WNY Wonna-Arinya Land System

Area: 22 km^2

Landscape: Undulating hard rock rises, often isolated occurrences on pediments and slopes. Soils are shallow calcareous loams.

Annual rainfall: 275 – 325 mm range, with around 80% receiving 275 – 300 mm average

Geology: Neoproterozoic Wilpena Group quartzites, siltstones and shales.

Main soils:

L1	(23%) Shallow soil on rock	(Rocky Rudosol-Tenosol)
A3	(14%) Deep moderately calcareous loam	(Calcic Calcarosol)
A2	(12%) Calcareous loam on rock	(Paralithic Calcarosol)
C3	(11%) Friable gradational clay loam	(Calcic-Hypercalcic Red Dermosol-Calcarosol)
D4	(10%) Loam over pedaric red clay	(Pedaric Red Sodosol-Dermosol)

Minor soils:

RR	(8%) Bare rock	
A4	(6%) Deep (rubbly) calcareous loam	(Hypercalcic-Lithocalcic Calcarosol)
C2	(6%) Gradational loam on rock	(Shallow Red Dermosol-Kandosol-Calcarosol)
M4	(4%) Deep hard gradational sandy loam	(Hard Brown-Dark Kandosol- Dermosol)

Summary: The Wonna-Arinya Land System consists of disjunct rises and pediments formed over Wilpena Group Proterozoic rocks. Soils are shallow calcareous loams.

Soil Landscape Unit summary: Wonna-Arinya Land System (WNY)

SLU	% of area	Component	Main soils	Prop#	Notes
AIA	2.9	Gently undulating rises	L1RR C2	D	Rises with very shallow sandy loam, or rock outcrop or shallow gradational loam over red clay loam on fine-grained rock. **AIA** Gently undulating rises Slopes are 1-3%, relief is less than 30m. **AIB** Rolling rises as above. Relief is 9-30m, slopes are 10-30%. Main soils: Shallow stony soils on rock - **L1**, Bare rock – **RR** and Gradational loam on rock - **C2**.
AIB	9.1	Rolling rises	L1RR C2	D	
AJD	10.1	Ridge	L1A2	D	Steep low hilly ridge with shallow soils formed on fine-grained rocks (Umberatana Group tillites). Less than 20% of soils have secondary carbonate. Soils are shallow over calcareous rocks. Relief is 30-90m, slopes are 30-50%. Main soils: Shallow stony soils on rock - **L1** and Calcareous loam on rock – **A2**.
AWA	10.3	Rise	L1	D	Hills and rises with shallow rocky soils formed on quartzites with more than 50% interbedded calcareous rocks. More than 20% of soils have secondary carbonate accumulations. **AWA** Undulating rises. Relief is less than 30m, slopes are 3-10%. **AWC** Rolling rises. Relief is less than 30m, slopes are 10-30%. Main soils: Shallow stony soils on rock **- L1**.
AWC	7.5	Rise	L1	D	

DBB	3.9	Gentle slope	D1A2	D	Gently sloping pediment formed on basement rocks with texture contrast soils with clay-loamy surfaces and containing carbonate in the subsoils. Relief is less than 9m, slopes are 1-3%. Main soils: Clay loam over pedaric red clay on rock - **D1** and Calcareous clay loam on rock – **A2**.
EHB	7.6	Rise	A2L1	D	Gently sloping rises and pediments on calcareous siltstones and limestones such as those of the ABC Range Quartzite Formation of the Wilpena Group. Slopes are 3-10%, relief is 9-30m. Main soils: Calcareous loam on rock – **A2**, and Shallow stony soils on rock - **L1**.
JIl	12.2	Fan	C3D4	D	Pediments and plains with mostly deep red texture contrast soils. More than 20% are deep rubbly calcareous loam on clay soils. **JIl** Gently sloping fans. Moderately gullied (10-20%) and scalded (5-10%). Slopes are 1-3%, relief is less than 9m. **JIm** Undulating fan slopes. Moderately gullied (10-20%) and scalded (5-10%). Slopes are 3-10%, relief is less than 9m. **JIy** Drainage depression. Moderately gullied (10-20%) and severely scalded (>50%). Main soils: Friable gradational clay loam - **C3** and Loam over pedaric red clay - **D4**.
JIm	7.6	Fan	C3D4	D	
Jly	1.4	Drainage depression	D4C3	D	
JLyy	4.0	Drainage depression	D4C3	D	Creek flat with more than 20% pedaric, texture contrast (loam over crumbly red clay) soils, but less than 20% calcareous gradational soils. Severely gullied (over 20%) and scalded (over 50%), non-saline. Main soils: Clay loam over pedaric red clay - **D4** and Friable gradational clay loam - **C3**
KFB	11.2	Gently undulating plain	A4A3	E	Gently sloping pediments and flats with calcareous gradational soils and more than 20% red pedaric texture contrast soils. Slopes are 1-3%, relief is less than 9m. Main soils: Deep (rubbly) calcareous sandy loam **-A4** and Deep moderately calcareous loam - **A3**.
		Flat	A3A4	E	
KVA	3.9	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**.
KXC	5.3	Fan	A3	D	Pediments and creek flats with deep calcareous clay loam over, often rubbly, clay. Slopes are 3-10%, relief is less than 9m. Main soils: Deep moderately calcareous loam - **A3**.
KYE	3.0	Flat	A3M4	D	Plains formed on outwash materials with predominantly deep calcareous gradational soils with sandy loam to sandy clay-loam surfaces. Main soils: Deep moderately calcareous sandy loam - **A3** and Gradational loamy sand - **M4**.

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

- 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:

A2/L1 Shallow calcareous loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)(**A2**)
Gradational calcareous sandy loam over clay loam on weathered rock.
OR Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol)(**L1**)
Shallow calcareous sandy loam on rock.

A3 Deep moderately calcareous (sandy) loam (Calcic Calcarosol)
Calcareous (sandy) loam topsoil grading into loamy-clay loamy subsoil without a significant CO_3 buildup in the subsoil (<20% CO_3 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 CO_3 buildup in the subsoil. Often rubbly. Soil usually >120 cm in depth

C2 Gradational loam on rock (Calcic / Hypercalcic Red Dermosol)
Loam to clay loam grading to a friable red clay with soft Class I carbonate within 50 cm, grading to weathering rock within 100 cm.

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.

D4 Loam over red friable clay (Calcic, Pedaric, 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.

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.

RR Bare rock.

Further information: DEWNR Soil and Land Program