

WRB Warrenben Land System

A relatively low lying land system, with gently undulating to level plains, and some depressions and rises. Jumbled dune topography is common. Soils are mostly very shallow to shallow carbonate sands.

Area: 177.8 km²

Landscape: The land system consists of relatively low lying gently undulating to level plains, with some depressions and low rises. The land is completely overlain by calcrete and carbonate sand deposits. In recent geological times deep carbonate sands blanketed this area. Leaching of carbonate has led to the formation of a calcreted calcarenite core. Most areas have lost much of their cover of carbonate sand; exposing the calcrete core. Extensive areas are covered by low jumbled dunes: mostly calcreted; but some with deep sands. Soil depth is mostly very shallow to shallow. Consequently the majority of the system is non arable and is covered with perennial native vegetation.

Annual rainfall: 440 - 485 mm average

Main soils: **B1** *Shallow carbonate sand on calcrete*

Minor soils: **H1** *Carbonate sand*
B1-B2 *Shallow highly calcareous to calcareous loam on calcrete*

Main features: Soils are mostly very shallow to shallow over calcrete, with textures of fine loamy sand to light fine sandy loam. Patches of deeper soil occur; mostly on dunes, on flats, or in depressions. Most soils are composed almost entirely of finely ground shell fragments. The main issues are the highly infertile nature of carbonate sand, stoniness and soil depth, soil salinity, wind erosion, and water repellence. High carbonate levels reduce the availability of phosphorus, manganese, zinc and iron. Regular applications of manganese are needed for productive agriculture. Copper is also commonly deficient but can be corrected by occasional applications.

Most soils are too stony and shallow for cropping. Most of the land system is covered by perennial native vegetation, so nature conservation is an important issue. Saline seepage occurs as raised subsoil salinity levels in many areas, or as marginal salinity in some depressions. Where cleared, these sandy soils need adequate vegetative cover to minimise the risk of wind erosion. Water repellence in surface soils can occur.



Soil Landscape Unit summary: Warrenben Land System (WRB)

In this land system report, soil landscape areas with a '1' as the fourth character of the label are deemed to be non arable. This may be due to deep sandy soils, stony soils, or such areas may just be covered with native vegetation.

SLU	% of area	Main features #
QFA1 QFK QFO1 QFP	5.0 3.1 0.3 0.05	Land with shallow to very shallow highly calcareous to carbonate dominant soil. Main soils: shallow to very shallow calcareous to highly calcareous carbonate dominant light fine sandy loam to loam on calcrete (soil B1-B2). QFA1 – non arable stony plains and low rises with very shallow soils (slopes 0-2.5%, 5r, 2a, 2-1s). QFK – arable to semi arable relatively low lying level plains with shallow soils (slopes <1%, 4r, 2a, 2-3s). QFO1 – non arable to semi arable to non arable stony low lying plains, mostly with very shallow soils (slopes <1%, 5-4r, 2-1a, 3-2s). QFP – semi arable low lying plains with saline seepage with shallow soils (slopes <1%, 4r, 2a, 3-4s ^o).
YaB1 YaC1 YaF1 YaL1 YaI1 YaO1 YaR1 YaU YaU1 YaUs	1.1 0.2 2.2 1.6 4.7 1.8 2.7 0.8 15.5 19.6	Land with very shallow to shallow carbonate dominant soil. Main soils: very shallow to shallow carbonate dominant light fine sandy loam to fine loamy sand on calcrete (soil B1). With minor to limited areas of moderate depth to deep <i>carbonate sand</i> (soil H1). YaB1 – non arable stony moderate height to low jumbled dune rises (slopes 0-3%, 1-2e, 5-4r, 3-2a, 2-1s, 1-2y). YaC1 – non arable stony low jumbled dune rises (slopes 0-2%, 5-4r, 3-2a, 2-1s). YaF1 – non arable stony low rises and slopes with 60-90% low dune rises (slopes 0-2.5%, 5-4r, 3-2a, 2-1s, 1-2y). YaL1 – non arable stony plains and low rises, with some very low dunes rises in places (slopes 0-1.5%, 5r, 2-3a, 2-1s). YaI1 – non arable to semi arable stony plains and low rises with 30-60% low to very low dune rises (slopes 0-1.5%, 5-4r, 3-2a, 2-1s). YaO1 – non arable stony plains with 60-90% low dune rises (slopes 0-1.5%, 5-4r, 2-3a, 2-3s). YaR1 – non arable stony plains with 30-60% low to very low dune rises (slopes 0-1%, 5-4r, 2-3a, 2-3s). YaU – mostly arable level to gently undulating plains with some very low dune rises in places (slopes 0-1%, 4-5r, 2-3a, 2-3s). YaU1 – non arable stony relatively low lying plains with some very low dune rises in places (slopes 0-1%, 5-4r, 2-3a, 2-3s). YaUs – non arable, semi arable, and some arable stony relatively low lying plains with some very low dune rises in places; often with large areas bare of perennial vegetation (slopes 0-1%, 5-4r, 2-3a, 3-2s): includes some B1-B2 soil. Small sinkholes are relatively common.
YcL YcL1 YcU YcW	0.4 0.8 0.2 0.05	Land with shallow, and some deeper, carbonate dominant soil, and some shallow highly calcareous soil. Main soils: shallow carbonate dominant light fine sandy loam to fine loamy sand on calcrete (soil B1). With areas of moderate depth to deep <i>carbonate sand</i> (soil H1), mostly on dune rises or in some low lying areas. Minor to common areas of shallow highly calcareous light fine sandy loam to loam on calcrete can occur (soil B1-B2). YcL – mostly arable gently undulating plains with some low dune rises (slopes 0-1.5%, 4-3r, 3-2a, 2-1s). YcL1 – non arable stony gently undulating plains with some low dune rises (slopes 0-2%, 5-4-3r, 3-2a, 2-1s). YcU – mostly arable relatively low lying plains with some very low dune rises (slopes <1%, 4-3r, 3-2a, 2-3s). YcW – depression with some saline seepage (slopes <1%, 2w, 4-3r, 2a, 3s).
YdL YdU YdU1 YdUs YdF1 YdI1 Ydg Ydg1	0.1 0.4 9.4 7.0 5.2 5.3 0.2 2.8	Land with shallow, and some deeper, carbonate dominant soil. Main soils: shallow carbonate dominant fine loamy to light fine sandy loam on calcrete (soil B1). With areas of moderate depth to deep <i>carbonate sand</i> (soil H1), mostly on dune rises or in some low lying areas. YdL – semi arable to arable plains and low rises (slopes 0-1%, 4r, 2-3a, 2-1s). YdU – semi arable to arable relatively low lying plains (slopes <1%, 4r, 2-3a, 2-3s). YdU1 – non arable to semi arable relatively low lying plains with some very low dune rises in places (slopes <1%, 4-5r, 2-3a, 2-3s).



