

LAN Landseer Land System

Ranges extending from the Hundred of Duffield to the Hundred of Conmurra

- Area:** 474.0 km²
- Landscape:** Complex of calcarenite ranges, including Reedy Creek Range and West Avenue Range, and corridor plains with irregular flats and swamps, which are progressively more saline from south to north.
- Annual rainfall:** 565 – 665 mm average
- Geology:** Calcreted calcarenite of the Pleistocene Bridgewater Formation on ridges, with Pleistocene lagoonal deposits of the Padthaway Formation on flats. The System is formed on an ancient coastal dune comprising mixed calcareous and siliceous sand which has hardened to calcarenite (Bridgewater Formation). There are extensive areas of Molineaux Sand overlying the range. These tend to be more widespread on the eastern (leeward) side. Small depressions within the range are geologically variable and may be infilled with locally derived outwash sediments, drift sand or swamp sediments. Sporadic granitic intrusions underlie the range and outcrop in places.
- Topography:** The Landseer Land System is an undulating to rolling range of rounded rises and low hills with a NNW - SSE orientation. It includes the Reedy Creek and West Avenue Ranges. They have an overall relief of 40 m and slopes of 3 - 20%. Isolated closed depressions are scattered throughout the range. These are swampy in places. A feature of the topography is the common occurrence of abrupt stony knobs. Most of the land is non arable.
- Elevation:** 10 - 50 m
- Relief:** Up to 40 m
- Main soils:**
- | | |
|--|---------------------------------------|
| H3 (21%) Bleached siliceous sand | (sandy Bleached Tenosol) |
| B7 (19%) Shallow sand over clay on calcrete | (sandy Petrocalcic Sodosol-Chromosol) |
| I1 (17%) Highly leached sand | (Aeric Podosol) |
| RR (14%) Bare calcrete rock | |
- Minor soils:**
- | | |
|---|--|
| B3 (9%) Shallow sandy loam on calcrete | (Petrocalcic Red Tenosol-Kandosol-Rudosol) |
| B8 (5%) Shallow bleached sand on calcrete | (sandy Petrocalcic Rudosol-Tenosol) |
| B6 (4%) Shallow loam over red-brown clay on calcrete | (Petrocalcic Red Chromosol-Kandosol) |
- Summary:** The Landseer Land System is characterized by low hills with predominantly well drained moderately shallow to shallow sand over clay soils mixed with shallow stony soils and deep sands. Cropping is limited by low fertility, rocky reefs and the uneven land surface, as well as high soil variability. Depressions are minor overall, but have better productive potential, although swampiness and salinity are increasing.
- The deep sands (H3, I1), which occupy 38% of the area, are typically found as dunes overlying the calcarenite range. These soils have high wind erodibility, are often water repellent, excessively drained and have low inherent fertility. Where they occur in sheltered situations can be utilised for growing deep-rooted perennials, and acid loving plants and species, which require good drainage. Shallow soils over calcrete occupy most of the rest of the land system. These generally have low moisture holding capacity and may offer only



minimal root depth potential unless ameliorative measures are undertaken. Swales and swamps tend to be moderately to highly saline.

Soil Landscape Unit summary: 53 Soil Landscape Units (SLUs) mapped in the Landseer Land System

