

YDH Yandiah Land System

Range of low hills in the Yandiah - Murray Town area

- Area:** 103.7 km²
- Annual rainfall:** 425 - 500 mm average
- Geology:** Tillites (Appila Formation), quartzitic slates and shales (Kadlunga Formation) and reefs of Gilbert Range Quartzite with associated locally derived alluvium.
- Topography:** Undulating to rolling range of low hills with slopes from 4% on the gentler grades to 25% on some steeper ridges. There are two well defined, gently sloping valleys within the land system, associated with the north west flowing Pine Creek and an un-named creek flowing south to join the Rocky River at Wirrabara. Other watercourses draining the slopes occupy narrow drainage depressions. There is significant surface quartzite stone throughout, particularly on steeper slopes where there are also sporadic linear quartzite outcrops.
- Elevation:** 330 m on the lower slopes in the north west, to 537 m on the eastern side
- Relief:** Maximum relief is 100 m, but 30-50 m is more typical
- Soils:** The soils are characteristically clay loamy with heavy, coarsely structured red clayey subsoils. On sloping ground, there are shallower loamy soils over basement rock.

Main soils

Soils formed over basement rock on rises

- D1** Loam over red clay on rock
D7 Clay loam over dispersive red clay on rock
C2 Shallow gradational loam

Minor soils

Soils formed over basement rock on rises

- A2** Shallow calcareous loam
B3 Shallow stony loam on calcrete
L1 Shallow stony loam

Soils formed over alluvium on lower slopes and flats

- D3** Clay loam over dispersive red clay
D2 Clay loam over well structured red clay
C4 Gradational clay loam
E2 Red cracking clay

- Main features:** The Yandiah Land System is undulating to moderately steep land characterized by loamy to clay loamy texture contrast soils with extensive quartzite stone cover. There are some steeper non arable slopes, but most land is arable. The soils are moderately deep and inherently fertile, but poor structure is a widespread limitation, resulting in workability and emergence problems. Low infiltration, high runoff and associated erosion risk need to be controlled. Stone cover is likely to cause excessive implement wear.



Soil Landscape Unit summary: 11 Soil Landscape Units (SLUs) mapped in the Yandiah Land System

SLU	% of area	Main features #
AAC	5.2	Rocky low hills and hills with slopes of 15-30% formed on fine grained rocks. Main soils: <u>loam over red clay on rock</u> - D1 (E) and <u>shallow stony loam</u> - L1 (E), with <u>shallow gradational loam</u> - C2 (C) and <u>shallow calcareous loam</u> - A2 (L). The hills are non arable due to the roughness of the terrain, moderate slopes and shallow stony soils. Rocky outcrops limit accessibility in places. Runoff is rapid and exposure is high, so a significant proportion of rainfall does not infiltrate the soil. However, areas of deeper soils are potentially productive for grazing.
ABB ABC	2.7 2.2	Low rocky ridges formed on predominantly fine grained rocks with prominent quartzite reefs occupying 10-20% of the land surface. ABB Ridges with slopes of 10-25% and relief to 30 m. ABC Higher rocky ridges (to 80 m) with slopes of 15-30%. Main soils: <u>loam over red clay on rock</u> - D1 (E), with <u>shallow stony loam</u> - L1 (C), <u>shallow gradational loam</u> - C2 (C) and stony <u>shallow calcareous loam</u> - A2 (L). These ridges are non arable and largely inaccessible to machinery due to moderate slopes and rocky reefs. The soils are mainly shallow and stony with marginal waterholding capacities and fertility.
DBD	4.5	Ridges with slopes of 10-25% and relief of 30-50 m formed on fine grained rocks, with 10-20% quartzite reefs and 10-20% surface stone. Main soils: <u>loam over red clay on rock</u> - D1 (E) and <u>clay loam over dispersive red clay on rock</u> - D7 (E), with <u>shallow gradational loam</u> - C2 (L), <u>shallow calcareous loam</u> - A2 (L) and <u>shallow stony loam</u> - L1 (M). These slopes are sufficiently steep and stony that regular cropping is not feasible. Apart from the erosion potential and difficulty in working much of the land, poor soil structure limits productivity by causing excessive runoff restricting waterholding capacity of the soil and satisfactory root growth.
DLC DLD	47.2 15.7	Rises and low hills formed on quartzitic fine grained rocks. There is less than 5% rocky reefs and up to 20% surface quartzite stone. DLC Undulating low hills with slopes of 5-12% and relief of 25-40 m. DLD Rolling low hills with slopes of 10-25% and relief of 30-50 m. Main soils: <u>clay loam over dispersive red clay on rock</u> - D7 (E), with <u>loam over red clay on rock</u> - D1 (C), <u>shallow gradational loam</u> - C2 (L), <u>shallow calcareous loam</u> - A2 (L) and <u>shallow stony loam on calcrete</u> - B3 (M). Much of this land is arable with deep moderately fertile soils. However, poor soil structure (hard setting surface soil and dispersive clay subsoil) cause excessive runoff, increased erosion risk, restricted workability, temporary waterlogging and patchy emergence. An additional problem is the extensive coverage of quartzite stones which are highly abrasive. The potential for erosion is too great on steeper parts of this unit for cropping on a regular basis.
DXH	7.4	Complex of rising ground on basement rock and locally derived outwash sediments with overall slopes of 5-12%. There is 10-20% surface quartzite stone. Main soils: <u>clay loam over dispersive red clay on rock</u> - D7 (C), <u>loam over red clay on rock</u> - D1 (L) and <u>shallow gradational loam</u> - C2 (L) on rising ground, and <u>clay loam over dispersive red clay</u> - D3 (L), <u>clay loam over well structured red clay</u> - D2 (L), <u>gradational clay loam</u> - C4 (M) and <u>red cracking clay</u> - E2 (M) on outwash slopes. Most of this land is arable with deep moderately fertile soils. However, poor soil structure (hard setting surface soil and dispersive clay subsoil) causes excessive runoff, increased erosion risk, restricted workability, temporary waterlogging and patchy emergence. Surface quartzite stones are highly abrasive.
JAB JAC JAE JAJ	6.9 4.6 2.6 1.0	Outwash fans and flats formed on fine grained alluvium with up to 20% quartzite stone. JAB Lower slopes of 2-4%. JAC Lower slopes of 4-10%. JAE Drainage depressions/creek flats: 2-6% slopes and well defined partly eroded watercourses. JAJ Drainage depressions/creek flats: 2-7% slopes and well defined eroded watercourses. Main soils: <u>clay loam over dispersive red clay</u> - D3 (E), <u>clay loam over well structured red clay</u> - D2 (E), with <u>gradational clay loam</u> - C4 (C) and <u>red cracking clay</u> - E2 (L). This land has deep moderately fertile soils and is generally arable. However, poor soil structure (hard setting surface soil and dispersive clay subsoil) causes excessive runoff, increased erosion risk, restricted workability, temporary waterlogging and patchy emergence. Careful management is required to protect eroded watercourses which are common in this landscape. Surface quartzite stones are highly abrasive.



