

**WYN**

# Wynarka Land System

(Based on the description by A. K. McCord in "A Description of Land in the Southern Mallee of South Australia")

Undulating rises and flats in the Wynarka area

**Area:** 308.8 km<sup>2</sup>

**Annual rainfall:** 325 - 375 mm average

**Geology:** The entire area is underlain by Tertiary Loxton or Parilla Sands, veneered in places by Blanchetown Clay equivalent. These sediments were apparently mantled by calcrete which formed a sheet of rock across the landscape. This sheet has subsequently been partly eroded and / or dissolved away, leaving isolated benches of calcrete, separated by flats underlain by the older Tertiary sediments.

More recently there have been aeolian accessions of:

- Highly calcareous medium textured Woorinen Formation sediments (parts of which have been hardened into rubbly forms), and
- Molineaux Sand. These two materials are sporadically distributed over the pre-existing landscape.

**Topography:** The landscape is dominated by broad NW - SE trending ridges (partly calcrete capped), separated by broad gently undulating flats. Low to moderate rounded sandhills with a general east - west orientation overlie both rises and flats.

**Elevation:** 40 - 120 m

**Relief:** 5 - 40 m

**Soils:** Shallow calcareous sandy loams and non calcareous sandy loams are typical soils of the system.

#### Main soils

**B2** Shallow calcareous sandy loam - slopes and flats

**C1** Gradational red sandy loam - slopes and flats

**H2** Deep sand - sandhills

#### Minor soils

**D2** Sandy loam over red clay - flats

**G1** Sand over sandy clay loam - flats and slopes

**Main features:** The Wynarka Land System is undulating land comprising several distinctive components. The most widespread features are broad undulating rises with moderately deep rubbly calcareous soils with variable limitations to cropping due to shallow soil depth. Significant areas are non arable due to excessive surface stone and shallowness of soils. Between the rises are broad flats characterized by moderately deep to deep fertile loamy texture contrast or gradational soils. Overlying both flats and rises are dunefields of low to moderate rounded east - west oriented sandhills. Soils are deep but infertile, water repellent and prone to wind erosion.



**Soil Landscape Unit summary:** 8 Soil Landscape Units (SLUs) mapped in the Wynarka Land System:

SLU	% of area	Main features #
HoA HpA	10.1 4.4	<p>Flats underlain by Blanchetown Clay or Parilla/Loxton Sand, with up to 30% low sandhills.</p> <p><b>HoA</b> Flats with less than 10% sandhills</p> <p><b>HpA</b> Flats with 10-30% sandhills.</p> <p>Main soils: <u>sandy loam over red clay</u> - <b>D2</b> (E), <u>gradational red sandy loam</u> - <b>C1</b> (E), <u>shallow calcareous sandy loam</u> - <b>B2</b> (M) and <u>sand over sandy clay loam</u> - <b>G1</b> (M), with <u>deep sand</u> - <b>H2</b> (M-C) on sandhills. The D2 soils are moderately deep and naturally fertile with few limitations to crop growth. Subsoil boron and salinity may restrict root zone depth. The C1 soils have shallower effective profile depths but otherwise are favourable cropping soils. The sandhills have deep soils which are infertile, water repellent and prone to wind erosion.</p>
QMB	7.3	Very stony slopes and flats. Sheet calcrete near the surface and extensive surface calcrete fragments are widespread. Main soil is <u>shallow calcareous sandy loam</u> - <b>B2</b> . These areas are semi arable due to extensive surface stone and shallow stony soils. Significant areas are uncleared.
QiB QkB	28.9 31.2	<p>Slopes, undulating rises and flats underlain by rubbly or sheet calcrete. There is extensive surface stone. Low sandhills cover up to 30% of the land surface.</p> <p><b>QiB</b> Slopes with less than 10% sandhills.</p> <p><b>QkB</b> Slopes with 10-30% sandhills.</p> <p>Main soils: <u>shallow calcareous sandy loam</u> - <b>B2</b> (E) and <u>gradational red sandy loam</u> - <b>C1</b> (E), with <u>deep sand</u> - <b>H2</b> (M-C) on sandhills. The calcareous soils are shallow with low water holding capacities. Surface stone makes much of the land difficult to work. The gradational soils are deeper and although rubbly at depth, are not associated with so much surface stone. The sandhills have deep soils which are infertile, water repellent and prone to wind erosion.</p>
Uec Uee Uef	0.6 7.1 10.4	<p>Dunefields of low to moderate east-west sand hills draped over the slopes of the main landscape.</p> <p><b>Uec</b> 60-90% low sandhills.</p> <p><b>Uee</b> 30-60% moderate sandhills.</p> <p><b>Uef</b> 30-60% low sandhills.</p> <p>Main soils: <u>deep sand</u> - <b>H2</b> (E-V) on sandhills, with <u>shallow calcareous sandy loam</u> - <b>B2</b> (E-L), <u>gradational red sandy loam</u> - <b>C1</b> (E-L) and <u>sand over sandy clay loam</u> - <b>G1</b> (M) on slopes and swales between the sandhills. The sandy soils are infertile, water repellent and prone to wind erosion. The moderate sandhills are difficult to manage, and may need specialized soil conservation management to control drift. The soils between the sandhills vary from shallow stony B2 soils with moderate to severe limitations due to restricted water holding capacity, to moderately deep, relatively fertile C1 soils with no productivity limitations other than some reduction in water holding capacity due to rubble content.</p>

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

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



**Detailed soil profile descriptions:**

- B2** Shallow calcareous sandy loam (Petrocalcic, Lithocalcic Calcarosol)  
Calcareous rubbly sandy loam grading to a calcareous light sandy clay loam over rubbly calcrete at about 20 cm. Rubble content decreases with depth and grades through a thick layer of very highly calcareous pale brown sandy clay loam to Blanchetown Clay below 150 cm.
- C1** Gradational red sandy loam (Lithocalcic, Red Kandosol)  
Medium thickness sandy loam grading to a red light sandy clay loam over rubbly Class III C carbonate at about 20 cm, becoming less rubbly with depth and grading to Loxton or Parilla Sand at about 100 cm.
- D2** Sandy loam over red clay (Calcic, Red Chromosol)  
Medium thickness sandy loam abruptly overlying a red sandy clay, calcareous from about 30 cm, and grading to Blanchetown Clay or clayey Parilla/Loxton Sand at 80 cm.
- G1** Sand over sandy clay loam (Sodic, Lithocalcic, Brown Chromosol)  
Thick loose sand to loamy sand with a bleached sub-surface layer, abruptly overlying a coarsely structured yellow to brown heavy sandy loam to sandy clay loam, calcareous with depth
- H2** Deep sand (Basic, Arenic / Argic, Brown-Orthic Tenosol)  
Greyish brown loose sand, becoming yellow with depth over orange lamellae (thin layers) of clayey sand or sandy loam from about 65 cm, continuing below 150 cm.

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