| SLU | % of area | Component | Main soils | Prop# | Notes |
|------|-----------|-----------|------------|-------|--|
| M-B | 1.9 | Rise | B3B8RR | D | M-B Gently undulating rises, with very shallow red and brown loamy sand, occasionally over thin red clay, on calcrete, bare calcrete, or thin bleached sand on calcrete; 10-30% deeper sandy loam over red clay on calcrete or deep bleached siliceous sand. |
| M-BA | 0.9 | Low rise | B3RR H3 | D | |
| | | Swale | G3B7B8 | M | |
| M-C | 9.9 | Rise | RRB3 | D | M-BA Gently undulating low rises with dune core topography with shallow sand, occasionally over thin red clay, on calcrete, or bare calcrete; 10-30% deeper loamy sand over red clay on calcareted calcarenite. <10% swales with deep sand over brown clay, shallow bleached sand over calcrete, or over poorly structured brown clay on calcrete. M-C Undulating rises with shallow sandy loam, occasionally over thin red clay, on calcareted calcarenite, or bare calcrete; 10-30% deeper sandy loam over red clay on calcareted calcarenite. M-g Plains with soils as for M-C ; 10-20% wet swales with non-saline to moderately saline, loam over dark clay. Main soils: Rises and plains: <u>Shallow sandy loam on calcrete - B3</u> , <u>Shallow sand on calcrete - B8</u> and <u>Rock or exposed calcrete - RR</u> . Swales: <u>Thick sand over clay - G3</u> , <u>Sand over friable brown clay on calcrete - B7</u> and <u>Shallow sand on calcrete - B8</u> or <u>Wet clay loam - N3</u> and <u>Wet saline clay loam - N2c</u> . |
| M-g | 0.3 | Plain | B3RR | V | |
| | | Swale | N3N2 | L | |
| MAB | 0.5 | Rise | B3RR | D | MAB Gently undulating calcareted former beach ridges with stony, very shallow red and brown loam, occasionally over red clay, on calcrete. >50% bare calcrete. |
| MABA | 1.2 | Low rise | B3RR | D | |
| | | Swale | G3B7B8 | M | |
| MAC | 0.03 | Rise | B3RR | D | MABA As above with low dune core ridges; 10- 30% deep bleached sand. <10% swales with deep sand over brown clay, or shallow bleached sand on poorly structured brown clay on calcrete, or bleached sand on calcrete; 10-30% deep highly leached sand. MAC Undulating rises, with soils as for MAB . Main soils: Rises: <u>Shallow sandy loam on calcrete - B3</u> and <u>Rock or exposed calcrete - RR</u> . Swales: <u>Thick sand over clay - G3</u> , <u>Sand over friable brown clay on calcrete - B7</u> and <u>Shallow sand on calcrete - B8</u> . |
| MCA | 0.2 | Plain | B6B3B8 | D | Plains with shallow sand, often bleached, or over red clay, on calcrete; 10-30% shallow dark clay loam over dark clay on calcrete in low, wetter parts. Main soils: <u>Shallow sandy loam over red-brown clay on calcrete - B6</u> , <u>Shallow sandy loam on calcrete - B3</u> and <u>Shallow sand on calcrete - B8</u> . |



