

# LOB Lower Broughton Land System

Plains on the lower reaches of the Broughton River, overlain by parallel low sand hills

**Area:** 68.5 km<sup>2</sup>

**Annual rainfall** 330 – 355 mm average

**Geology:** Medium to fine grained alluvial sediments of an old Broughton River flood plain, overlain by medium to coarse grained calcareous materials of the Woorinen Formation and Molineaux Sands.

**Topography:** Dunefield superimposed on an old flood plain of the Broughton River immediately east of where it enters coastal marshes. The dunes are low (less than 5 m) and cover 30 - 60% of the land surface. They are parallel, although discontinuous and have a marked north west - south east orientation. The swales or flats between the dunes are variable, depending on their elevation. The slightly higher flats are dry with lighter textured soils; the lower lying flats have a saline water table close to the surface and have heavier soils, are saline, and in some areas are wet for extended periods. The land system also includes a large samphire flat at the mouth of the river, at the point where it enters its tidal channel.

**Elevation:** 5 m at the western extremity, to 20 m at the highest point in the east

**Relief:** The only relief is provided by the sand ridges which are up to 5 m high

**Soils:** Deep sands and calcareous sandy loams to clay loams are predominant, with cracking clays and loamy red texture contrast soils. Wet saline soils occur on saline depressions.

#### Main soils

**H2** Deep sand - dune crests and upper slopes

**A4** Calcareous sandy loam - dune slopes and higher level flats

**C1** Gradational sandy loam - higher level flats

#### Minor soils

**A6** Calcareous clay loam - marginally saline flats

**N2** Wet saline soil - samphire flats

**E3/E2** Brown / red cracking clay - marginally saline flats

**D4** Loam over friable red - saline flats

**Main features:** The dunes and sandy rises are infertile, have low water holding capacity and are susceptible to wind erosion; but they are well drained and not saline. The higher level flats and lower slopes of rises represent the best land with more clayey and fertile soils. They are easily worked and are sandy enough to benefit from light rain. The lower lying flats are increasingly affected by saline groundwater tables. The soils are generally loamy or clayey and fertile, but salinity restricts crop growth - much of this land is only suitable for cropping in seasons with strong early breaks so that surface salt is leached. The saline flats are too salty for any cropping and are only suitable for light grazing of native shrubs. The samphire flats are periodically inundated, extremely saline and of very little agricultural use.



**Soil Landscape Unit summary:** 3 Soil Landscape Units (SLUs) mapped in the Lower Broughton Land System:

SLU	% of area	Main features #
UPQ UPX	82.5 10.7	Dunefield formed on old alluvial sediments. <b>UPQ</b> 30-60% low dunes with marginally saline swales. <b>UPX</b> 30-60% low dunes with saline swales. Main soils: <u>deep sand</u> - <b>H2</b> (E) on sand hills and <u>calcareous sandy loam</u> - <b>A4</b> (C), with <u>gradational sandy loam</u> - <b>C1</b> (L), <u>calcareous clay loam</u> - <b>A6</b> (M), <u>brown / red cracking clay</u> - <b>E3/E2</b> (M) and <u>loam over friable red clay</u> - <b>D4</b> (M) in flats and swales. The dunes and sandy rises are infertile, have low water holding capacity and are susceptible to wind erosion; but they are well drained and not saline. The higher level flats and lower slopes of rises represent the best land with more clayey and fertile soils. They are easily worked and are sandy enough to benefit from light rain. The lower lying flats are increasingly affected by saline groundwater tables. The soils are generally loamy or clayey and fertile, but salinity restricts crop growth - much of this land is only suitable for cropping in seasons with strong early breaks so that surface salt is leached.
ZB-	6.8	Highly saline flats with mainly <u>wet saline soils</u> - <b>N2</b> (D). The samphire flats are periodically inundated, extremely saline and of very little agricultural use. They are only suitable for light grazing of native shrubs.

# 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:

- A4** Calcareous sandy loam (Regolithic, Hypercalcic / Lithocalcic Calcarosol)  
Calcareous loamy sand to sandy loam grading to a highly calcareous sandy clay loam to sandy clay with soft Class III A or rubbly Class III B or III C carbonate segregations at moderate depth.
- A6** Calcareous clay loam (Regolithic / Pedal, Hypercalcic Calcarosol)  
Calcareous clay loam grading to a very highly calcareous clay with abundant soft carbonate from about 40 cm.
- C1** Gradational sandy loam (Hypercalcic, Red Kandosol)  
Medium thickness sandy loam to sandy clay loam over a weakly structured red brown sandy clay loam to sandy light clay, calcareous from shallow depth.
- D4** Loam over friable red clay (Calcic, Pedaric, Red Sodosol)  
Loam to clay loam sharply overlying a red friable clay with soft carbonate from about 40 cm and soft gypsum at depth.
- E3/E2** Brown / red cracking clay (Self-mulching, Brown / Red Vertosol)  
Calcareous self-mulching brown seasonally cracking clay, more calcareous with depth.
- H2** Deep sand (Hypocalcic Calcarosol)  
Very thick reddish calcareous sand grading to a clayey sand with minor soft carbonate at depth.
- N2** Wet saline soil (Hypersalic Hydrosol)  
Highly calcareous grey clay loam grading to an olive and grey mottled clay loam to clay with gypsum crystals and minor soft carbonate. Water table is usually between 50 and 100 cm.

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

