

PDA**Pandappa Land System**

Area: 80.1 km²

Landscape: Pediments and valley floor between Chinamans Hat Hill and Porcupine Range Land Systems. Landforms are rolling to gently undulating slopes with mostly calcareous soils.

Annual rainfall: 250 – 325 mm average

Geology: Proterozoic rocks of the Adelaide Geosyncline, including those of the Umberatina Group, Yudnamutana Subgroup and the Burra Group. Lithologies are variable but are commonly siltstones, shales and quartzites; often calcareous.

Main soils:

M4 (23%) Deep hard gradational sandy loam	(Hard Brown-Dark Kandosol- Dermosol)
D4 (21%) Loam over pederic red clay	(Pedric Red Sodosol-Dermosol)
A3 (21%) Deep moderately calcareous loam	(Callic Calcarosol)
C3 (10%) Friable gradational clay loam	(Callic-Hypercalcic Red Dermosol-Calcarosol)
A2 (10%) Calcareous loam on rock	(Paralithic Calcarosol)

Minor soils:

L1 (5%) Shallow soil on rock	(Rocky Rudosol-Tenosol)
D3 (4%) Loam over poorly structured red clay	(Callic-Hypercalcic Red Sodosol-Chromosol)

Summary: The Pandappa Land System consists of broad pediments, fans and valley floors with rolling to gently undulating landscapes. Soils include deep gradational loams, often calcareous, with some crumbly texture contrast soils and shallow soils on rock.

Soil Landscape Unit summary: Pandappa Land System (PDA)

SLU	% of area	Component	Main soils	Prop#	Notes
AAA	1.0	Rise	L1A2	D	<p>Undulating rises with shallow rocky calcareous soils formed on fine-grained rocks. Rock outcrops are common. Relief is less than 30m, slopes are 3-10%.</p> <p>Main soils: <u>Shallow stony soils on rock - L1</u> and <u>Calcareous loam on rock - A2</u>.</p>
DDB	3.9	Rise	D1A2	E	<p>Gently undulating rises and fans, where shallow texture-contrast soils have loam or clay loam surfaces. Relief 9-30m, slopes are 1-3%.</p> <p>Main soils:</p> <p>Rises: <u>Loam over clay on rock- D1</u>, <u>Calcareous loam on rock - A2</u>.</p> <p>Fans: <u>Loam over pederic red clay - D4</u> and <u>Deep moderately calcareous loam - A3</u>.</p> <p>Soils are fertile, but waterholding capacity is low.</p>
		Fan	D4A3	E	
ETB	12.3	Rise	A2	E	<p>Rises and fans with very shallow soils and more than 20% outcrop of ABC Range Quartzite Formation rocks, including siltstones and quartzite.</p> <p>ETB Undulating rises. Slopes are 3-10%, relief < 9-30m.</p> <p>ETC Rolling rises. Relief is 9-30m, slopes are 10-30%.</p> <p>Main soils:</p> <p>Rises: <u>Calcareous loam on rock - A2</u> and <u>Shallow stony soils on rock - L1</u>.</p> <p>Fans: <u>Loam over pederic red clay - D4</u>, <u>Gradational loamy sand - M4</u>.</p>
		Fan	D4M4	E	
ETC	1.2	Rise	A2	D	