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| MEC | 1.4 | Sand rise | H3G2 | E | <p>MEC Undulating stony rises with shallow sandy loam, occasionally on red clay, on calcreted calcarenite; 10-30% either deeper with deeper red clay or shallower bleached sand on calcreted calcarenite</p> <p>MEU Gently undulating plains with shallow loamy sand, over thin red sandy clay loam on calcreted calcarenite, or shallow bleached sand over calcrete, or bare calcrete. 10-20% swales with shallow loam over red clay on calcrete, or wet non-saline soils in low parts.</p> <p>Main soils: Sandy rises: <u>Bleached siliceous sand - H3</u> and <u>Bleached sand over sandy clay loam - G2</u>. Stony rises: <u>Shallow sandy loam on calcrete - B3</u> and <u>Shallow calcareous loam on calcrete - B2</u>. Swales: <u>Shallow sandy loam over red-brown clay on calcrete - B6</u>, <u>Sand over friable brown clay on calcrete - B7</u>; <u>Wet clay loam - N3</u>.</p> |
| | | Stony rise | B3B2 | E | |
| | | Swale | B6B7 | L | |
| MEU | 0.2 | Gently undulating plain | B3B8RR | V | |
| | | Swale | B6N3 | L | |
| MHA | 0.3 | Plain | H3G3 | D | <p>MHA Plains with deep bleached sand, or deep sand over brown clay.</p> |
| MHAA | 0.1 | Plain | H3G3 | V | <p>MHAA Plains with low dune core topography, and soils as for MHA, but also 10-30% deep siliceous, highly leached sand.</p> |
| | | Sandy rise | H3G2 | C | <p>MHB Gently sloping dunes on ranges with deep, bleached siliceous sand. Co-dominant stony ranges have shallow sand, often bleached, on calcreted calcarenite, or bare calcrete; 10-30% deeper sand over red clay on calcrete.</p> |
| MHB | 5.9 | Dune | H3 | E | <p>MHC Undulating slopes on dune ranges with deep bleached, to highly leached sand, or shallow sand over poorly structured brown clay on calcreted calcarenite; 10-30% bare calcrete, shallow sand over thin red sandy clay on calcrete, or deep sand over organic pans. 10-20% stony ranges with shallow sand, often bleached, on calcreted calcarenite, or bare calcrete; 10-30% deeper sandy loam over red clay, on calcrete. <10% swales with deep sand over brown clay, shallow sand over brown clay on calcrete, or shallow bleached sand on calcrete.</p> |
| | | Stony range | B3RRB8 | E | |
| MHC | 51.2 | Dune range | H3I1B7 | V | |
| | | Stony range | B3RRB8 | L | |
| | | Swale | G3B7B8 | M | |
| MHD | 0.1 | Slope | B3B8RR | D | <p>MHD Rolling range slopes with soils as for MHC stony range component.</p> |
| MHE | 0.2 | Undulating swale | H3B6B8 | D | <p>MHE Undulating swales with deep bleached loamy sand, shallow sandy loam over red clay on calcreted calcarenite, or shallow bleached sand on calcrete.</p> |
| MHh | 0.6 | Rise | B3H3 | E | <p>MHh Gently sloping rises with shallow sand over thin reddish sandy clay on calcreted calcarenite, or deep bleached sand; 10-30% deep, bleached sand over red-brown sandy clay, shallow sand over poorly structured brown clay on calcrete or shallow sandy loam over red clay on calcrete. Co-dominant flats with shallow sand over poorly structured brown clay, or deep gradational calcareous loam over calcareous grey clay, on marl.</p> |
| | | Flat | G4A7 | E | |
| MHI | 13.2 | Dune range | H3I1B7 | D | <p>MHI Undulating dune ranges with deep bleached to highly leached acidic sand, or shallow sand over poorly structured brown clay on calcreted calcarenite; 10-30% bare calcrete, shallow sandy loam on calcrete, or deep sand with impeded drainage on organic pans. <10% swales with deep sand over brown clay, shallow sand over brown clay on calcrete, or shallow bleached sand on calcrete.</p> |
| | | Swale | G3B7B8 | M | |
| MHn | 0.1 | Sand rise | H3G2 | V | <p>MHn Gently undulating sand rises with deep bleached sand, or bleached sand over red-brown sandy clay. 10-20% stony rises with shallow sandy loam over calcrete, or clay loam over red clay on calcrete; 10-30% sandy loam over poorly structured brown clay on calcrete, or calcareous sandy loam on calcareous, or bleached sand</p> |
| | | Stony rise | B3B4 | L | |
| | | Swamp | N2 | M | |
| MHt | 0.1 | Sand rise | H3G2 | V | |
| | | Swamp | N2 | C | |



