	Gradational clay loam

Main features: The use of this land is primarily limited by low rainfall. The soils are generally deep, well drained and fertile, but the rainfall and the adverse effects of past cropping (gully and sheet erosion and scalding) and natural soil salt levels restrict productive potential.

Soil Landscape Unit summary: 14 Soil Landscape Units (SLUs) mapped in the Winninowie Land System

SLU	% of area	Main features #
JMA JMH JMI JMV JMW JMk JMl JMm	6.9 7.5 1.3 9.9 2.4 4.5 19.3 0.9	Outwash fans and flats formed on stony clayey sediments: **JMA** Very gentle slopes of 1-2% with up to 10% surface quartzite. Gentle slopes of 4-10% with eroded watercourses and 10-50% surface stone. **JMI** Footslopes of 8-18%, commonly with eroded watercourses, and up to 50% surface quartzite coverage. **JMV** Gentle slopes of 2-4% with up to 20% surface quartzite and sporadic scalding over 5-10% of the land. **JMW** Slopes of 3-5% with sporadic scalding and 10-20% surface quartzite. **JMk** Slopes of 2% with 10-20% of the land affected by scalding. **JMl** Slopes of 2-4% with often eroding watercourses and up to 20% surface quartzite. **JMm** Slopes of 5-12% with badly eroded watercourses and 20-50% surface quartzite. 10-20% of the land is scalded. Main soils: loam over red crumbly clay - **D4** (E) with loam over red clay - **D2** (L), calcareous loam - **A3** (L), deep stony sandy loam - **M3** (L) near creeks and gradational clay loam - **M2** (M). The use of this land is primarily limited by low rainfall. The soils are generally deep, well drained and fertile, but the rainfall and the adverse effects of past cropping (gully and sheet erosion and scalding) and natural soil salt levels restrict productive potential.
KFG KFH KFI KFU KFl KFm	6.5 8.1 0.8 12.5 12.4 6.9	Outwash fans and flats formed on medium to fine grained alluvium, with up to 20% surface siltstone and quartzite: **KFG** Slopes of 2-4% with eroded watercourses. Up to 5% of the land is scalded. **KFH** Slopes of 4-10% with eroded watercourses. Up to 5% of the land is scalded. **KFI** Slopes of 10-18% with eroded watercourses. Up to 5% of the land is scalded. **KFU** Slopes of 1-2%. 10-20% of the land is scalded. **KFl** Slopes of 1.5-3% with eroded watercourses. 5-10% of the land is scalded. **KFm** Slopes of 4-8% with eroded watercourses. 5-10% of the land is scalded. Main soils: calcareous loam - **A3** (E), with loam over red crumbly clay - **D4** (C), rubbly calcareous loam - **A4** (L), gradational clay loam - **M2** (L) and deep stony sandy loam - **M3** (M) near creeks. The use of this land is primarily limited by low rainfall. The soils are generally deep, well drained and fertile, but the rainfall and the adverse effects of past cropping (gully and sheet erosion and scalding) and natural soil salt levels restrict productive potential.

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

(D) Dominant in extent (>90% of SLU)
(V) Very extensive in extent (60–90% of SLU)
(E) Extensive in extent (30–60% of SLU)
(C) Common in extent (20–30% of SLU)
(L) Limited in extent (10–20% of SLU)
(M) Minor in extent (<10% of SLU)

Detailed soil profile descriptions:

A3 Calcareous loam (Regolithic, Calcic / Supracalcic, Calcarosol)
Calcareous stony (quartzite) loam becoming more clayey, calcareous (soft or rubbly) and stony with depth. 30% of profiles are derived from siltstones and contain siltstone fragments and become silty with depth.

A4 Rubbly calcareous loam (Regolithic, Supracalcic Calcarosol)
Calcareous loam over rubbly carbonate at about 10 - 20 cm, grading to a highly calcareous clay loam.

D2 Loam over red clay (Calcic, Red Chromosol)
Medium thickness hard setting gravelly loam abruptly overlying a red well structured stony clay with soft carbonate shallower than 50 cm on alluvium.

D4 Loam over red crumbly clay (Calcic / Hypocalcic, Pedaric, Red Sodosol)
Thin crusting gravelly sandy loam to loam over a red very friable (saline) stony clay with soft carbonate shallower than 50 cm on alluvium.

M2 Gradational clay loam (Calcic, Red Dermosol)
Medium thickness stony clay loam to clay grading to a well structured red stony clay, calcareous with depth.

M3 Deep stony sandy loam (Basic, Regolithic, Brown-Orthic / Red-Orthic Tenosol)
Thick very stony sandy loam becoming slightly more clayey with depth.

Further information: DEWNR Soil and Land Program