

WIF Wilsford Land System

Gentle to moderate slopes east of Rosedale

Area: 32.3 km²

Annual rainfall: 475 – 575 mm average

Geology: The land is underlain by basement siltstones, slates and fine sandstones. These are commonly capped by a veneer of carbonate. This is of aeolian origin, and has been leached into the upper layers of the rock. In places it has become indurated to calcrete. There are deposits of locally derived outwash sediments (clays, silts and sands) on lower slopes and in drainage depressions.

Topography: The Wilsford Land System is a broad low range running along the eastern side of the Rosedale Valley. The range is dissected by watercourses draining into the North Para River, which itself cuts through the southern part of the System in an east - west direction. Adjacent to the River and its main tributaries, dissection has created moderately steep to steep slopes, but elsewhere the land is undulating to gently rolling. Drainage depressions and lower slope outwash fans occupy less than 5% of the area.

Elevation: 110 m where the North Para River flows out, to 268 m in the north

Relief: Up to 70 m, but usually less than 40 m

Soils: Most of the soils are moderately deep to shallow over basement rock. Typically they have hard loamy surfaces overlying either weathering rock, or more commonly a red friable clay loamy to clayey subsoil. Some are calcareous throughout. On the rising ground there are also limited areas of deep clay loamy to clayey gradational soils on highly weathered rocks. On minor lower slopes and creek flats, deep red loam over clay soils predominate, with small areas of deep sandy loams and heavy dark soils.

Main soils: *Soils formed on calcified basement rock*
D1 Shallow loam over red clay
L1 Shallow stony loam
C2 Shallow gradational red loam
B6 Shallow loam over red clay on calcreted rock

Minor soils: *Soils formed on calcified basement rock*
A2 Shallow calcareous loam
Deep soils formed on highly weathered rocks
A6 Gradational calcareous clay loam
C3 Gradational friable red clay loam
E1 Black cracking clay
Soils formed in alluvium
C1 Gradational red sandy loam
D2 Loam over red clay
D3 Sandy loam over poorly structured red clay
M1 Deep sandy loam
M2 Deep dark clay loam



Main features: The Wilsford Land System comprises mainly undulating to gently rolling rises and low hills. About a quarter of the area is too steep or stony for cropping and is characterized by shallow loamy soils over rock. The rest is mainly arable, with moderately deep to shallow loamy surfaced soils, usually with more clayey subsoils. These are inherently fertile and well drained. Main limitations are associated with poor surface structure causing excessive runoff, workability problems and impaired emergence. However, with suitable surface management and erosion control, the land is well suited to a range of broad acre and horticultural crops, and viticulture.

Soil Landscape Unit summary: 9 Soil Landscape Units (SLUs) mapped in the Wilsford Land System

SLU	% of area	Main features #
AAC	16.2	Moderately steep slopes underlain by siltstones, slates and fine sandstones. Slopes are 18-30% and relief is up to 70 m. There is up to 10% surface stone and rock outcrop. Watercourses are well defined in narrow drainage depressions. Soils are generally loamy and shallow over rock, but many have more clayey subsoils. Main soils: <u>shallow stony loam</u> - L1 (E), with <u>shallow calcareous loam</u> - A2 (C), <u>shallow loam over red clay on calcrete</u> - B6 (L), <u>shallow gradational red loam</u> - C2 (L) and <u>shallow loam over red clay</u> - D1 (M) all on weathering rock. These slopes are too steep and rocky, and the soils too shallow for cropping. They are used for rough grazing.
AZm	8.2	Steep slopes created by the down cutting of the North Para River. Slopes are variable up to 100% and relief is up to 40 m. There is up to 50% surface stone and rocky outcrop. Minor discontinuous flats adjoin the river. Main soils: <u>shallow stony loam</u> - L1 (V) and <u>shallow loam over red clay</u> - D1 (C) on basement rock on slopes, and <u>deep sandy loam</u> - M1b (L) on flats. This land is either steep and rocky, or subject to flooding, so has very limited agricultural potential, but high conservation and water resource protection value.
DCC DCD	53.4 9.8	Undulating rises and rolling low hills formed on calcified siltstones, slates and fine sandstones. Slopes range from 4% to 18%. Rock outcrop is sporadic, but there is up to 10% surface stone. DCC Undulating rises with relief to 40 m and slopes of 4-10%. DCD Moderate slopes of 10-18%, up to 40 m high. Most soils are moderately deep to shallow over calcified siltstone, or siltstone mantled by soft to semi hard carbonate. Main soils: <u>shallow loam over red clay</u> - D1 (E), <u>shallow gradational red loam</u> - C2 (C), <u>shallow loam over red clay on calcrete</u> - B6 (L), <u>shallow stony loam</u> - L1 (L) and <u>shallow calcareous loam</u> - A2 (M). Deeper <u>loam over red clay</u> - D2 (L) occurs on lower slopes and minor creek flats. The soils are fertile and well drained, although often shallow, thereby restricting waterholding capacity. Surface soils set hard, creating workability and emergence problems, and increasing erosion susceptibility. However, the land is potentially productive - DCC is suitable for cropping provided that adequate erosion control measures are used, but DCD is marginal due to the potential for erosion. The land is suited to horticultural development where water is available.
DFC	8.7	Undulating rises to 30 m high formed on calcified siltstones and slates. Slopes are 3-10%. A wide variety of soils occurs, differences being mainly attributable to parent materials. Common profiles include loams over red brown clays, cracking clays, and calcareous and non-calcareous loams. Main soils: <u>shallow loam over red clay</u> - D1 (C), <u>shallow gradational red loam</u> - C2 (C) and <u>shallow stony loam</u> - L1 (L), all on basement rock, and <u>gradational calcareous clay loam</u> - A6 (L), <u>gradational friable red clay loam</u> - C3 (L) and <u>black cracking clay</u> - E1 (M), all on deeply weathered rocks. <u>Loam over red clay</u> - D2 (M) occurs on alluvium on lower slopes. The shallower soils on basement rock are similar to those of DCC , but the deeper soils on highly weathered rocks or alluvium are fertile and have high waterholding capacities. Although some have poor surface structure, they are potentially highly productive.
JBB JBE JBG	0.5 1.7 1.1	Very gently sloping outwash fans and drainage depressions formed on alluvial clays derived from the erosion and deposition of basement rock materials, mantled by fine grained carbonates of aeolian origin.