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|-------------------|--------------------|--|------|---|--|
| | | Stony rise | B3B4 | L | <p>over red-brown sandy clay. <10% swamps with wet, moderately highly to very highly saline sand over dark brown clay.</p> <p>MHt Gently undulating sand rises, swamps and stony rises with soils as for MHn. 20-30% saline swamps. 10-20% stony rises.</p> <p>MHV Gently undulating sand rises with deep bleached siliceous sand. 20-30% stony rises with soils as for MHn. 10-20% swales with deep sand over brown clay.</p> <p>Main soils:</p> <p>Plains: <u>Bleached siliceous sand</u> - H3 and <u>Thick sand over clay</u> - G3.</p> <p>Dunes: <u>Bleached siliceous sand</u> - H3.</p> <p>Stony ranges and slopes: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Rock or exposed calcrete</u> - RR and <u>Shallow sand on calcrete</u> - B8.</p> <p>Dune ranges: <u>Bleached siliceous sand</u> - H3, <u>Highly leached sand</u> - I1 and <u>Sand over friable brown clay on calcrete</u> - B7.</p> <p>Sandy rises: <u>Bleached siliceous sand</u> - H3 and <u>Bleached sand over sandy clay loam</u> - G2.</p> <p>Swales: <u>Thick sand over clay</u> - G3, <u>Bleached siliceous sand</u> - H3, <u>Shallow sandy loam over red-brown clay on calcrete</u> - B6, <u>Sand over friable brown clay on calcrete</u> - B7 and <u>Shallow sand on calcrete</u> - B8.</p> <p>Stony rises: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Shallow red loam on limestone</u> - B4.</p> <p>Swamps: <u>Wet saline clay loam</u> - N2c.</p> <p>Non-stony rises: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Bleached siliceous sand</u> - H3</p> <p>Flats: <u>Sand over yellow and brown clay</u> - G4; <u>Calcareous loam</u> - A7.</p> |
| MHV | 0.4 | Sand rise | H3 | V | |
| | | Stony rise | B3B4 | C | |
| | | Swale | G3 | L | |
| MHC MHD MHh | 51.2 0.1 0.6 | <p>Range comprising undulating to rolling rises and low hills formed on calcreted calcarenite and overlain by siliceous sand. There is up to 40 m relief. Slopes vary from 3-10% and are up to 20% in places. There is variable surface calcrete, depending on presence of sand. 10-20% stone cover is common, with more in places. About 20% of the land surface is too rocky to have warranted clearing. Isolated depressions and flats within the range are underlain by limestone or clayey lagoonal sediments.</p> <p>MHC Main range.</p> <p>MHD Drainage depression incised through the range, linking the Minecrow and Ross flats.</p> <p>MHh Lower slope complex of about 50% calcarenite rises and 50% flats.</p> <p>Main soils: <u>deep bleached sand</u> - H3 (E) on sandy areas, with <u>sand over clay on calcrete</u> - B7a (C), <u>shallow stony sandy loam on calcrete</u> - B3/B2 (L) and <u>thick bleached sand on calcrete</u> - B8 (M) on stony areas. <u>Loamy sand over clay</u> - D1 (M) occurs sporadically on granite outcrops. <u>Loamy sand over brown sandy clay on calcrete</u> - B7b (M) and <u>calcareous loam</u> - A7 (M) occur on flats.</p> <p>Key properties:</p> <p>Drainage: Rapidly to well drained.</p> <p>Fertility: Very low on deep sands to moderately low on stony soils.</p> <p>Physical condition: Surface soils are soft to loose and do not restrict root growth. Where subsoils occur they are friable and not restrictive to root growth.</p> <p>AWHC: Moderate on sandy soils. Very low to low on stony soils, due to shallow depth to hard calcrete.</p> <p>Salinity: Low.</p> <p>Erosion potential: Water: Low to moderate, depending on slope. Wind: High on sand spreads to moderately low on stony ground.</p> <p>Water repellence: Strong on sand spreads. Low to slight on stony land.</p> <p>Rockiness: Nil on sand spreads. Variable to 50%, usually less than 20%.</p> <p>Other: The higher rises are exposed.</p> <p>Summary: The ranges are dominated by deep, low fertility, water repellent and erodible sands, with moderately shallow to shallow stony soils of marginal fertility.</p> | | | |