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:

- A2** Shallow calcareous loam (Paralithic, Calcic / Lithocalcic Calcarosol)
Calcareous stony loam grading to soft or rubbly carbonate, over weathering rock at less than 50 cm.
- B3** Shallow stony loam on calcrete (Petrocalcic, Leptic Tenosol / Rudosol)
Shallow stony loam over calcreted rock within 50 cm.
- C2** Shallow gradational loam (Calcic / Petrocalcic, Red Dermosol)
Medium thickness stony loam to clay loam grading to a well structured red clay with soft, rubbly or semi-hard carbonate within 50 cm, grading to weathering basement rock within 100 cm.
- C4** Gradational clay loam (Calcic, Red Dermosol)
Medium thickness hard clay loam to clay with 10 - 20% quartzite stones grading to a coarsely structured red clay with soft carbonate within 50 cm over stony alluvium.
- D1** Loam over red clay on rock (Calcic, Red Chromosol)
Medium thickness stony sandy loam to clay loam overlying a well structured red clay, calcareous with depth grading to weathering siltstone or sandstone within 100 cm.
- D2** Clay loam over well structured red clay (Calcic, Red Chromosol)
Medium to thick clay loam (less commonly sandy loam) with 20-50% quartzite stones over a well structured red clay with soft carbonate at depth, grading to stony alluvium.
- D3** Clay loam over dispersive red clay (Calcic, Red Sodosol)
Medium to thick clay loam (less commonly sandy loam) with 20-50% quartzite stones over a coarsely structured dispersive red clay with soft carbonate at depth, grading to stony alluvium.
- D7** Clay loam over dispersive red clay on rock (Calcic, Red Sodosol)
Medium thickness clay loam (less commonly sandy loam) with 20 - 50% quartzite stones abruptly overlying a coarsely structured dispersive red clay with soft carbonate at depth, grading to rock at 50 - 100 cm.
- E2** Red cracking clay (Epipedal, Red Vertosol)
Medium thickness well structured red clay (seasonally cracking) grading to a coarsely structured red heavy clay, calcareous from about 50 cm. Variable quartzite stone throughout.
- L1** Shallow stony loam (Lithic, Leptic Tenosol / Rudosol)
Shallow stony loam over hard rock within 50 cm.

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

