

TOW Towitta Land System

Gentle slopes adjacent to the eastern slopes of the Mt. Lofty Ranges in the Towitta area

Area: 164.7 km²

Annual rainfall: 300 – 400 mm average

Geology: The land system is formed on outwash sediments (Pooraka Formation) derived from the range to the west. These are mostly medium textured (fine sandy loam to fine sandy clay loam), with variable gravels. Heavy gravelly sediments (Telford Gravel) occur sporadically. In places, remnants of an old calcreted land surface remain, overlying Blanchetown Clay. All sediments are mantled by carbonates, blown or washed into the soils during the reworking of the old land surface. The carbonates are mostly soft, but rubbly forms are common.

Topography: The Towitta Land System is a gently inclined outwash fan. The land surface is even, with an easterly aspect and slopes ranging from 0% in the east to 4% in the west. A narrow strip immediately adjacent to the escarpment bounding the western side has slopes of up to 8%. The most notable topographic features are the eroded water courses which cross the outwash fan at intervals ranging from 500 to 1000 m.

Elevation: 190 m in the north west to 100 m in the south east.

Relief: There is no local relief other than incised stream channels. Overall east - west elevation difference is up to 90 m.

Soils: The soils are deep with sandy loam surfaces. Most are calcareous, but there are some non calcareous sandy loams with more clayey subsoils.

Main soils

A4a Calcareous sandy loam - Extensive throughout

D2/D3 Sandy loam over red clay - Extensive throughout, more common nearer the ranges and in the south

C1 Deep sandy loam

A3 Deep calcareous sandy loam - Common near ranges

Minor soils

A4b Rubbly calcareous loam - Common in the north

M1 Deep gravelly sandy loam - Common in water courses

Main features: The Towitta Land System is a gently inclined outwash fan with mainly deep, moderately to marginally fertile, well structured calcareous and texture contrast soils. There are limited areas of shallow stony soils with low water holding capacities and highly alkaline surfaces. Productivity is mainly limited by low rainfall. The main soil limitations are moderately high subsoil salt and boron levels, a consequence of the lack of leaching. Runoff from the steep slopes of the adjacent range has caused significant erosion in the past, particularly of water courses, so protection of both watercourses and steeper slopes (nearest the ranges) is an important management consideration.



Soil Landscape Unit summary: 8 Soil Landscape Units (SLUs) mapped in the Towitta Land System:

SLU	% of area	Main features #
KNA	48.7	<p>Outwash fans formed on medium textured and variably gravelly outwash sediments of the Pooraka Formation and Telford Gravel. There is variable surface stone up to 20% comprising calcrete, and slate and sandstone for the range to the west.</p> <p>KNA Flat to very gently inclined outwash fans with slopes of up to 2%.</p> <p>KNB Gently inclined outwash fans with slopes of 2-4%.</p> <p>KNC Short slopes adjacent to the foot of the range with slopes of 4-8%.</p> <p>KNE Drainage depressions without well defined water courses.</p> <p>KNG Gently inclined outwash fans with slopes of 2-4% and minor water course erosion.</p> <p>KNH Short slopes adjacent to the foot of the range with minor water course erosion. Slopes are 4-8%.</p> <p>KNJ Eroded water courses and adjacent outwash fans. Slopes are up to 8%.</p> <p>Main soils: <u>calcareous sandy loam</u> - A4a (E) with <u>sandy loam over red clay</u> - D2/D3 (C), <u>gradational sandy loam</u> - C1 (C), <u>deep calcareous sandy loam</u> - A3 (L), <u>rubbly calcareous loam</u> - A4b (M) on stony rises and <u>deep gravelly sandy loam</u> - M1 (M) in watercourses. These soils are deep, moderately fertile and well structured. Productivity is mainly limited by low rainfall, and as a consequence of the lack of leaching, subsoil salt and boron levels are moderately high. Runoff from the steep slopes of the adjacent range has caused significant erosion in the past, particularly of water courses, so protection of these is needed. Erosion control within paddocks is also required on the steeper slopes near the range.</p>
KNB	17.3	
KNC	0.9	
KNE	0.8	
KNG	11.1	
KNH	4.0	
KNJ	15.8	
QMB	1.4	

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

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|--|---------------------------------------|
| (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:

- A3** Deep calcareous sandy loam (Regolithic, Calcic Calcarosol)
Medium to thick slightly calcareous sandy loam, with variable quartzite, slate or other hard rock gravel grading to a moderately calcareous sandy loam to loamy sand continuing below 100 cm. Common near ranges.
- A4a** Calcareous sandy loam (Regolithic, Hypercalcic Calcarosol)
10-30 cm calcareous fine sandy loam to light sandy clay loam over a very highly calcareous brown sandy clay loam to sandy light clay with abundant soft carbonate and up to 20% rubbly carbonate from 45 cm, grading to a calcareous clay loam with variable rounded gravels continuing below 100 cm. Extensive throughout.
- A4b** Rubbly calcareous loam (Regolithic, Supracalcic / Lithocalcic Calcarosol)
10-20 cm calcareous sandy loam to loam over a rubbly Class III B or III C carbonate layer, becoming less rubbly with depth and grading to a calcareous clay loam with variable rounded gravels continuing below 100 cm. Common in the north.
- C1** Deep sandy loam (Calcic / Hypercalcic, Red Kandosol)
Medium thickness sandy loam grading to a red weakly structured fine sandy clay loam, calcareous from about 50 cm, and with variable hard rock gravel.
- D2/D3** Sandy loam over red clay (Calcic, Red Chromosol / Sodosol)
20-40 cm sandy loam to fine sandy clay loam abruptly overlying a red strongly structured light to medium clay (coarsely structured and dispersive in 50% of profiles), with moderate soft carbonate and occasional rubble from 50 cm, grading to a calcareous clay loam with variable rounded gravels continuing below 100 cm. Extensive throughout, more common nearer the ranges and in the south.
- M1** Deep gravelly sandy loam (Regolithic, Red-Orthic Tenosol)
Very thick stony sandy loam, weak clay increase at depth. Common in water courses.

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