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| MiO | 0.9 | Plain | B8B7 | D | Plains with shallow bleached sand over calcrete, or over poorly structured brown clay on calcrete. <10% swales with often wet, shallow calcareous loam over calcrete. Main soils: Plains: <u>Shallow sand on calcrete - B8</u> and <u>Sand over friable brown clay on calcrete - B7</u> . Swales: <u>Wet clay loam - N3</u> and <u>Shallow calcareous loam on calcrete - B2</u> . |
| | | Swale | N3B2 | M | |
| MLF | 0.2 | Steep range | B3RRH3 | D | Steep range with shallow loamy sand over very thin red sandy clay on calcrete, bare calcrete, or deep bleached sand. Main soils: <u>Shallow sandy loam on calcrete - B3</u> , <u>Rock or exposed calcrete - RR</u> and <u>Bleached siliceous sand - H3</u> . |
| MtBA | 1.5 | Rise | B3B6 | V | Gently sloping rises with low dune core topography, with shallow sandy loam, often over red clay, on calcrete; 10-30% bare calcrete. 10-20% swales with shallow sand over poorly structured brown clay on calcrete; 10-30% bare calcrete, or shallow sandy loam over red clay on calcrete, or deep sand over brown clay. Main soils: Rises: <u>Shallow sandy loam on calcrete - B3</u> , and <u>Shallow sandy loam over red-brown clay on calcrete - B6</u> . Swales: <u>Sand over friable brown clay on calcrete - B7</u> . |
| | | Swale | B7 | L | |
| MWB | 0.3 | Gently undulating plain | B7B6 | D | Gently undulating plains with shallow loamy sand over red clay on calcreted calcarenite; 10-30% bare calcrete, or shallow sandy loam on calcrete. Main soils: <u>Sand over friable brown clay on calcrete - B7</u> and <u>Shallow sandy loam over red-brown clay on calcrete - B6</u> . |
| NBA | 0.1 | Plain | B2B7 | D | NBA Plains with mostly shallow calcareous loam on calcrete, or shallow loam over poorly structured brown clay on calcrete; 10-30% shallow bleached sand on calcrete, or gradational calcareous loam over calcareous grey clay on marl. |
| NBC | 0.3 | Stony plain | B2 | D | |
| NBI | 0.2 | Stony rise | B2RR | M | NBC Plains with very shallow calcareous sandy loam on calcrete; 10-30% shallow sandy loam over poorly structured brown clay on calcrete. <10% stony rises with very shallow calcareous sandy loam on calcrete, or bare calcrete. NBI Stony plains with shallow dark cracking clay on calcrete, or shallow calcareous grey clay on calcrete. 20-30% swamps with shallow calcareous loam on calcrete, or wet organic loam or peat. NBu Plains with wet, moderately highly saline dark cracking clay mostly over calcrete. 20-30% salt pans with wet highly saline dark clay with salt crusted surface; 10-30% water filled. 10-20% lunettes with gradational calcareous clay loam over gypseous grey clay. Main soils: Swampy and stony plains: <u>Shallow calcareous loam on calcrete - B2</u> , <u>Sand over friable brown clay on calcrete - B7</u> , <u>Shallow dark clay loam on limestone - B5</u> and <u>Wet saline clay loam - N2c</u> . Swamps: <u>Shallow calcareous loam on calcrete - B2</u> , <u>Wet clay loam - N3</u> and <u>Peaty soil - N1</u> . Stony rises: <u>Shallow calcareous loam on calcrete - B2</u> and <u>Rock or exposed calcrete - RR</u> . Salt pans: <u>Wet saline clay loam - N2c</u> . Lunettes: <u>Gypseous calcareous loam - A8</u> . |
| | | Swamp | B2N3N1 | C | |
| NBu | 0.02 | Stony plain | B5B2 | V | |
| | | Plain | N2B5 | V | |
| | | Salt pan | N2 | C | |
| NTa | 0.8 | Plain | A8 | L | |
| | | Swamp | G4N2 | M | |
| NTA | 0.3 | Plain | G3 | D | NTa Plains with deep sand over brown clay; 10-30% thin sand over poorly structured brown clay. <10% swamps with often wet, slightly saline, thin sand over poorly structured brown clay; 10-30% |