JBJ	0.4	<p>JBB Very gently inclined fans with slopes of 2-4%.</p> <p>JBE Drainage depressions with well defined and sometimes eroded watercourses.</p> <p>JBG Very gently inclined fans with slopes of 2-4% and eroded watercourses.</p> <p>JBJ Drainage depressions with well defined eroded watercourses.</p> <p>Most soils have red texture contrast profiles with a range of surface textures from sandy loam to clay loam, and clayey subsoils. There are limited areas of heavy black soils.</p> <p>Main soils: <u>loam over red clay</u> - D2 (E), <u>sandy loam over poorly structured red clay</u> - D3 (E), <u>gradational red sandy loam</u> - C1 (C) and <u>deep dark clay loam</u> - M2 (L). These soils are deep and inherently fertile. Poor structure and associated drainage, infiltration, workability and emergence problems are the main limitations. Although poor structure is mostly a surface feature, D3 soils have dispersive subsoils as well, causing perched water tables and impaired root growth. These are also the most erodible of the soils. Improved surface management and gypsum applications will help to alleviate the problem. Erosion potential is a significant problem. Sheet/rill erosion in paddocks, and gully erosion in watercourses both occur. Run on water from upslope adds to the potential for erosion. Provided erosion is controlled, productive potential is high.</p>
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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:

Soils formed on calcified basement rock

- A2** Shallow calcareous loam on rock (Paralithic, Calcic Calcarosol)
Medium thickness calcareous reddish brown stony loam, overlying a brown highly calcareous stony clay loam, increasingly calcareous and paler coloured with depth. Highly calcareous weathering siltstone or slate occurs at about 50 cm.
- B6** Shallow loam over red clay on calcrete (Petrocalcic, Red Chromosol)
Medium thickness hard setting loam with a paler and stony A2 horizon, overlying a dark reddish brown well structured clay with a massive calcrete pan at 55 cm, overlying a highly calcareous clay loam which grades to weathering calcified rock at variable depths averaging 100 cm.
- C2** Shallow gradational red loam on rock (Hypercalcic, Red Dermosol)
Medium thickness red brown loam to clay loam, grading a red well structured clay loam, grading to massive semi hard carbonate over weathering siltstone below 50 cm.
- D1** Shallow loam over red clay on rock (Hypercalcic, Red Chromosol)
Medium thickness hard setting loam with a paler and stony A2 horizon, overlying a dark reddish brown well structured clay which is highly calcareous from about 50 cm. Weathering calcified siltstone or slate occurs within 100 cm.
- L1** Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol)
Thick stony reddish brown loam, grading to highly calcified weathering siltstone or fine sandstone within 50 cm.

Deep soils formed on highly weathered rocks

- A6** Gradational calcareous clay loam (Pedal, Calcic Calcarosol)
Medium thickness reddish brown calcareous loam to clay loam, grading to a well structured calcareous reddish brown clay subsoil, becoming more clayey and calcareous with depth. Coarsely structured brown heavy clay continues below 200 cm.



- C3** Gradational friable red clay loam (Calcic, Red Dermosol)
Medium thickness dark reddish brown clay loam, overlying a dark reddish brown well structured clay which is calcareous with depth. Highly calcareous clay continues below 100 cm.
- E1** Black cracking clay (Self-Mulching, Black Vertosol)
Medium thickness brown to black well structured light clay, grading to dark brown to black strongly structured heavy clay, calcareous with depth. Coarsely structured brown heavy clay with soft calcareous segregations continues below 200 cm.

Soils formed in alluvium

- C1** Gradational red sandy loam (Calcic / Hypercalcic, Red Kandosol)
Thick reddish brown sandy loam to fine sandy loam with a pink A2 horizon, overlying a yellowish red weakly structured clay loam to clay, highly calcareous with depth.
- D2** Loam over red clay (Sodic, Calcic, Red Chromosol)
Thick loam with a paler coloured A2 horizon, overlying a dark reddish brown well structured clay, highly calcareous (Class I carbonate) from about 60 cm. The soil grades to medium to fine grained alluvium below 100 cm.
- D3** Sandy loam over poorly structured red clay (Calcic, Red Sodosol)
Thick reddish brown massive sandy loam to loam with a pink very hard A2 horizon, overlying a reddish brown clay with prismatic structure and many soft carbonate segregations (Class I carbonate) from 65 cm.
- M1** Deep sandy loam (Regolithic, Brown-Orthic Tenosol)
Thick brown sandy loam to loamy sand, overlying a reddish brown clayey coarse sand to silty sand, grading to variable sandy and gritty alluvial sediments.
- M2** Deep dark clay loam (Calcic, Black Dermosol)
Medium thickness black clay loam to light clay with moderate blocky structure, overlying a black clay with strong blocky structure and abundant soft Class I carbonate segregations from 30 cm.

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

