

MBA Mount Barker Land System

Undulating to rolling low hills in the Mount Barker - Inverbrackie area

Area: 31.6 km²

Annual rainfall: 690 – 880 mm average

Geology: The Land System is formed on fine grained weakly metamorphosed sedimentary rocks of the Tapley Hill Formation. Common rock types include metasiltstones, phyllites, slates and fine grained schists. There are occasional interbedded metasandstones. The formation abuts the eastern and southern sides of a prominent S-shaped ridge of Mitcham Quartzite. Weathered rock is generally within a metre of the surface on hillslopes, although deeply weathered rocks are common on both crests and lower slopes. There are substantial areas of valley floor alluvium derived from the erosion of rocks and soils on rising ground. The alluvium is mostly medium to fine grained, but sandy lenses occur.

Topography: The landscape is typically undulating to gently rolling, with some minor (less than 2%) slopes steeper than 20%. In the south the slopes drain into Western Flat Creek and Mount Barker Creek, but in the north the System narrows into a belt of low hills which drain variously into Inverbrackie Creek, Nairne Creek and other minor streams flowing into the Onkaparinga River. About a third of the area is valley floor, creek flat or adjacent lower slopes formed on outwash sediments.

Elevation: 300 m in the south east where Mount Barker Creek flows out of the System, to 488 m in the north

Relief: Maximum relief is 70 m

Soils: Most soils are moderately shallow to moderately deep over weathering rocks. Surfaces are typically loamy to clay loamy, underlain by thick well structured clayey subsoils. Shallow stony soils directly overlying rock are restricted to steeper slopes. Deep clay loamy soils with loamy texture contrast profiles dominate lower slopes and creek flats.

Main soils

Soils formed in weathering basement rock

K2 Acidic loam over red (**K2a**) or brown (**K2b**) clay

K3 Acidic sandy loam over mottled red (**K3a**) or yellowish red (**K3b**) clay

Soils formed in deeply weathered basement rock

K2 Loam over red (**K2c**) or brown (**K2d**) clay

Soils formed in alluvial outwash sediments

F1 Sandy loam over brown clay on fine grained alluvium

F1/F2 Sandy loam over brown clay on coarse grained alluvium

F2 Sandy loam over poorly structured brown clay

Minor soils

Soils formed in weathering basement rock

K1 Acidic gradational brown (**K1a**) or red (**K1b**) loam

K4 Acidic sandy loam over brown clay

L1 Thick stony sandy loam to loam

Soils formed in alluvial outwash sediments

M2 Deep grey (**M2a**) to black (**M2b**) clay loam to clay



Main features: The Mount Barker Land System consists of undulating to gently rolling hills, over 95% of which are arable. The soils are typically deep and fertile, with hard loamy surfaces overlying well structured clayey subsoils. On lower slopes and creek flats, waterlogging becomes an increasing problem. All soils are susceptible to acidification. However, overall productive potential is high.

Soil Landscape Unit summary: 12 Soil Landscape Units (SLUs) mapped in the Mount Barker Land System:

