

# JUN Junction Land System

Undulating to gently rolling low hills between Littlehampton and Oakbank

**Area:** 10.9 km<sup>2</sup>

**Annual rainfall:** 770 – 910 mm average

**Geology:** The land is underlain by weakly metamorphosed sedimentary rocks of the Saddleworth, Balhannah and Stonyfell Formations. Fine grained rocks including phyllites, fine grained schists, slates and metasiltstones are most common, associated with interbedded quartzites and metasandstones. In places the rocks are kaolinized, indicating that they have been deeply weathered in the past. Remnants of the old weathering surface occur sporadically. These have deep weathering profiles with lateritic gravels. Locally derived alluvium, generally fine to medium grained, occurs in valleys, lower slopes and drainage depressions.

**Topography:** The Junction Land System comprises undulating to gently rolling low hills surrounding two drainage systems. More than three quarters of the land drains to the north into the Onkaparinga. The rest drains southwards into Mount Barker Creek. Slopes are in the range 2 - 20%.

**Elevation:** 340 - 460 m

**Relief:** Up to 80 m

**Soils:** Most soils are formed in freshly weathered basement rock. They are characterized by texture contrast profiles, with sandy loam to loam surface soils overlying brown or red clayey subsoils. Variations in texture, colour and consistence are due to differences in the parent rock. Some soils are shallow without subsoils. Ironstone gravelly soils are common on old lateritic remnants. Deep texture contrast soils (loam over clay) dominate lower slopes and drainage depressions.

## Main soils

### *Soils formed in weathering basement rock*

- K2** Acidic loam over red clay (**K2a**) or brown clay (**K2b**)
- K3a** Acidic sandy loam over red mottled clay
- F1c** Loam to sandy loam over brown clay on alluvium

## Minor soils

### *Soils formed in weathering basement rock*

- K1** Acidic gradational loam
- K2c** Acidic loam over black clay
- K3b** Acidic sandy loam over red clay
- K4** Acid sandy loam over brown clay
- L1** Shallow stony loam

### *Ironstone soils*

- J2** Deep acidic ironstone soil

### *Hard loamy soils with deep brown clayey subsoils*

- F1** Loam to sandy loam over brown clay on - deeply weathered fine grained rock (**F1a**) or deeply weathered coarse grained rock (**F1b**)



**Main features:** The Junction Land System is characterized by undulating to gently rolling low hills which are mostly arable. Most soils are loamy surfaced, with thick well structured clayey subsoils. Inherent fertility is moderate to high, although all soils are prone to acidification. Drainage is generally good, and water holding capacities are high. On lower slopes and valley floors, soils are deeper but less well drained. Waterlogging is somewhat of a problem in these areas. Poor surface structure and associated high runoff and erosion are the main limitations of the land which is otherwise highly productive. Because it is intensively used, erosion is more likely to be a problem than it would on grazing land.

**Soil Landscape Unit Summary:** 7 Soil Landscape Units (SLUs) mapped in the Junction Land System:

SLU	% of area	Main features #
BbD	35.0	<p>Gently rolling rises formed on phyllites, fine grained schists, slates and metasiltstones, with interbedded quartzites and metasandstones. Slopes are in the range 10% to 20%. Relief varies from 20 to 60 m. The dominant soils have loamy surfaces and clay subsoils with variable colours and structure depending on the type of parent rock.</p> <p>Main soils: <u>Acidic loam over red, brown or black clay on rock</u> - <b>K2a</b> / <b>K2b</b> / <b>K2c</b> (E) on fine grained rocks  <u>Acidic sandy loam over red or brown clay on rock</u> - <b>K3a</b> / <b>K4</b> (E) on quartzitic and coarser grained rocks  <u>Acidic gradational loam</u> - <b>K1</b> (L) on upper slopes  <u>Shallow loam on rock</u> - <b>L1</b> (M) on steeper rocky slopes</p> <p>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	6.8 26.5	<p>Undulating rises, gentle slopes and gently rolling low hills formed on phyllites, fine grained schists and slates. Slopes range from 4% to 18%, and relief varies from 20 to 50 m. Water courses are well defined and too narrow in their upper reaches to be mappable.</p> <p><b>BdC</b> Undulating rises and gentle slopes with relief to 20 m and slopes of 4-10%.  <b>BdD</b> Gently rolling low hills with relief to 50 m and slopes of 10-18%.</p> <p>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.</p> <p>Main soils: <u>Acidic loam over brown to red clay on rock</u> - <b>K2b</b> / <b>K2a</b> (E) on fine grained rocks  <u>Acidic sandy loam over brown or red clay on rock</u> - <b>K4</b> / <b>K3a</b> (C) on quartzitic and coarser grained rocks  <u>Loam over brown clay</u> - <b>F1a</b> (L) on lower slopes  <u>Acidic gradational loam</u> - <b>K1</b> (L) on upper slopes  <u>Sandy loam over brown clay</u> - <b>F1c</b> (M) on unmappable creek flats</p> <p>This land is similar to <b>BbD</b>, but with a higher proportion of browner and imperfectly drained soils. Productive potential and limitations are as for <b>BbD</b>.</p>
CbD	4.0	<p>Gently rolling rises and low hills formed on micaceous sandstones, commonly kaolinized. Slopes range from 8% to 18% and relief varies from 20 m to 60 m. Water courses are well defined in broad drainage depressions. The majority of soils have sandy to loamy surfaces overlying brown or red clay subsoils forming in fresh, or more commonly deeply weathered, basement rock. Deeper texture contrast soils on alluvium are common on lower slopes.</p> <p>Main soils: <u>Acidic sandy loam over brown clay on rock</u> - <b>K4</b> (E) } on slopes  <u>Sandy loam over brown clay on deeply weathered rock</u> - <b>F1b</b> (C) }  <u>Acidic sandy loam over red clay on rock</u> - <b>K3b</b> (L) }  <u>Sandy loam over brown clay</u> - <b>F1c</b> (L) on lower slope or creek flat alluvium</p> <p>These soils are deep but imperfectly drained due to the tendency for water to perch on the subsoil. Inherent fertility is low and all soils are susceptible to acidification. Erosion potential is moderately high even on gentler slopes as soils are highly erodible.</p>
FcD	9.9	<p>Upper slopes and crests formed on deeply weathered, kaolinized and lateritized siltstones. Slopes are 10-20%. The soils are deep and strongly leached.</p>