Ydp1	0.5	<p>YdUs – semi arable, arable, and non arable low lying plains (slopes <1%, 4-5r, 2a, 3-2s).</p> <p>YdF1 – non arable plains to low rises overlain with 60-90% low dune rises (slopes 0-2%, 4-5r, 3-4a, 2-1s, 1-2y).</p> <p>YdII – non arable plains with 30-60% low dune rises (slopes 0-2%, 4-5r, 3-2a, 2-1s).</p> <p>Ydg – semi arable low lying plains with saline seepage and some marginally saline to saline patches (slopes <1%, 4r, 2-3a, 3-4s*).</p> <p>Ydg1 – non arable low lying plains with some very low to low dune rises, and saline seepage, with marginally saline to saline patches (slopes <1%, 5-4-3r, 3-2a, 3-4s*).</p> <p>Ydp1 – non arable rise (slopes 1-3.5%, 2-1e, 4-5r, 3-2a, 1-2s, 2-1y).</p>
YAC1	3.3	<p>Land with moderate depth to deep carbonate dominant soil.</p> <p>Main soils: deep to moderate depth <i>carbonate sand</i> (soil H1). And minor to limited areas of shallow to very shallow <i>carbonate sand</i> (soil B1).</p> <p>YAC1 – non arable low jumbled dune rise (slopes 0-3%, 2-1r, 4-5a, 1-2s).</p>
YEU	3.5	Land with shallow, moderate depth, and deep carbonate dominant soil.
YEU _s	1.6	Main soils: moderate depth to deep <i>carbonate sand</i> (soil H1). And shallow to very shallow <i>carbonate sand</i> (soil B1).
YEX1	0.6	<p>YEU – arable, semi arable, and non arable undulating plains with low dune rises (slopes 0-2%, 3-4-5r, 3-4a, 2-3s).</p> <p>YEU_s – arable to non arable low lying plains with some saline seepage (slopes <1%, 3-4-5r, 2-3a, 3-2s).</p> <p>YEX1 – non arable depressions with marginal salinity (slopes <1%, 3-4-5r, 2a, 4-5s).</p>

Classes in the 'Soil Landscape Unit summary' table (eg. 2-1e, 3w, 2y, etc) describe the predominant soil and land conditions, and their range, found in Soil Landscape Units. The number '1' reflects minimal limitation, while increasing numbers reflect increasing limitation. Letters correspond to the type of attribute:

a - wind erosion e - water erosion f - flooding g - gullyng
r - surface rockiness s - salinity w - waterlogging y - exposure

Detailed soil profile descriptions:

Main soils:

B1 *shallow carbonate sand on calcrete* [Petrocalcic Shelly Calcarosol]

Loose to powdery, grey brown fine loamy sand to fine sandy loam, or occasionally loam, overlying calcreted calcarenite at shallow or very shallow depth. The non organic fraction is almost entirely composed of finely divided shell fragments. The majority of these soils are too stony and shallow to be cropped. These soils are often water repellent. Found on plains, relict jumbled dunes, rises, and depressions.

Minor soils:

H1 *carbonate sand* [Shelly Calcarosol]

Loose to powdery, grey brown loamy sand to light fine sandy loam, dominantly composed of finely divided shell fragments, overlying calcreted calcarenite at moderate depth or more. Grey organic stained topsoils overlie light coloured subsoils (pale brown to very pale brown). These soils are commonly water repellent. Found on low jumbled dunes, flats, and depressions.

B1-B2 *shallow highly calcareous to calcareous loam on calcrete* [Petrocalcic Supravescant-Hypervescent Calcarosol]

Very shallow to shallow brown to grey brown calcareous loam to light fine sandy loam on calcrete. These soils can be dominated by carbonate or siliceous particles, but have a significant component of siliceous particles. Surface soils often have weak to moderate granular structure. Mostly found in the northern part of the system on low stony rises (mostly non arable very shallow soils on relict low dunes) and flats (mostly arable shallow soils).

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