SLU	% of area	Main features #
AxC	1.5	<p>Short steep rocky slopes up to 50 m high with slopes of 20-50%. Main soils: <u>Acidic loam over red clay</u> - K2a (E) <u>Acidic sandy loam over yellowish red clay</u> - K3b (C) <u>Shallow loam on rock</u> - L1 (L) <u>Acidic gradational brown loam</u> - K1a (L) These areas are too steep and rocky for any uses other than grazing.</p>
BbC BbD	28.6 10.9	<p>Undulating to gently rolling low rises formed on phyllites, fine grained schists, slates and metasiltstones, with interbedded quartzites and metasandstones. Slopes are in the range 4% to 20%. Relief varies from 20 to 60 m. BbC Undulating rises and low hills with relief to 40 m and slopes of 4-10%. BbD Gently rolling low hills with relief to 60 m and slopes of 10-20%. The dominant soils have loamy surfaces and clay subsoils with variable colours and structure depending on the type of parent rock. Main soils: <u>Acidic loam over red to brown clay on freshly to deeply weathered rock</u> - K2a / K2b / K2c / K2d (E) on fine grained rocks <u>Acidic sandy loam over red or brown clay on rock</u> - K3a / K4 (E) on quartzitic and coarser grained rocks <u>Acidic gradational brown loam</u> - K1a (L) on upper slopes <u>Shallow loam on rock</u> - L1 (M) on steeper rocky slopes <u>Sandy loam over brown clay</u> - F1 (M) on unmappable creek flats and lower slopes This land is arable with mostly deep, naturally fertile and moderately well drained soils. Slight limitations are caused by poorly structured hard setting surface soils, and susceptibility to acidification and associated manganese toxicity. This is potentially some of the most productive land in the Mount Lofty Ranges, but more intensive development must be accompanied by appropriate erosion control.</p>
BdC BdD	17.0 8.3	<p>Undulating rises, gentle slopes and gently rolling low hills formed on phyllites, fine grained schists and slates of the Saddleworth, Woolshed Flat, Tapley Hill and Stonyfell Formations. Slopes range from 4% to 18%, and relief varies from 20 to 50 m. Watercourses are well defined and too narrow in their upper reaches to be mappable. Minor granitic outcrops occur in places. BdC Undulating rises and gentle slopes with relief to 20 m and slopes of 4-10%. BdD Gently rolling low hills with relief to 50 m and slopes of 10-18%. Soils are mostly moderately deep, overlying fine grained metamorphic rocks. They have loamy surfaces and variably coloured and structured subsoil clays. Deeper texture contrast soils occur on lower slopes and minor flats. Less well developed medium to fine grained soils on deeply weathered rocks occur on upper slopes. Main soils: <u>Acidic loam over red to brown clay on freshly to deeply weathered rock</u> - K2a / K2b / K2c / K2d (E) on fine grained rocks <u>Acidic sandy loam over brown or red clay on rock</u> - K4 / K3a / K3b (C) on quartzitic and coarser grained rocks <u>Acidic gradational brown loam</u> - K1a (L) on upper slopes <u>Sandy loam over brown clay</u> - F1 (L) on unmappable creek flats This land is similar to BbC/BbD, but with a higher proportion of browner and imperfectly drained soils. Productive potential and limitations are as for BbC/BbD.</p>



FcD	0.5	Prominent crest with slopes of 15-20% formed on deeply weathered and ferruginized siltstone. Main soil: <u>Acidic gradational red loam</u> - K1b (D) These soils are deep but of moderately low fertility. The moderately steep slopes and exposed position of this small area limit its potential usefulness.
LHE	1.0	Creek flat formed on medium to coarse grained alluvium. Main soils: <u>Sandy loam over brown clay</u> - F1 (E) and F1/F2 (E) These soils are deep and moderately fertile but prone to waterlogging.
LdA	10.9	Creek flats formed on clayey alluvium. Main soils: <u>Sandy loam over brown clay</u> - F1 (E) and F1/F2 (L) <u>Sandy loam over poorly structured brown clay</u> - F2 (L) <u>Deep grey clay loam</u> - M2a (L) <u>Deep black clay loam to clay</u> - M2b (L) These soils are deep and fertile, but imperfectly drained. Productive potential is high although irrigation must be carefully managed to avoid waterlogging. Sporadic salinity should be monitored.
LeB LeC LeE	7.9 8.8 2.6	Broad, shallow drainage depressions, and gently undulating to undulating lower slopes of up to 10% formed on medium to fine grained alluvium derived from the erosion of basement siltstones, shales, phyllites and schists, associated with very deeply weathered medium to fine grained rocks. LeB Lower slopes, 1-4%. LeC Lower slopes, 4-8%. LeE Shallow valleys with slopes of 0-10%. All the major soils have texture contrast profiles with sandy to loamy surfaces and mottled brown, yellow and grey clay subsoils. Variations between the different soils are due to drainage conditions, grain size of the parent sediments and ironstone gravel content. Main soils: <u>Sandy loam over brown clay</u> - F1 (E) and F1/F2 (C) <u>Loam over poorly structured brown clay</u> - F2 (C) <u>Loam over brown clay over deeply weathered rock</u> - K2d (L) These soils are deep, fertile and moderately well to imperfectly drained. Productive potential is high provided that temporary waterlogging can be managed.
LtE	2.0	Drainage depressions formed on medium to coarse grained alluvium. Soils have thick sandy to loamy surfaces overlying mottled clayey subsoils. Main soil: <u>Sandy loam over brown clay</u> - F1/F2 (D) These soils are deep and moderately fertile, but prone to waterlogging. Watercourses are well defined and susceptible to erosion if banks are exposed.

