

TRU Truro Land System

Undulating to rolling rises and low hills in the headwaters of the Truro and Pine Creek catchments

Area: 44.4 km²

Annual rainfall: 400 - 525 mm average

Geology: The land system is almost entirely formed on basement rocks including phyllites and metamorphosed siltstones and sandstones of the Carrickalinga Head Formation, metasandstones and phyllites of the Tarcowie, Tapley Hill and Appila Formations, carbonaceous Heatherdale Shales and interbedded marbles, related calcareous rocks and metamorphosed sandstones of the Angaston Marble Formation. All of these rocks outcrop in places, either on prominent crests or on dissection slopes. There are relatively small areas of outwash sediments, mostly associated with Middle Hut Creek. Rocks and sediments are generally mantled by fine secondary carbonates occurring as soft segregations in the lower soil profile.

Topography: The Truro Land System comprises a section of dissected slopes on the western margin of the Murray Basin (the western edge of the land system is the watershed dividing the basin from the North Mt. Lofty Ranges catchments). Numerous east flowing watercourses have dissected the basement rock substrate to produce an undulating to rolling topography characterized by prominent crests of resistant rocks and eroded watercourses. There is a small area of steeper dissection slopes in the south east. The watercourses coalesce into two major streams, viz. Truro and Pine Creeks which flow out of the land system through gorges cut in the adjacent Cooke Hill Land System.

Elevation: 500 m in the north west to 300 m east of Truro

Relief: Maximum relief is 80 m

Soils: Hard loam to sandy loam soils with red clayey subsoils are most common, with shallow stony sandy loams on steeper slopes and deep loam over red clay soils on lower ground.

Main soils:

- D1a** Loam over red clay on rock - rises
- L1** Shallow stony sandy loam - steeper rocky slopes
- D7** Sandy loam over dispersive red clay on rock - rises
- D1b** Hard loam over red clay on blue shale - rises in the south

Minor soils:

- D3** Sandy loam over dispersive clay on alluvium - outwash fans
- C2** Gradational loam on rock – rises
- A2** Shallow calcareous loam - rises

Main features: The Truro Land System is characterized by a mixture of arable undulating rises and semi arable, moderately steep and rocky crests and low hills. There are minor non arable steep rocky slopes adjacent to watercourses. The soils are predominantly sandy loam to loam surfaced texture contrast types with hard setting, erodible surfaces. The main limitations are excessive runoff and associated erosion, poor water retention, restricted workability and patchy crop emergence. These problems can be alleviated by the use of gypsum and modified surface management practices. Extensive watercourse erosion is a result of unsound management practices in the past.



Soil Landscape Unit summary: 11 Soil Landscape Units (SLUs) mapped in the Truro Land System

SLU	% of area	Main features #
AEI	11.1	Moderately steep dissected slopes of the Murray Creek catchment. Underlying rocks are phyllites and metamorphosed siltstones and sandstones of the Carrickalinga Head Formation. Slopes are 20-40% and relief is up to 80 m. Watercourses are commonly eroded. Main soils: <u>shallow stony sandy loam</u> - L1 (V) with <u>gradational loam on rock</u> - C2 (L). Although there are some minor areas of arable lower slopes, most of this land is too steep and rocky for any agricultural uses other than grazing. Stocking rates must be managed to maintain protective cover for erosion control.
DBC DBI	12.8 10.8	Dissected slopes formed on phyllites and metamorphosed siltstones and sandstones of the Carrickalinga Head Formation. DBC Undulating rises up to 40 m high with slopes of 3-10%. There are sporadic pointed rocky crests. DBI Irregular rises and low hills to 50 m high with slopes of 5-20% and 10% pointed rocky crests. Watercourses are commonly eroded. 10-20% of the land is non arable due to rockiness. Main soils: <u>loam over red clay on rock</u> - D1a (E), with <u>shallow stony sandy loam</u> - L1 (C) on rocky areas, and <u>sandy loam over dispersive red clay on rock</u> - D7 (L). The texture contrast soils are moderately deep and fertile but generally have poorly structured surfaces. They are prone to excessive runoff and erosion, may be difficult to work and cause patchy crop emergence. The shallow stony soils have restricted waterholding capacities which cause uneven crop and pasture maturation. However these are more common on the steeper slopes (DBI) which have more limited cropping potential than DBC .
DHC DHH DHI	4.9 10.6 12.7	Rises and low hills formed on metasandstones and phyllites of the Tarcowie, Tapley Hill and Appila Formations. DHC Irregular rises to 20 m high with slopes of 3-10% and minor watercourse erosion. DHH Undulating rises with slopes of 3-10%, relief of up to 30 m and moderate to severe watercourse erosion. DHI Dissected slopes of 5-25%, up to 40 m high, with rocky outcrop on steep slopes adjacent watercourses and 10-20% surface sandstone. Erosion of watercourses is common. Main soils: <u>sandy loam over dispersive red clay on rock</u> - D7 (E) and <u>loam over red clay on rock</u> - D1a (E), with <u>shallow stony sandy loam</u> - L1 (L). <u>Sandy loam over dispersive red clay on alluvium</u> - D3 (L) occurs on lower slopes. This land is arable except for watercourses and steeper rocky slopes in DHI. The soils are mostly moderately deep with reasonable inherent fertility. Their main limitation is poor structure of surface soils and, in the case of the D7 and D3 soils, subsoils as well. Most surface soils have a high fine sand content, causing them to set hard. This condition reduces infiltration, resulting in excessive runoff and associated erosion, difficulties in effective working, patchy emergence and early crop growth, and reduced water storage capacity. Poorly structured dispersive subsoils exacerbate these problems by causing sub surface waterlogging and impaired root growth. Erosion control and conservation management to improve soil structure are needed on this land.
DOH DOI	13.3 5.2	Rises and low hills formed on carbonaceous Heatherdale Shales with up to 10% surface quartzite. DOH Undulating rises to 20 m high with slopes of 4-10% and eroded watercourses. DOI Moderately steep slopes of 10-20% with some steeper pointed rocky crests. Relief is up to 50 m. Watercourse are usually eroded. Main soils: <u>hard loam over red clay on blue shale</u> - D1b (V) with <u>shallow stony sandy loam</u> - L1 (L) on rocky areas. The distinctive feature of soils formed over these blue to black shales is their hardness. This must have an adverse effect on plant root growth, water infiltration, seedling emergence and workability. Erosion control is a major management issue.



