

WIU Wiluna Land System

The land system consists of two separate rises. These rises are southerly extensions of the central highland area

Area: 15.3 km²

Landscape: The two rises, with constituent crests and slopes, are underlain by bedrock highs. The resistant underlying bedrock is largely pre-Adelaidean Proterozoic age metamorphosed rock (eg gneisses). The very north of this system joins the central highlands area, but otherwise lower lying areas surround. Soils are underlain by clayey sediments, or clay loamy to light clayey saprolitic sediments, which have formed from underlying weathered rock. Vague gilgai microrelief occurs on some slopes.

Accessions of wind-deposited carbonate dust have infused into profiles. Numerous profiles are calcareous throughout; and many include some hard carbonate fragments. Wind-deposited calcareous loess (Woorinen Formation) overlies older sediments in some places, especially on the southern rise.

Annual rainfall: 420 - 460 mm average

Main soils:

A6	<i>gradational calcareous clay loam</i>
C4-D3	<i>clay loam to loam over clay</i>
A5-A4	<i>calcareous loam</i>

Main features: The land system is mostly arable. The most common soils are clay loams to light clays overlying clayey subsoil: many of these are calcareous throughout. There are also significant areas of moderate depth to deep calcareous loams, especially on the southern rise. Many soils contain some hard carbonate fragments, and some contain small amounts of fine quartz fragments.

Most subsoils are dispersive, resulting in restricted internal drainage and the potential for waterlogged conditions. Many soils have raised subsoil salinity levels: probably due to an accumulation of cyclic salt.

Water erosion is a potential problem on sloping land.

Toxic accumulations of boron were not found to be a significant issue. However, the lower subsoils of many profiles have high sodium levels, and the bases of profiles can have raised boron levels.

Calcareous soils restrict 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. This is particularly true for those soils with highly calcareous surfaces.



Soil Landscape Unit summary: Wiluna Land System (WIU)

SLU	% of area	Main features
IOB	36.7	Land dominated by calcareous soils formed in or on clayey sediments. Main soils: <i>gradational calcareous clay loam</i> A6 grading to <i>clay loam to loam over red clay</i> D3-C4 . And extensive areas of <i>calcareous loam</i> A5-A4 . IOB – rise: crest and slopes (slopes 0-3.5%). Vague gilgai microrelief is evident on a few lower slopes.
IVB	48.7	Land dominated by calcareous soils formed in clayey to saprolitic sediments. Main soils: <i>gradational calcareous clay loam</i> A6 grading to <i>clay loam over red clay</i> C4-D3 . With minor to limited areas of <i>calcareous loam</i> A5-A4 . IVB – slopes and rises (slopes 0-2.5%). Vague gilgai microrelief is evident on some lower slopes. IVC – slopes (1-4%). IVZ – summit surface (slopes 0-1%).
IVC	12.8	
IVZ	1.7	

Detailed soil profile descriptions:

- A6** *gradational calcareous clay loam* [Pedal Hypercalcic-Supracalcic Calcarosol]
Calcareous grey brown to brown medium thickness to thin clay loamy, light clayey or loamy topsoil overlying brown, red brown, to yellow brown clayey subsoil with abundant fine carbonate. Fine carbonate content increases with depth. This is underlain by clayey sediments, or light clayey to clay loamy saprolitic sediments. Profiles can contain some hard carbonate fragments, and sometimes small amounts of fine quartz fragments. Subsoils are usually dispersive, and surface soils are sometimes dispersive. It is likely that some profiles have vertic (reactive) subsoils.
- C4-D3** *clay loam to loam over clay* [Sodic-Effervescent Hypercalcic-Supracalcic Red-Brown Dermosol-Chromosol]
Red brown to brown thin to medium thickness clay loamy, light clayey or loamy topsoil overlying red to brown clayey subsoil grading to clay with abundant fine carbonate. This is underlain by clayey sediments, or light clayey to clay loamy saprolitic sediments. Profiles can contain some hard carbonate fragments, and sometimes small amounts of fine quartz fragments. Topsoils can be slightly calcareous when the profile is gradational (grading to soil **A6**), and slightly to highly calcareous when the profile is texture contrast. Subsoils are typically dispersive, and topsoils are occasionally dispersive. It is likely that some profiles have vertic (reactive) subsoils.
- A5-A4** *calcareous loam* [Regolith Hypercalcic-Supracalcic Calcarosol]
Grey brown to brown medium thickness calcareous loamy to clay loamy topsoil grading to clay loamy or light clayey subsoil with abundant fine carbonate. Lower subsoils are dispersive and strongly alkaline; upper subsoils can also be dispersive. Profiles typically contain some hard carbonate rubble, and are usually underlain by clayey sediments (soil **A5**). Especially found on the rise which forms the southern part of the system.

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