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

- F1** Sandy loam over brown clay (Bleached-Mottled, Hypocalcic, Brown Chromosol)
Thick loamy sand to sandy clay loam surface soil with a strongly bleached A2 horizon, sharply overlying a yellowish brown, grey and red mottled clay subsoil grading to fine grained alluvium.
- F1/F2** Sandy loam over brown clay (Bleached-Mottled, Eutrophic, Brown Chromosol / Sodosol)
Thick dark brown loamy sand to light sandy clay loam with a bleached A2 horizon, overlying a yellow brown and grey brown sandy clay with coarse prismatic structure, grading to a grey, brown and yellow mottled clayey sand.
- F2** Sandy loam over poorly structured brown clay (Hypocalcic, Brown Sodosol)
Medium thickness sandy loam to loam with a bleached A2 layer, over a brown mottled clay with coarse prismatic structure, weakly calcareous with depth over fine grained alluvium.



- K1a** Acidic gradational brown loam (Eutrophic, Brown Dermosol)
Medium thickness loam to silty loam grading to a brown or red well structured clay forming in fine grained rock within 100 cm.
- K1b** Acidic gradational red loam (Mesotrophic, Red Dermosol)
Thick fine sandy loam with minor to moderate ironstone grading to a brownish to reddish coarsely blocky clay loamy to clayey subsoil, siltier with depth, grading to kaolinized and/or ferruginized phyllite or siltstone, continuing to depths of 200 cm or more.
- K2a** Acidic loam over red clay on rock (Eutrophic, Red Kurosol)
Medium thickness reddish brown loam to clay loam with a gravelly and paler coloured A2 horizon, overlying a red, very well structured clay grading to weathering phyllite from about 100 cm.
- K2b** Acidic loam over brown clay on rock (Eutrophic, Brown Kurosol)
Thick loam with a paler coloured gravelly A2 horizon, overlying a dark brown, yellowish brown and red mottled, coarsely structured clay subsoil, grading to weathering metasiltstone or phyllite deeper than 100 cm.
- K2c** Loam over red clay (Eutrophic, Red Chromosol)
Medium thickness hard setting loam to clay loam over a red well structured clay grading to deeply weathered fine grained rock below 100 cm.
- K2d** Loam over brown clay (Eutrophic, Brown Kurosol)
Thick, dark brown loam to clay loam with a bleached A2 horizon, overlying a brown, yellowish brown and red, coarsely blocky clay subsoil grading to grey and brown coarsely prismatic clay forming in deeply weathered fine grained rock, below 100 cm.
- K3a** Acidic sandy loam over mottled red clay on rock (Bleached-Mottled, Eutrophic, Red Chromosol)
Medium thickness sandy loam with a paler or bleached A2 horizon, overlying a dark red and brown mottled prismatic structured clay, grading to weathering schist or phyllite by 100 cm.
- K3b** Acidic sandy loam over yellowish red clay on rock (Bleached, Eutrophic, Red Chromosol)
Medium thickness grey brown sandy loam with a bleached and gravelly A2 horizon, overlying a yellow or yellowish red well structured clay forming in weathering weakly micaceous fine sandstone by 100 cm.
- K4** Acidic sandy loam over brown clay on rock (Bleached-Mottled, Eutrophic, Brown Kurosol)
Thick, gravelly sandy loam with a bleached and gravelly A2 horizon, overlying a yellowish brown, red and greyish brown, coarsely prismatic clay subsoil, grading to weathering metasandstone below 100 cm.
- L1** Shallow loam on rock (Paralithic, Leptic Tenosol)
Thick, stony sandy loam to loam, forming in weathering schist or phyllite at 50 cm or less.
- M2a** Deep grey clay loam (Melanic, Calcic, Grey Dermosol)
Thick dark grey clay loam with granular structure, overlying a dark grey heavy clay with strong blocky structure. The clay is yellowish brown and weakly calcareous with depth.
- M2b** Deep black clay loam to clay (Melanic, Eutrophic, Black Dermosol / Epipedal, Black Vertosol)
Thick black silt loam to medium clay with strong granular structure, overlying a black to dark brown clay with strong blocky structure, becoming yellow and grey mottled with depth.

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

