

SHW Sharp Well Land System

Gently inclined outwash fans flanking the western slopes of the Hummocks and Barunga Ranges, extending from the northern end of the range near Wandearah East to the gap in the range south west of Lochiel.

- Area:** 147.4 km²
- Annual rainfall** 300 - 425 mm average
- Geology:** Medium to fine grained sediments (Pooraka Formation) eroded from the western slopes of the Hummocks and Barunga Ranges and deposited on outwash fans along the footslopes of the range. The sediments are mantled by fine carbonates deposited on the fan surface by the wind. Scattered along the fans are isolated basement rock highs which occur as linear outcrops parallel to the main Hummocks Range.
- Topography:** Very gently to gently inclined outwash fans with slopes of 1-12%. Slopes are steepest adjacent to the footslopes of the range and flatten out in a westerly direction. Water courses cross the slopes at intervals ranging from 100 to 800 m. These are well defined and eroded in places on the upper fan margins but tend to dissipate downslope. The only stream to reach the western edge of the land system is Mundoora Creek. Basement rock rises protrude through the sediments in places. Slopes are mainly 3-15%, but up to 30%.
- Elevation:** In the north of the land system, elevation ranges from 40 m on the western edge to 80 m on the eastern edge. The elevation increases in a southerly direction and at the southern end of the system the corresponding heights are 200 m and 290 m.
- Relief:** There is little relief on the fans as the slopes are even, interrupted only by minor watercourses. The basement rock highs are 10 to 50 m above the general surface.
- Soils:** Deep calcareous loamy soils are predominant, with sandy loam texture contrast soils occurring to a limited extent on gentle slopes. Sandy and light calcareous soils are typical of the sandhill country. Shallow stony soils occur on minor basement rock rises.
- Main soils:** *Soils on outwash fans and flats*
- A6** Calcareous clay loam
 - A4a** Calcareous loam
 - C3** Gradational red clay loam
- Minor soils:** *Soils on outwash fans and flats*
- D3** Hard sandy loam over dispersive red clay
 - D2** Hard sandy loam over red clay
- Soils on basement rock rises*
- A2** Shallow calcareous loam
 - B2/A2** Shallow rubbly calcareous loam
 - L1** Shallow stony loam
- Soils on sand spreads*
- A4b** Calcareous sandy loam
 - A4c** Rubbly calcareous sandy loam
 - H2** Deep calcareous sand



Main features: The outwash fans of the Sharp Well Land System are fully arable, the main limitation being possible fertility problems caused by the predominantly calcareous soils. Provided that erosion is controlled, this land is potentially productive. Poorly structured sandy loam over dispersive clay soils have several limitations (excessive runoff, poor emergence and root distribution, waterlogging, restricted workability and reduced waterholding capacity). The gradational soils have no significant limitations. The basement rock rises have variable depth soils which are often shallow, posing the main limitation to productivity. Control of wind erosion and maintaining fertility are the main issues on the sandy rises.

Soil Landscape Unit summary: 12 Soil Landscape Units (SLUs) mapped in Sharp Well Land System

