

# EBA Eba Land System

Extensive depression west and south west of Morgan

**Area:** 213.7 km<sup>2</sup>

**Annual rainfall:** 230 – 260 mm average

**Geology:** The land system is underlain by Tertiary age limestone, largely covered by clayey sediments, similar to Blanchetown Clay. The clay is partially capped by calcrete. The calcrete originally would have been in extensive sheet form, but dissolution and /or erosion has removed much of the capping, with the result that most of the land surface down the western side is now formed on the older clay sediments. Remnant calcretes occur as "islands". On the eastern side of the land system is a tract of weakly dissected calcrete with only minor exposure of underlying clay, which may be absent altogether.

**Topography:** The Eba Land System is an extensive solution depression formed by the removal of the calcrete capping of an old land surface. There is a gradual fall from north to south, with the system ending in a large closed depression. The bulk of the western and central parts of the System comprise low lying flats and depressions, with remnant calcretes occurring as benches up to 10 m above the flats. Down the eastern side of the System is a very gently undulating calcrete plain, intermediate in elevation between the depressions and the remnant benches. There is a variable cover of surface stone, mostly calcrete, but some minor quartzite. Heaviest stone cover is on rises, with little or none in flats and depressions.

**Elevation:** 60 m in the north to 40 m in the south

**Relief:** Maximum local relief is 10 m

**Soils:** The typical soils of the system are calcareous throughout, with sandy loam to clay loam surfaces. The main difference between them is the nature of the carbonate layer, which varies from soft to rubbly to sheet calcrete. Minor soils are deep loamy gradational and texture contrast types over clayey sediments.

#### Main soils

**A4/A5** Rubbly calcareous loam  
**A5/A6** Calcareous loam  
**B2** Calcareous loam over sheet calcrete

#### Minor soils

**C3** Gradational red loam  
**D4** Loam over friable red clay

**Main features:** The Eba Land System is flat to very gently undulating with predominantly calcareous soils. About half of the land is flats and depressions with mostly deep non rubbly soils over clayey sediments. The other half is rises with mainly shallow rubbly soils. All soils are alkaline to the surface and strongly alkaline at depth. The over-riding limitation to land use is the low rainfall. Rangeland grazing is the predominant land use, although substantial areas (especially the stony rises) have either not been cleared of mallee scrub, or have regenerated.



**Soil Landscape Unit summary:** 5 Soil Landscape Units (SLUs) mapped in the Eba Land System:

SLU	% of area	Main features #
IAA	38.5	<p>Drainage depressions and flats incised into an old calcreted land surface and underlain by clayey sediments. The sediments contain minor to moderate quartzite gravel, but there is little or no surface stone. There is sporadic scalding throughout.</p> <p>Main soils: <u>calcareous loam over clay</u> - <b>A5/A6</b> (V), with <u>gradational red loam</u> - <b>C3</b> (L) and <u>loam over friable red clay</u> - <b>D4</b> (L). These soils are deep, well structured and moderately fertile, although alkaline throughout, and strongly alkaline with depth. Low rainfall is the major limitation to productivity.</p>
QHA	19.3	<p>Flat topped benches standing up to 10 m above surrounding flats. These are remnants of an old calcreted land surface, relatively unaffected by dissolution or erosion. There is 20-50% surface calcrete stone.</p> <p>Main soils: <u>calcareous loam over sheet rock</u> - <b>B2</b> (V) with <u>rubbly calcareous sandy loam</u> - <b>A4</b> (L). This land has very shallow stony soils and retains substantial native vegetation. It is used for sparse grazing.</p>
QLA QLB	7.6 0.1	<p>Remnants of an old calcreted land surface which has been dissected by dissolution and / or erosion to produce a mosaic of remnant calcrete benches and depressions.</p> <p><b>QLA</b> Bench / depression ratio is about 3:1. <b>QLB</b> Bench / depression ratio is about 1:1. Short slopes from depression to bench are up to 3%. Relief is usually less than 5 m.</p> <p>Main soils: <u>calcareous loam over sheet rock</u> - <b>B2</b> (E) and <u>rubbly calcareous sandy loam</u> - <b>A4/A5</b> (E) on benches with <u>calcareous loam over clay</u> - <b>A5/A6</b> (C) in depressions. The soils are mostly very shallow with limited water holding capacity and high pH. Soils in the depressions tend to be deeper. However, low rainfall is the most limiting factor - grazing of native shrubs or grasses is the main land use.</p>
QMA	34.5	<p>Low lying calcrete plain with slopes of less than 1% and relief of less than 5 m. There is little evidence in this landscape of the heavy clay which underlies the rest of the Land System. Calcrete stone covers 20-50% of the surface and wombat burrows are common.</p> <p>Main soils: <u>calcareous loam over sheet rock</u> - <b>B2</b> (V) and <u>rubbly calcareous sandy loam</u> - <b>A4/A5</b> (C). The soils are too shallow and stony, and the rainfall too low for any agricultural uses other than low intensity grazing of native shrubs and grasses.</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:***Main soils*

- A4/A5** Rubbly calcareous sandy loam (Supracalcic / Lithocalcic Calcarosol)  
10 - 20 cm calcareous sandy loam to loam over a rubbly Class III B or III C carbonate layer, over a very highly calcareous light brown sandy clay loam (A4 profile) grading to reddish clay within 100 cm in 30% of profiles (A5 profile). Extensive on rises, limited on flats.
- A5/A6** Calcareous loam over clay (Hypercalcic / Supracalcic Calcarosol)  
10 - 20 cm calcareous loam to clay loam becoming more clayey and calcareous with depth with abundant soft and rubbly carbonate from 20 cm grading to a coarsely structured reddish clay from 60 cm. Variable quartzite gravel occurs throughout. Extensive on flats.
- B2** Calcareous loam over sheet rock (Petrocalcic Calcarosol)  
10 - 20 cm calcareous sandy loam to loam grading to rubbly sandy loam to sandy clay loam abruptly overlying sheet calcrete at 30 cm. Extensive on rises.

*Minor soils*

- C3** Gradational red loam (Calcic, Red Dermosol)  
10-20 cm loam to clay loam grading to a well structured red clay, calcareous from 30 cm, grading to a reddish clay from 60 cm. Surface soil may be calcareous from carbonate dusting. Limited on flats.
- D4** Loam over friable red clay (Calcic, Pedaric, Red Sodosol)  
5 - 20 cm sandy loam to loam abruptly overlying a well structured friable red clay, calcareous from 30 cm, grading to a reddish clay from 55 cm. The clay may contain variable quartzite gravel or gypsum crystals. The subsoil clay is friable although sodic (Pedaric) due to moderate salt content. Surface soil may be calcareous from carbonate dusting. Limited on flats.

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