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| | | Swamp | G4N2 | M | deep sand over brown clay. |
| NTg | 0.1 | Depression | G4N2 | D | <p>NTA Plains with mostly deep acid sands over brown clay; 10-30% thin sand over poorly structured brown clay. <10% swamps with often wet, moderately saline, thin sand over poorly structured brown clay; 10-30% deep sand over brown clay.</p> <p>NTg Depressions with often wet and moderately saline, thin sand over poorly structured brown clay; 10-30% deep sand over brown clay.</p> <p>NTG Depressions with often wet and slightly saline, thin sand over poorly structured brown clay; 10-30% deep sand over brown clay.</p> <p>NTk Flats with slightly saline deep sand over brown clay; 10-30% thin sand over poorly structured brown clay.</p> <p>Co-dominant swamps with often wet, moderately saline, thin sand over poorly structured brown clay; 10-30% deep sand over brown clay. 10-20% sandy rises with deep sand over brown clay; 10-30% deep bleached sand or bleached sand over red-brown sandy clay.</p> <p>NTs Flats, sandy rises and swamps with soils as above. 20-30% sandy rises, 10-20% swamps.</p> <p>NTv Moderately saline, flats, swamps and sandy rises as for NTk. 20-30% swamps. 10-20% sandy rises. 10-20% stony rises with shallow sand over calcrete, or bare calcrete.</p> <p>Main soils: Plains, flats and sandy rises: <u>Thick sand over clay</u> - G3. Depressions and swamps: <u>Sand over yellow and brown clay</u> - G4 and <u>Wet saline clay loam</u> - N2c. Stony rises: <u>Shallow sandy loam on calcrete</u> - B3 and <u>Rock or exposed calcrete</u> - RR.</p> |
| NTG | 0.1 | Depression | G4N2 | D | |
| NTk | 0.2 | Flat | G3 | E | |
| | | Swamp | G4N2 | E | |
| | | Sand rise | G3 | L | |
| NTs | 0.1 | Flat | G3 | V | |
| | | Sand rise | G3 | C | |
| | | Swamp | G4N2 | L | |
| NTv | 0.2 | Flat | G3 | E | |
| | | Swamp | G4N2 | C | |
| | | Sand rise | G3 | L | |
| | | Stony rise | B3RR | L | |
| NZa | 0.2 | Flat | G4 | D | <p>NZa S lightly saline flats with thin sandy loam over poorly structured brown clay; 10-30% deep sand over brown clay or dark clay loam over dark clay on calcrete.</p> <p>NZS Plains with thin sandy loam over poorly structured brown clay; 10-30% acid sand over acidic brown clay. 20-30% sandy rises with acid sand over acidic brown clay or deep acidic sand over organic pans. 20-30% swamps with wet, non-saline organic loam over dark sandy clay</p> <p>Main soils: Plains: <u>Sand over yellow and brown clay</u> - G4. Sandy rises: <u>Sand over acidic clay</u> - G5; <u>Wet highly leached sand</u> - I2. Swamps: <u>Wet clay loam</u> - N3.</p> |
| NZS | 0.8 | Plain | G4 | V | |
| Sandy rise | | G5I2 | C | | |
| Swamp | | N3 | C | | |
| OLe | 0.5 | Sand dune | H3 | E | |
| | | Sandy rise | H3 | E | |
| | | Stony rise | B3B4 | M | |
| OLH | 0.2 | Sand dune | H3 | E | |
| | | Sandy rise | H3 | E | |
| Xtf | 0.1 | Swamp | B5N3 | V | |
| | | Rise | B2B3 | C | |