EUB	7.8	Rise	L1A2	V	Rises with a complex of red clayey soils and shallow calcareous soils and red texture contrast soils with calcareous subsoils. EUB Gently undulating rises and fans. Relief 9-30m, slopes 1-3%. EUC Undulating rises. Slopes are 3-10%, relief is 9-30m.
EUC	0.5	Rise	L1A2	D	Main soils: Rises: Shallow stony soils on rock - L1 and Calcareous loam on rock - A2 . Fans: Deep moderately calcareous loam - A3 and Deep alluvial loam - M1 .
JIV	11.9	Fan	D4M4	D	Gently sloping fans with mostly deep red texture contrast soils. More than 20% are deep rubbly calcareous loam on clay soils. Moderately scalped (5-10%). Slopes are 1-3%, relief is less than 9m. Main soils: Loam over pederic red clay - D4 and Gradational loamy sand - M4 .
JLU	0.5	Flat	D3D4	D	Plains and pediments with more than 20% pederic, texture contrast (loam over crumbly red clay) soils, but less than 20% calcareous gradational soils. JLU Plains. Moderately scalped (10-50%). Subsoils moderately saline. JLy Drainage depression. Severely gullied (more than 20%) and scalped (more than 50%). Main soils: Clay loam over pederic red clay - D4 and Loam over poorly structured red clay - D3 .
JPo	2.6	Drainage depression	D4C3	D	Pediments and plains with texture contrast soils formed on outwash sediments derived from basement rocks. Calcareous in some part of the profile. More than 20% of soils are pederic (fine crumbly structure in subsoils). JPo Creek flats with soils as above. Moderately gullied (10-20%) and scalped (10-50%). Main soils: Loam over pederic red clay - D4 and Friable gradational clay loam - C3 .
KVA	0.7	Flat	A3A4	D	Plains formed on outwash sediments with mostly gradational calcareous clay loam surfaced soils. Main soils: Deep moderately calcareous loam - A3 and Deep (rubbly) calcareous sandy loam - A4 .
KXA	1.9	Flat	M4A3	D	Pediments and creek flats with gradational sandy loam over red clay on rock; 10-30% deep calcareous sandy loam over, often rubbly, clay. KXB Gently sloping fans.. Slopes are 1-3%, relief is less than 9m. KXC Undulating pediments. Slopes are 3-10%, relief is less than 9m. KXH Undulating pediments. Moderately gullied (10-20%). Slopes are 1-3%, relief is less than 9m. KXo Drainage depression. 10-20% gullied and 10-50% scalped. KXv Gently sloping fans. 10-20% gullied and over 50% scalped. Slopes are 1-3%, relief is less than 9m. Main soils: Gradational loamy sand - M4 and Deep moderately calcareous sandy loam - A3 .
KXB	17.5	Fan	M4A3	D	
KXC	3.0	Fan	M4A3	D	
KXH	5.2	Fan	M4A3	D	
KXo	2.3	Drainage depression	M4A3	D	
KXv	10.7	Fan	M4A3	D	Gently sloping pediments formed on outwash sediments with mostly calcareous soils but with more than 20% non-calcareous gradational soils (Kandosols). Gullyling affects up to 5% of land and scalding affects 5-10%. Main soils: Deep moderately calcareous sandy loam - A3 and Deep (rubbly) calcareous sandy loam - A4 .
KcV	6.4	Fan	A3A4	D	



PROPORTION codes assigned to Soil Landscape Unit (SLU) components:

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)

A2/L1 Shallow calcareous loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)(A2) OR Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol)(L1)

A3 Deep moderately calcareous (sandy) loam (Calcic Calcarosol)

Calcareous (sandy) loam topsoil grading into loamy-clay loamy subsoil without a significant CO₃ buildup in the subsoil (<20% CO₃ in subsoil). Pediment type Calcarosols.

A4 Deep (rubbly) calcareous loam (Hypercalcic-Lithocalcic Calcarosol)

Calcareous sandy-clay loamy topsoil grading into loamy-clay loamy subsoil with a significant CO₃ buildup in the subsoil. Often rubbly. Soil usually >120 cm in depth

C3 Gradational clay loam (Calcic / Hypercalcic Red Dermosol)

Loam to clay loam grading to a friable red clay with soft Class I carbonate within 50 cm, grading to alluvium within 100 cm.

D1 Loam over red clay on rock (Hypercalcic / Calcic, Red Chromosol / Sodosol)

Medium thickness hard gravelly loam over red clay, friable and finely structured, calcareous with depth, grading to weathering basement rock within 100 cm.

D3 Loam over poorly structured red clay (Calcic-Hypercalcic Red Sodosol-Chromosol)

Topsoil <30 cm over poorly structured subsoil. Hard-setting loamy to clay loamy texture-contrast soil with a prismatic/poorly structured red alkaline clayey subsoil. Often with a thin topsoil. Can have slightly to moderately calcareous surface soil.

D4 Loam over red friable clay (Calcic, Pederic, Red Sodosol)

Thin to medium thickness fine sandy loam to loam over a finely structured friable red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.

L1 Shallow stony loam (Paralithic, Leptic Tenosol)

Shallow stony loam, often calcareous throughout or with depth, overlying weathering rock shallower than 50 cm.

M1 Alluvial loam (Orthic Tenosol)

Very thick loam with variable gritty or more-clayey lenses, formed over recent alluvium.

M4 Gradational loamy sand (Hypocalcic, Red / Brown Kandosol)

Medium to thick massive (often powdery) loamy sand to sandy loam grading to a red or brown sandy clay loam becoming more clayey and weakly calcareous with depth.

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

