

SPS Spalding South Land System

Moderately steep very rocky low hills south of Spalding

Area: 19.8 km²

Annual rainfall: 425 – 500 mm average

Geology: Interbedded Appila Tillites, Saddleworth Formation siltstones, Watervale Sandstones and Gilbert Range and Leasingham Quartzites. Differential weathering of this mixture of lithologic types has produced a landscape characterized by north - south linear rock outcrops in a "tiger stripe" pattern. There are only small areas of outwash sediment accumulation. Most of the rocks and sediments are mantled by a veneer of aeolian carbonates occurring as fine segregations in the fissures of weathering rock.

Topography: The notable features of this land system are the moderately steep to steep slopes and pronounced pattern of linear rock outcrop of resistant beds of quartzite. The land surface has been strongly dissected by the Broughton and Hutt Rivers and their tributaries. Slopes are mostly over 15%, and up to 50% adjacent to the major water courses. Only limited areas have slopes of less than 10%. Most water courses show evidence of erosion.

Elevation: 250 m to 350 m

Relief: Maximum relief from river bed to ridge crest is 70 m

Soils: Most soils are loamy and shallow to moderately deep over basement rock. The majority of these do not have clayey subsoils (although calcareous subsurface layers are common), but about a quarter of profiles have friable red clayey subsoils. On lower slopes, soils are deeper, invariably loam over red clay.

Main soils

Soils formed over basement rock on hillslopes

- L1** Shallow stony loam
- D1** Hard loam over red clay on rock
- A2** Shallow calcareous loam
- C2** Shallow gradational loam

Minor soils

Soils formed over alluvium on lower slopes and flats

- D2** Hard loam over well structured red clay
- D3** Hard loam over dispersive red clay

Main features: The Spalding South Land System is mostly non arable due to moderate to steep slopes and substantial areas of rocky outcrop. Grazing of native pastures is virtually the only option for primary production. Retention of adequate cover is essential to minimize the risk of erosion. Shallow soils, rocky outcrop and moderate slopes combine to generate high run off volumes. On the arable land, erosion control is paramount. Most soils are moderately fertile and reasonably deep, although there are shallower soils associated with rocky areas which are prone to moisture deficit in dry finishes.



Soil Landscape Unit summary: 5 Soil Landscape Units (SLUs) mapped in the Spalding South Land System

SLU	% of area	Main features #
ABC ABD	29.6 9.5	Moderately steep to steep ridges with pronounced north south oriented rocky reefs. Relief is between 40 and 70 m. ABC Slopes are 15-30%. ABD Slopes are 30-50%. Main soils: <u>shallow stony sandy loam</u> - L1 (E) with <u>shallow calcareous loam</u> - A2 (C), <u>shallow gradational loam</u> - C2 (L) and <u>hard loam over red clay on rock</u> - D1 (L). The hills are mostly non arable due to the roughness of the terrain, moderate slopes and shallow stony soils. Rocky outcrops limit accessibility. Runoff is rapid and exposure is high, so a significant proportion of rainfall does not infiltrate the soil. Erosion potential is a major management issue. Watercourses are particularly susceptible to erosion. However, areas of deeper soils are potentially productive for grazing.
DCC	14.3	Very gently to gently undulating rises between 10 and 40 m high, formed on basement siltstone. Slopes are 3-12%. There is minor rock outcrop in linear reefs. Main soils: <u>hard loam over red clay on rock</u> - D1 (E) with <u>shallow calcareous loam</u> - A2 (C) and <u>shallow gradational loam</u> - C2 (L). <u>Shallow stony sandy loam</u> - L1 (L) occurs adjacent to rock outcrops. These soils are moderately fertile, well drained and have moderately high water holding capacities. The slopes are mostly arable (except for minor rocky outcrops). Gradients are moderate with a consequent potential for water erosion. This is exacerbated by the predominant hard setting, poorly structured soil type which tends to seal over and shed water. Other limitations caused by poor structure are difficulty in working and patchy emergence.
ETD	41.2	Moderately steep slopes of 10-20%, up to 50 m high, with pronounced north - south oriented rocky reefs occupying 20-50% of the land surface. Main soils: <u>shallow stony sandy loam</u> - L1 (V), with <u>shallow calcareous loam</u> - A2 (C) and <u>hard loam over red clay on rock</u> - D1 (L). Although moderately steep and having mostly shallow soils, significant areas are cropped. High run-off rates accentuate the erosion potential which is the main management issue. The shallow stony soils are prone to moisture deficit in dry finishes, and are responsible for excessive implement abrasion.
JXC	5.4	Complex of lower slopes and creek flats, with basement rock rises. Slopes are 3-12%, steepest slopes being on the rises and upper margins of the slopes adjacent to higher ground. There is minor water course erosion. Main soils: <u>hard loam over well structured red clay</u> - D2 (E) and <u>hard loam over dispersive red clay</u> - D3 (C) on lower slopes and flats, and <u>hard loam over red clay on rock</u> - D1 (E) with <u>shallow calcareous loam</u> - A2 (M) on rises. The dominant soils are the deeper texture contrast profiles of the lower slopes which are moderately fertile but are often poorly structured. Surface sealing and hard setting cause excessive runoff and erosion, patchy emergence and sub optimal root growth. This landscape is subject to considerable run on from surrounding higher land, so control of water flow and consequently erosion is very important.

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:

- A2** Shallow calcareous loam (Paralithic, Calcic / Lithocalcic Calcarosol)
Calcareous loam over fine to rubbly carbonate grading to weathering siltstone within 50 cm.
- C2** Shallow gradational loam (Hypercalcic, Red Dermosol)
Loam to clay loam grading to a well structured red clay, highly calcareous with depth, grading to weathering siltstone within 100 cm.
- D1** Hard loam over red clay on rock (Calcic, Red Chromosol)
Medium thickness hard loam abruptly overlying a red well structured clay, calcareous with depth grading to weathering siltstone within 100 cm.
- D2** Hard loam over well structured red clay (Calcic, Red Chromosol)
Medium thickness hard massive loam to clay loam abruptly overlying a well structured red clay grading to fine carbonate merging with alluvium from 100 cm.
- D3** Hard loam over dispersive red clay (Calcic, Red Sodosol)
Medium thickness hard sandy loam to clay loam sharply overlying a poorly structured dispersive red clay, calcareous with depth, merging with alluvium from 100 cm.
- L1** Shallow stony loam (Lithic, Leptic Tenosol / Rudosol)
Shallow stony sandy loam grading to hard basement rock within 50 cm. Fine carbonate commonly occurs in rock fissures.

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