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| | | | | | over calcrete, often loam over very thin red clay over calcrete; 10-30% bare calcrete, or clay loam over grey-brown clay on calcrete. Main soils: Swamps: <u>Shallow dark clay loam on limestone</u> - B5 and <u>Wet clay loam</u> - N3 . Rises: <u>Shallow calcareous loam on calcrete</u> - B2 and <u>Shallow sandy loam on calcrete</u> - B3 . |
| XuC | 0.3 | Swamp | N3 | D | <p>XuC Swamps with non-peaty wet sand over dark clay; 10-30% wet peat.</p> <p>XuD Swamps with wet, dark organic loam over dark clay, 10-30% deep dark clay loam over dark brown poorly structured clay. 10-20% sandy rises and hummocks, with deep sand often over, poorly structured brown clay or organic pans.</p> <p>XuF Swamps as above; 20-30% stony rises with shallow often calcareous, grey clay loam, often over dark grey clay, on calcrete.</p> <p>XuF Swamps as above; 20-30% water filled or moderately saline, 2-10% highly saline patches.</p> <p>XuI Swamps as for XuF, 20-30% stony rises with shallow, often calcareous, loam on calcrete; 10-30% with shallow dark clay loam over dark clay on calcrete.</p> <p>XuX Swamps with wet, marginally saline and non saline, dark clay loam over dark clay, often shallow over calcrete.</p> <p>Main soils: Swamps: <u>Wet clay loam</u> - N3, <u>Wet saline clay loam</u> - N2c and <u>Shallow dark clay loam on limestone</u> - B5. Sandy rises: <u>Thick sand over clay</u> - G3; <u>Wet highly leached sand</u> - I2. Stony rises: <u>Shallow calcareous loam on calcrete</u> - B2 and <u>Shallow sandy loam on calcrete</u> - B3.</p> <p>Salt lake with highly saline clay loam over clay, bare salt encrusted surface common; 10-30% water filled.</p> <p>Main soils: <u>Wet saline clay loam</u> - N2c.</p> <p>Swampy flats with wet, often saline, dark deep clay loam over dark clay; 10-30% water filled, or gradational calcareous loam over calcareous grey clay on marl. Co-dominant lunettes with shallow dark clay loam over dark or olive-brown clay on calcrete; 10-30% shallow clay loam, often calcareous, on calcrete.</p> <p>Main soils: Swamps: <u>Wet clay loam</u> - N3, <u>Wet saline clay loam</u> - N2c and <u>Deep hard gradational sandy loam</u> - M4. Lunettes: <u>Shallow dark clay loam on limestone</u> - B5 and <u>Shallow clay loam over brown or dark clay on calcrete</u> - B9.</p> <p>Swampy flats with moderate to high salinity. Soils are often wet, deep sand over brown clay.</p> <p>Main soils: <u>Wet saline clay loam</u> - N2c; <u>Thick sand over clay</u> - G3.</p> <p>Moderately to highly saline plains with thin to thick sand over poorly structured brown clay, often wet. Co-dominant swamps with highly to slightly saline, mostly wet, sandy clay loam over dark clay; 10-30% sand or clay loam over poorly structured brown clay. 10-20% sandy rises with deep sand over brown clay; 10-30% deep bleached sand or bleached sand over red-brown sandy clay.</p> <p>Main soils: Flats: <u>Sand over yellow and brown clay</u> - G4, <u>Thick sand over clay</u> - G3 and <u>Wet saline clay loam</u> - N2c. Swamps: <u>Wet saline clay loam</u> - N2c.</p> |
| XuD | 0.1 | Swamp | N3 | V | |
| | | Sandy rise | G3I2 | L | |
| XuF | 1.9 | Swamp | N3 | V | |
| | | Stony rise | B2B3 | C | |
| XuF | 0.1 | Swamp | N3 | D | |
| XuI | 0.3 | Swamp | N3 | V | |
| | | Stony rise | B2B3 | C | |
| XuX | 0.1 | Swamp | N2N3B5 | D | |
| ZD- | 0.4 | Salt lake | N2 | D | |
| ZK- | 0.3 | Swampy flat | N3N2 M4 | E | |
| | | Lunette | B5B9 | E | |
| Zo- | 0.1 | Swampy flat | N2G3 | D | |
| Zpk | 0.2 | Flat | G4G3 N2 | E | |
| | | Swamp | N2 | E | |
| | | Sandy rise | G3 | L | |



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|-----|-----|------------|------|---|--|
| | | | | | Sandy rises: Thick sand over clay - G3. |
| ZS- | 0.1 | Swamp | N2 | D | Highly saline swamp with bare salt crust. Main soils: <u>Wet saline clay loam</u> - N2c . |
| Zsk | 0.6 | Flat | G4N2 | E | Saline swamps, flat and sandy rises with soils as for as for Zpk ; Flats and swamps are co-dominant, <10% sandy rises. Main soils: Flats: <u>Sand over yellow and brown clay</u> - G4 and <u>Wet saline clay loam</u> - N2c . Swamps: <u>Wet saline clay loam</u> - N2c . Sandy rises: <u>Thick sand over clay</u> - G3 . |
| | | Swamp | N2 | E | |
| | | Sandy rise | G3 | M | |

PROPORTION codes assigned to Soil Landscape Unit (SLU) components:

| | | | |
|---|--|---|-----------------------------------|
| 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:

