

# CAK Carrickalinga Land System

Coastal flats and low sandy rises in the Carrickalinga - Lady Bay area

**Area:** 7.7 km<sup>2</sup>

**Annual rainfall:** 535 – 575 mm average

**Geology:** The land is underlain by alluvial sandy clays and clays derived from the basement rock ranges which flank the eastern side of the system. Abutting the ranges and superimposed on the alluvial sediments are drift sand banks, a metre or more deep. There is a relict deposit of glacial valley sediments in the north. This is an outlier of material as for the Yankalilla Land System.

**Topography:** The landscape is a coastal plain with a gentle slope from the ranges on the eastern side to the sea on the western side. A band of low coastal sandhills lies between the plains and the sea. Gently inclined sand banks lie along the eastern side of the system adjacent to the ranges. Two major water courses, the Bungala River and Carrickalinga Creek cut across the sand banks and plains as they flow out of the ranges to the sea.

**Elevation:** 0 m at the coast, to 100 m on the rising ground formed on relict glacial valley deposits.

**Relief:** Up to 50 m, but generally less than 20 m

**Soils:** The soils of the flats are deep with mostly texture contrast profiles. They have sandy to sandy loam surfaces and clayey subsoils which vary from well to poorly structured. Deep gradational coarse to medium textured soils are sub dominant. Sandy soils sometimes over a metre deep are characteristic of the sandy areas.

#### Main soils

**H2** Deep sand  
**D2** Sandy loam over red clay  
**F2** Loamy sand over dispersive brown clay  
**M1** Deep loamy sand

#### Minor soils

**M2** Gradational dark clay loam

**Main features:** The Carrickalinga Land System is a flat to gently undulating coastal plain. Apart from a small area of moderately steep low hilly land (more typical of the Yankalilla Land System), the land is flat to gently undulating. The predominant land forms are alluvial flats and outwash fans. Characteristic soils are sandy loam to sand texture contrast types with clayey subsoils. The loamier types are fertile and well drained, with potential for irrigated crops, but the sandier forms tend to have dispersive subsoils, and are less fertile. Irrigation potential is poor. Deep medium to coarse textured soils are subdominant. The heavier forms are fertile but imperfectly drained in places. A quarter of the area is occupied by deep sands on gently undulating land. Although poor agricultural soils, they are well drained and are suitable for irrigation.



**Soil Landscape Unit summary:** 6 Soil Landscape Units (SLUs) mapped in the Carrickalinga Land System:

SLU	% of area	Main features #
HGD	8.8	<p>Undulating rises and rolling low hills formed on sandstones and sandy clays of old glacial valleys.</p> <p><b>HGD</b> Gently rolling low hills to 80 m high with slopes of 10-20%. There is a variety of soils with surfaces ranging from thick sands, through soft loamy sands or sandy loams, to firm loams.</p> <p>Main soils: <u>Sandy loam over alkaline - neutral brown clay - F1a</u> (C) } on sandy clays  <u>Sandy loam over acid - neutral brown clay - F1b</u> (L) }  <u>Hard sandy loam over red clay - D3</u> (C) } on sandstones  <u>Thick bleached sand over sandy clay loam - G2</u> (C) }  <u>Dark gradational loam over thick carbonate - C5</u> (L) }  <u>Red brown loam over hard carbonate - B4</u> (M) }  <u>Loam over brown clay - F1c</u> (M) on narrow flats between the rising ground</p> <p>These soils are each substantially different from one another. The F1 soils are marginally fertile, prone to acidification, and susceptible to waterlogging due to perching of water on the clayey subsoil. The D3 soils are poorly structured, although moderately fertile. Profiles are relatively shallow, so available water holding capacity is likely to be limiting. They are highly erodible by water. The deep sandy soils (G2) are infertile although well drained. They are susceptible to acidification, water repellence and wind erosion. The dark loams are naturally fertile, although somewhat shallow. All are suitable for irrigation, but there is a moderate to high risk of drainage problems on the sandy loams.</p>
JRA JRB JRe	33.2 9.8 8.0	<p>Flats, gentle slopes and drainage depressions formed on sandy clay to clay alluvial sediments.</p> <p><b>JRA</b> Flats with slopes of less than 1.5%.  <b>JRB</b> Very gently sloping outwash fans with slopes of 1.5-3%.  <b>JRe</b> Flats adjacent to the Bungala River and Carrickalinga Creek.</p> <p>The soils are mainly sandy to sandy loam texture contrast types, with deep uniform or gradational sandy loams to clay loams.</p> <p>Main soils: <u>Sandy loam over red clay - D2</u> (E)  <u>Loamy sand over dispersive brown clay - F2</u> (E)  <u>Deep loamy sand - M1</u> (L)  <u>Gradational dark clay loam - M2</u> (L)</p> <p>These soils are all deep but have variable characteristics. The D2 and M2 soils are naturally fertile, and are moderately well (D2) to imperfectly (M2) drained. The F2 and M1 soils are less fertile, but whereas the M1 soils are well drained, the F2 soils with dispersive clay subsoils tend to perch water and are imperfectly drained. The better drained soils are suitable for irrigated uses, but the F2 and M2 soils are at risk of waterlogging and salt build up.</p>
URK	25.3	<p>Undulating accumulations of brown siliceous drift sands overlying calcarenites. The land is almost flat on the western (seaward) side, but slopes increase to about 10% abutting the hills. The soils have very thick sandy surfaces, usually overlying a more clayey subsoil with soft to hard carbonates at depth.</p> <p>Main soil: <u>Deep sand - H2</u> (D).</p> <p>The sands are deep, with moderate water holding capacity, and rapid drainage. Their limitations are low natural fertility, wind erosion susceptibility and possibly water repellence. However, they are well suited to irrigation, although excessive water application may lead to water table development.</p>
WEW	14.9	Complex of low coastal dunes and beaches.

## # 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:**

- D2** Sandy loam over red clay (Calcic, Red Chromosol)  
Thick hard sandy loam over a well structured red clay, with weak soft carbonate accumulations from 80 cm, grading to alluvial clay.
- F2** Loamy sand over dispersive brown clay (Calcic, Brown Sodosol)  
Thick hard loamy sand to sandy loam with a bleached A2 layer, abruptly overlying a yellowish brown, red and grey mottled dispersive heavy clay, continuing below 100 cm.
- H2** Deep sand (Regolithic / Petrocalcic, Brown-Orthic Tenosol)  
More than 60 cm and commonly more than 100 cm soft to loose brown sand with a paler or bleached A2 layer over a red sandy loam to sandy clay loam, underlain by a weak calcareous pan, or soft sand.
- M1** Deep loamy sand (Regolithic, Brown-Orthic Tenosol)  
Thick to very thick loamy sand to sandy loam with variable quartz and other gravels.
- M2** Gradational dark clay loam (Eutrophic, Black Dermosol)  
Medium thickness crumbly black clay loam, grading to a light clay, overlying a black and grey heavy clay with strong coarse prismatic structure and variable soft calcareous segregations.

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

