

BLS Black Springs Land System

Porter Lagoon basin

Area: 48.3 km²

Annual rainfall: 460 – 535 mm average

Geology: The Porter Lagoon basin is an area of sedimentary infill derived from the basement rock hills and rises which surround it. The sediments are mainly fine grained. Because the basin is internally draining, salts have accumulated in the sediments. These salts are mobilized by rising ground waters, causing saline seepage where water tables are within a metre or two of the surface.

Topography: The Black Springs Land System represents the valley floor and adjacent outwash fans of the Porter Lagoon basin, but excludes the Hanson flats which are mapped separately. A small area on the eastern side of the Land System drains eastwards through Stony Gap, but most of the runoff water flows into Porter Lagoon. Slopes range from 8% on the fans on the eastern side to flat on the valley floor. Most of the surrounding basement rock rises and hills are mapped as the Porter Hills Land System - the two Systems are intricately mixed. Isolated basement rock rises protruding through the valley floor sediments are also mapped as Porter Hills.

Elevation: 510 m in the south east to 440 m at the lagoon bank.

Relief: Maximum vertical distance from watercourse to upper edge of fan is 40 m.

Soils: Deep loamy to clayey soils are predominant. Subsoils vary from well structured clays, to massive or dispersive sandy clays to clays.

Main soils

D3 Hard loam over poorly structured red clay

E2/E3 Red / brown cracking clay

D2 Hard loam over red clay

M2 Structured gradational loam

Minor soils

M4 Massive gradational loam

C3/C4 (Hard) gradational clay loam

A6 Calcareous clay loam

Main features: The Black Springs Land System is characterized by flat to gently sloping terrain with deep, generally fertile soils. The main limitations to productivity are significant areas of saline seepage and associated waterlogging, and poor soil structure. Improvement of surface soil structure through modifications to surface management and use of gypsum will improve the productivity of most soils, and to some extent alleviate the salinity problem through greater water use efficiency. However, salt and waterlogging tolerant species are also needed.



Soil Landscape Unit summary: 10 Soil Landscape Units (SLUs) mapped in the Black Springs Land System:

SLU	% of area	Main features #
JCA JCB JCC	13.5 26.2 6.2	<p>Outwash fans formed on mixed outwash sediments from adjacent ranges.</p> <p>JCA Slopes of 1% or less with minor water course erosion. JCB Slopes of 1-3% with minor water course erosion. JCC Slopes of 3-8% with minor water course erosion.</p> <p>Main soils: <u>hard loam over poorly structured red clay</u> - D3 (E) and <u>hard loam over red clay</u> - D2 (E) with <u>red / brown cracking clay</u> - E2/E3 (L), <u>structured gradational loam</u> - M2 (L) and <u>massive gradational loam</u> - M4 (L). These soils are deep and inherently fertile, but generally poorly structured. Except for the red cracking clays, surface soils seal and set hard, creating workability problems and unfavourable emergence/early growth conditions. Waterlogging is also likely, even on higher ground. However, the land is potentially productive if surface structure problems are overcome. Salinity and acidity should be monitored on this land.</p>
KTA KTB KTK KTL KTP KTF	8.6 5.6 2.0 10.2 7.9 10.7	<p>Flats and fans formed on clayey valley fill.</p> <p>KTA Flats with slopes of less than 1% KTB Fans with slopes of 1-3%. KTK Flats with slopes of less than 1% and sporadic saline seepage. KTL Fans with slopes of 1-3% and sporadic saline seepage. KTP Marginally saline flats with slopes of less than 1%. KTF Marginally saline flats with slopes of less than 1% and eroded water courses.</p> <p>Main soils: <u>red / brown cracking clay</u> - E2/E3 (E), and <u>structured gradational loam</u> - M2 (E), with <u>hard loam over poorly structured red clay</u> - D3 (L), <u>hard loam over red clay</u> - D2 (L), <u>(hard) gradational clay loam</u> - C3/C4 (M), and <u>calcareous clay loam</u> - A6 (M). Land characterized by deep fertile soils, but productivity potential is restricted by salinity over significant areas, and associated waterlogging. Increased water use in the basin may alleviate peripheral saline seepage, but unlikely to have a major impact on salinity levels in the lowest lying areas, where salt and waterlogging tolerant species need to be used. Elsewhere, the land is potentially productive, but soil salinity should be monitored.</p>
ZF-	9.1	Porter Lagoon

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:

- E2/E3** Red / brown cracking clay (Red / Brown Vertosol)
Medium thickness blocky to self-mulching red brown to grey brown light clay grading to a coarse blocky red to dark brown or grey brown heavy clay with soft carbonate at variable depth.
- D2** Hard loam over red clay (Calcic, Red Chromosol)
Medium thickness hard grey brown to red sandy loam to clay loam abruptly overlying a red well structured clay, usually calcareous with depth.
- D3** Hard loam over red poorly structured clay (Calcic, Red Sodosol)
Medium thickness hard grey brown to red sandy loam to clay loam abruptly overlying a red coarsely structured and dispersive clay, usually calcareous with depth.
- M4** Massive gradational loam (Brown / Red Kandosol)
Thick brown sandy loam to clay loam grading to a weakly structured brown or red clay.
- M2** Structured gradational loam (Red Dermosol)
Medium thickness red brown loam to clay loam grading to a well structured red clay.
- C3/C4** (Hard) gradational clay loam (Hypercalcic, Red Dermosol)
Medium thickness hard clay loam to light clay grading to a well structured and friable (**C3**) or coarsely structured and hard (**C4**) red clay, calcareous with depth.
- A6** Calcareous clay loam (Pedal, Hypercalcic Calcarosol)
Calcareous clay loam to light clay becoming more clayey and calcareous with depth.

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