- A7** Calcareous clay loam on marl (Marly Calcarosol)
Dark calcareous clay with marly subsoil (often saline in Upper SE). Often with shells and a peaty surface.
- A8** Gypseous calcareous loam (Gypseous Calcarosol)
Calcareous soil with a Gypsic horizon (>20% visual gypsum in a horizon which is at least 10cm thick). Found on lunettes, flats, etc.
- B2** Shallow calcareous sandy loam on calcrete (Petrocalcic Calcarosol)
Up to 40 cm calcareous loamy sand to sandy loam with variable calcrete rubble overlying calcreted calcarenite - rises.
- B3** Shallow sandy loam on calcrete (Petrocalcic Rudosol)
Medium thickness non-calcareous sandy loam, often having a slight clay increase with depth, over calcreted calcarenite shallower than 50 cm - rises.
- B4** Red sandy loam over calcrete (Petrocalcic, Red Dermosol)
Medium thickness red sandy loam grading to friable red clay loam over calcreted calcarenite within 50 cm - rises.
- B5** Shallow dark clay loam on limestone (Petrocalcic, Black Dermosol)
Black clay loam to light clay over calcreted limestone at shallow depth, grading to highly calcareous clay - flats.
- B6** Shallow sandy loam over red-brown clay on calcrete (Petrocalcic, Red Kandosol)
Medium thickness sandy loam with slight ironstone gravel overlying a weakly structured reddish brown sandy clay on calcarenite within 50 cm - rises.
- B7** Shallow sand over sandy clay on calcrete (Petrocalcic, Brown Chromosol)
Medium thickness sand overlying brown friable sandy clay to clay on limestone or calcreted sandy clay within 50 cm - flats.
- B7a** Sand over clay on calcrete (Petrocalcic, Brown / Red Chromosol)
Medium to thick sand with a bleached A2 layer abruptly overlying a friable brown or red sandy clay loam to light clay on calcreted calcarenite at depths ranging from 40 cm to more than 100 cm.



- B7b** Loamy sand over brown sandy clay on calcrete (Lithocalcic, Brown Sodosol)
Medium thickness loamy sand abruptly overlying a dark brown sandy clay on calcreted lagoonal sediments or rubbly calcrete at about 50 cm.
- B8** Shallow sand on calcrete (Petrocalcic, Bleached-Leptic Tenosol)
Thick bleached sand over calcreted calcarenite within 50 cm - rises.
- D1** Loamy sand over clay (Eutrophic, Red Chromosol)
Thick loamy sand abruptly overlying a well structured red clay grading to weathering granite within 100 cm.
- B9** Shallow clay loam over brown or dark clay on calcrete. (Clay loamy Petrocalcic Sodosol)
- G2** Bleached sand over sandy clay loam (sandy Brown-Red Chromosol)
Sandy texture contrast soil with a bleached A2 and a friable brown-red sandy clay loam to sandy loam subsoil.
- G3** Thick sand over clay (Hypercalcic, Brown Sodosol/ Chromosol)
Thick bleached sand with an organically darkened surface abruptly overlying a massive to coarsely structured brown to reddish yellow sandy clay to clay, calcareous with depth - rises.
- G4** Sand over poorly structured clay (Sandy Brown-Red Sodosol-Chromosol)
Topsoil <30 cm over a poorly structured subsoil. Thin sandy texture contrast soil with a sodic /dispersive /poorly structured brown or red clayey subsoil. Can have some ironstone.
- G5** Sand over acidic clay (Sandy Brown Kurosol)
Sandy texture contrast soil with a friable brown strongly acidic clayey to clay loamy subsoil. Very acidic soil; incipient Bh horizons; moderate depth topsoils. Some with ironstone.
- H3** Deep bleached sand (Basic, Arenic, Bleached-Orthic Tenosol)
Grey sand over a very thick bleached sand grading to yellow sand continuing below 100 cm.
- I1** Highly leached sand (Fragic, Pipey, Aeric Podosol)
Grey sand with a very thick bleached A2 layer, over dark brown and yellow massive soft to semi-hard clayey sand (coffee rock), grading to softer yellow and brown sand to sandy clay loam from about 80 cm.
- I2** Wet highly leached sand (Fragic, Humic, Aquic Podosol)
Grey sand with a thick bleached A2 horizon, overlying a thin to thick layer of coffee rock, grading to pale brown sand sharply overlying a grey, brown and yellow mottled sandy clay loam to light clay.
- M4** Deep hard gradational sandy loam (Hard Brown-Dark Kandosol- Dermosol)
Deep dark brown loamy to clay loamy soil grading to clay at depth. Hardsetting surface often with prismatic structures in the subsoil.
- N1** Peat (Organosol)
Peaty soil.
- N2c** Wet saline clay loam (Dermosolic, Salic Hydrosol)
Medium thickness dark grey to black clay loam to clay grading to well-structured dark grey clay with minor carbonates and a water table within 100 cm.
- N3** Seasonally waterlogged, non to marginally saline equivalents of soils listed above, viz.:
- N3c** Wet **G3**
- N3d** Wet **B5**
- N3e** Wet **B7**
- RR** Bare rock.

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