EMH EMI	6.4 7.9	<p>Rises and low hills formed on interbedded marbles and related calcareous rocks, and metamorphosed sandstones. There is up to 20% surface sandstone, quartzite and marble.</p> <p>EMH Undulating rises with slopes of 5-10% and relief to 30 m. There is minor watercourse erosion.</p> <p>EMI Low hills to 40 m high with slopes of 8-20% and eroded watercourses. Pointed rocky crests occupy 5-10% of the land area.</p> <p>Main soils: <u>shallow calcareous loam</u> - A2 (E), <u>gradational loam on rock</u> - C2 (E) and <u>sandy loam over dispersive red clay on rock</u> - D7 (C), with <u>shallow stony sandy loam</u> - L1 (M). The soils formed on calcareous rocks are well structured, well drained and moderately fertile, but often very shallow, with moisture holding capacity the main limitation to crop growth. The D7 soils, formed on the non calcareous quartzitic rocks, are deeper but poorly structured, with hard setting surfaces and dispersive subsoils. These conditions cause excessive runoff, low infiltration and restricted root growth.</p>
JGJ	4.3	<p>Creek flats and adjacent outwash fans formed on medium to fine grained alluvium. Slopes are up to 5%. Watercourse erosion is common.</p> <p>Main soil: <u>sandy loam over dispersive red clay on alluvium</u> - D3 (D). These soils are moderately fertile and deep but invariably have hard setting surfaces and dispersive subsoils. Consequently they have low infiltration rates, are difficult to work and prevent even emergence and optimum root growth. Dispersive subsoils cause perched water table development resulting in subsurface waterlogging. The soils are highly erodible, so excessive run off is likely to cause erosion. The use of gypsum and conservation surface management will help overcome these problems.</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:

- A2** Shallow calcareous loam (Paralithic, Calcic Calcarosol)
10 - 25 cm gravelly calcareous loam becoming more calcareous with depth over marble, limestone or calcreted rock at 35 cm.
- C2** Gradational loam on rock (Hypercalcic / Eutrophic, Red Dermosol)
15 - 40 cm loam grading to a well structured red clay loam to clay over limestone, phyllite or soft carbonate in rock fissures at 45 cm.
- D1a** Loam over red clay on rock (Calcic, Red Chromosol)
20 - 50 cm hard gravelly loam abruptly overlying a well structured red clay, calcareous from 70 cm, grading to fine grained basement rock at 100 cm.
- D1b** Hard loam over red clay on blue shale (Calcic, Red Chromosol)
15 - 40 cm very hard loam abruptly overlying a dark red structured clay, calcareous from 60 cm grading to blue shale at 80 cm.
- D3** Sandy loam over dispersive clay on alluvium (Calcic, Red Sodosol)
10 - 45 cm hard sandy loam to loam abruptly overlying a coarsely structured dispersive red clay, calcareous from 70 cm, continuing below 100 cm.
- D7** Sandy loam over dispersive red clay on rock (Calcic, Red Sodosol)
20 - 40 cm hard gravelly sandy loam abruptly overlying a coarsely structured dispersive red clay, calcareous from 60 cm, grading to weathering rock at 120 cm.
- L1** Shallow stony sandy loam (Lithic, Leptic Tenosol / Rudosol)
Up to 40 cm stony sandy loam to loam directly overlying basement rock.

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