		<p>Main soils: <u>Deep acidic ironstone soil - J2</u> (E)  <u>Acidic gradational loam - K1</u> (E)          These soils are deep but of moderately low fertility. The moderately steep slopes and exposed position of this land limit its potential usefulness.</p>
LeB LeE	6.5 11.3	<p>Broad shallow drainage depressions and gently undulating to undulating lower slopes of up to 10% formed on very deeply weathered medium to fine grained rocks, or medium to fine grained alluvium derived from basement siltstones, shales, phyllites and schists.</p> <p><b>LeB</b> Lower slopes, 2-4%.  <b>LeE</b> Shallow valleys with slopes of up to 10%.</p> <p>Most soils have texture contrast profiles with sandy to loamy surfaces and mottled brown, yellow and grey clay subsoils. Variations between the soils are due to drainage conditions, grain size of parent sediments and ironstone gravel content.</p> <p>Main soils: <u>Sandy loam over brown clay - F1c</u> (E) on alluvium  <u>Loam over brown clay - F1a</u> (C) } on deeply weathered rock  <u>Sandy loam over brown clay - F1b</u> (C) }</p> <p>These soils are deep, fertile and moderately well to imperfectly drained. Productive potential is high provided that temporary waterlogging can be managed.</p>

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

(D) Dominant in extent (>90% of SLU)

(V) Very extensive in extent (60–90% of SLU)

(E) Extensive in extent (30–60% of SLU)

(C) Common in extent (20–30% of SLU)

(L) Limited in extent (10–20% of SLU)

(M) Minor in extent (<10% of SLU)

### Detailed soil profile descriptions:

#### Soils formed in weathering basement rock

##### **K1** Acidic gradational loam (Mesotrophic, Red Dermosol)

Thick loam with minor ironstone, grading to a brownish or reddish coarsely blocky clay loam to clay, siltier with depth, grading to kaolinized phyllite or siltstone, continuing to depths of 200 cm or more.

##### **K2a** Acidic loam over red clay (Eutrophic, Red Chromosol)

Medium thickness reddish loamy to clay loamy surface soil, with a gravelly and paler coloured A2 horizon, overlying a red very well structured clay subsoil grading to weathering phyllite from about 100 cm.

##### **K2b** Acidic loam over brown clay (Mottled, Eutrophic, Brown Chromosol)

Thick loam with a paler coloured gravelly A2 horizon, overlying a dark brown, yellowish brown and red mottled coarsely structured clay, grading to weathering metasiltstone or phyllite from about 100 cm.

##### **K2c** Acidic loam over black clay (Melanic, Eutrophic, Black Dermosol)

Medium thickness black crumbly clay loam, overlying a black or dark reddish brown very well structured clay subsoil, grading to weathering slate from about 100 cm.

##### **K3a** Acidic sandy loam over mottled red clay (Bleached-Mottled, Eutrophic, Red Chromosol)

Medium thickness loamy surface soil 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 red clay (Bleached, Eutrophic, Red Chromosol)

Thick brown loamy sand to sandy loam with a gravelly and bleached A2 horizon, overlying a red coarsely structured clay, stony and browner with depth, grading to weathering metasandstone by 100 cm.



- K4** Acidic sandy loam over brown clay (Bleached-Mottled, Eutrophic, Brown Kurosol)  
Thick gravelly sandy loam to sandy clay loam with a bleached A2 horizon, overlying a yellowish brown, red and greyish brown coarsely prismatic clay subsoil, grading to weathering metasandstone below 100 cm.
- L1** Shallow stony loam (Acidic, Paralithic, Leptic Tenosol)  
Thick stony sandy loam to loam, forming in weathering schist or phyllite at 50 cm or less.

#### **Ironstone soils**

- J2** Deep acidic ironstone soil (Ferric, Eutrophic, Red Chromosol)  
Medium thickness dark brown loam with a pink A2 horizon containing abundant fragments of ferruginized siltstone, overlying a red and yellow brown clay with blocky structure, grading to grey mottled kaolinitic silty clay. Hard siltstone is deeper than 200 cm.

#### **Hard loamy soils with deep brown clayey subsoils**

- F1a** Loam over brown clay on deeply weathered rock (Eutrophic, Brown Kurosol)  
Thick dark brown sandy 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 weathering schist or phyllite, deeper than 200 cm.
- F1b** Sandy loam over brown clay on deeply weathered rock (Bleached-Mottled, Mesotrophic, Brown Kurosol)  
Thick grey loamy sand to loam with a gravelly and bleached A2 horizon, overlying a brown, yellowish brown and red coarsely prismatic sandy clay to clay subsoil, becoming siltier and greyer with depth. Soft weathering metasandstone occurs from about 150 cm.
- F1c** Sandy loam over brown clay (Bleached-Mottled, Eutrophic / 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.

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