SLU	% of area	Description #
AUC	0.4	Moderate slopes of 10-30% with abundant surface quartzite. Main soils: <u>shallow rubbly calcareous loam</u> - B2/A2 (V) with <u>shallow stony loam</u> - L1 (C). This small area is steep and stony with shallow soils and is covered by scattered scrub. It has little agricultural value other than stock shelter.
EAB EAC	0.1 5.2	Rises formed on quartzite, with significant surface calcrete and quartzite. EAB Rises with slopes of 2-4%. EAC Rises with slopes of 4-15%. Main soils: <u>shallow calcareous loam</u> - A2 (E) and are <u>shallow rubbly calcareous loam</u> - B2/A2 (E). The rises have variable depth soils which are often shallow - low waterholding capacity is the main limitation to productivity. Fertility problems associated with the calcareous soils, and the abrasiveness of the surface quartzite are less significant limitations.
JJB	2.6	Lower slopes of 2-3% formed on fine grained alluvium. Main soil: <u>hard sandy loam over dispersive red clay</u> - D3 (D). The characteristic features of this land are hard surfaces which run water, restrict workability and impair emergence, and poor subsoil structure which causes temporary waterlogging, poor root distribution and reduced waterholding capacity.
KNA KNB KNC KNH	9.8 28.9 25.3 3.0	Flats and outwash fans formed on fine grained alluvium: KNA Level plains with slopes of less than 2%. KNB Very gentle slopes of 2-4%. KNC Gentle slopes of 4-12%. KNH Gentle slopes of 4-12% with eroded watercourses. Main soils: <u>calcareous clay loam</u> - A6 (E) and <u>calcareous loam</u> - A4a (C), with <u>hard sandy loam over red (dispersive) clay</u> - D2/D3 (C) and <u>gradational red clay loam</u> - C3 (C). Provided that erosion is controlled, this land is potentially productive. The poorly structured D3 soils with hard setting surfaces and dispersive subsoils have several limitations (excessive runoff, poor emergence and root distribution, waterlogging and reduced waterholding capacity). The other soils have few limitations.
KOA KOB KOC	1.4 14.8 7.5	Flats and outwash fans formed on fine grained alluvium: KOA Plains with slopes of less than 2%. KOB Very gentle slopes of 2-4%. KOC Gentle slopes of 4-12%. Main soils: <u>calcareous clay loam</u> - A6 (V) and <u>gradational red clay loam</u> - C3 (C). These slopes are fully arable, the only possible limitation being the sub-optimal fertility of the predominant calcareous soils.
UIK	1.0	Gently undulating plains with irregular low sandy rises. Main soils: <u>calcareous sandy loam</u> - A4b (E) with <u>rubbly calcareous sandy loam</u> - A4c (E) in swales and on lower slopes, and <u>deep calcareous sand</u> - H2 (L) on rises. Control of wind erosion is the main concern on the sandy rises, along with fertility maintenance and the need to encourage deep rooted plants to maximize water use efficiency. Fertility maintenance is the main issue on the flats, although the rubbly soils may have restricted waterholding capacity.



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, Hypercalcic Calcarosol)
Calcareous loam to clay loam grading to a clay loam to light clay with abundant soft carbonate from about 30 cm and overlying quartzite within 100 cm.
- A4a** Calcareous loam (Regolithic, Hypercalcic Calcarosol)
Medium thickness calcareous sandy loam to loam, becoming gradually more clayey and calcareous with depth, merging with very highly calcareous light clay from about 100 cm.
- A4b** Calcareous sandy loam (Regolithic, Hypercalcic / Calcic Calcarosol)
Calcareous loamy sand to sandy loam, grading to very highly calcareous sandy clay loam Class III A carbonate.
- A4c** Rubbly calcareous sandy loam (Regolithic, Supracalcic / Lithocalcic Calcarosol)
Calcareous sandy loam grading to very highly calcareous Class III B or III C rubble.
- A6** Calcareous clay loam (Pedal, Hypercalcic / Calcic Calcarosol)
Calcareous loam to clay loam, more clayey at depth with soft Class I carbonate from about 50 cm, grading to clayey sediments.
- B2/A2** Shallow rubbly calcareous loam (Petrocalcic / Lithic, Calcic / Lithocalcic Calcarosol)
Stony calcareous sandy loam to loam grading to rubbly or soft Class III carbonate overlying quartzite or sheet calcrete, usually within 50 cm.
- C3** Gradational red clay loam (Hypercalcic / Supracalcic Dermosol)
Medium thickness clay loam grading to a well structured red clay with soft to rubbly carbonate from about 60 cm.
- D2** Hard sandy loam over red clay (Hypercalcic / Calcic, Red Chromosol)
Medium thickness hard setting sandy loam to sandy clay loam abruptly overlying a well structured red clay with soft Class I carbonate from about 50 cm.
- D3** Hard sandy loam over dispersive red clay (Hypercalcic / Calcic, Red Sodosol)
Medium thickness hard setting sandy loam to sandy clay loam sharply overlying a red poorly structured dispersive clay with soft Class I carbonate from about 50 cm.
- H2** Deep calcareous sand (Regolithic, Calcic Calcarosol)
Thick reddish calcareous sand, becoming more calcareous with depth and grading to highly calcareous red clayey sand below 100 cm.
- L1** Shallow stony loam (Calcareous, Lithic, Leptic Tenosol)
Shallow stony sandy loam to clay loam overlying quartzite with pockets of carbonate.

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

