

KYK Kanyaka Land System

Area:	88.2 km ²
Landscape:	Elongate ridges and rocky quartzite hills with steep to moderate slopes
Annual rainfall:	235 – 375 mm average
Geology:	Higher elevation and steeper hills and ridges are formed on ABC Range and Pound Quartzites. Calcareous siltstones and limestones of the Wonoka Formation occur on lower rises and more gently undulating topography.
Elevation:	250 - 500 m asl on ridge tops, highest in the eastern ridges. Valley floors have elevations around 200 - 300 m.
Relief:	Relief is up to, and is commonly, around 100 m
Soils:	Shallow rocky soils and rock outcrop occupy nearly 80% of the landscape, with shallow red, often calcareous, gradational soils and deeper red texture contrast soils as minor components.

Main soils:

- L1a** Shallow stony loamy sand to sandy loam (on quartzite)
- RR** Rock outcrop

Minor soils:

Basement rock rises

- A2** Shallow calcareous loam to clay loam
- C2** Gradational sandy loam to loam on rock
- D1** Clay loam to loam over clay on rock
- D7** Loam over poorly structured clay on rock
- L1b** Shallow stony loam to clay loam (on fine grained rock)

Pediments and flats

- A3** Deep moderately calcareous sandy loam
- A4** Deep (rubbly calcareous sandy loam
- C3** Friable gradational clay loam
- D2** Clay loam over red clay
- D4** Clay loam over pedaric red clay
- E2** Red cracking clay

Summary:	Steep rocky ranges and rolling low hills and rises. The steeper, rockier land is formed on quartzite, whilst the gentler rises are underlain by limestones and calc-siltstones. Soils are mostly shallow and rocky, with red duplex and clay soils or calcareous gradational soils associated with pediments.
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Soil Landscape Unit summary: 18 Soil Landscape Units (SLUs) mapped in the Kanyaka Land System:

SLU	% of area	Component	Main soils	Prop#	Notes
AFB	4.0	Rolling rises	L1A2	D	Rolling rises with very shallow loamy soils on fine grained calcareous rocks of the Wonoka Formation. Main soils: <u>shallow stony loam</u> - L1b and <u>shallow calcareous clay loam</u> - A2 with <u>rock outcrop</u> - RR .
AIC	4.7	Rolling low hills	L1RRC2	D	Rolling low hills with shallow rocky soils formed on quartzite (ABC Range Quartzite Formation). Rock outcrop is common. Main soils: <u>shallow stony loam</u> - L1b , <u>rock outcrop</u> - RR and <u>gradational loam on rock</u> - C2 (on lower slopes and depressions). Non-arable.
AQA	0.6	Undulating rises	L1	D	Non-arable low hills formed on Pound Quartzite with very shallow rocky soils and bare rocky outcrops. AQA Undulating low rises. Relief is 9-30m, slopes: 3-10%. AQB Rolling rises. Relief is 9-30m, slopes are 3-10%. AQC Rolling low hills. Relief is 30-90m, slopes are 3-10%. AQD Steep low hills. Relief is 30-90m, slopes are 30-50%. AQE Steep hills. Relief is 90-300m, slopes are 30-50%. AQF Very steep hills. Relief is 90-300m, slopes are 50-100%. AQH Rolling rises with eroded watercourses. Relief: 9-30m, slopes are 3-10%. AQV Steep low hills. Relief is 30-90m, slopes are 30-50%. AQY Undulating plateau, slopes are less than 10%. AQZ Rolling plateau, slopes are more than 10%. Main soils: <u>shallow stony loamy sand</u> - L1a and <u>rock outcrop</u> - RR , with <u>gradational sandy loam on rock</u> - C2 .
AQB	0.9	Rolling rises	L1	D	
AQC	27.8	Rolling low hills	L1	D	
AQD	2.6	Steep low hills	L1RR	D	
AQE	26.2	Steep hills	L1RR	D	
AQF	19.1	Very steep hills	L1RR	D	
AQH	1.1	Rolling rises	L1	D	
AQV	0.5	Steep low hills	L1RR	D	
AQY	1.8	Undulating plateau	L1	D	
AQZ	1.0	Rolling plateau	L1	D	
DCC	2.0	Undulating rises	D1A2L1	D	Undulating rises formed on shales and siltstones, typically Burra Group rocks including Minburra Quartzite. Surface soils commonly have clay loamy textures. There is much surface stone. Relief is 9-30m, slopes are 3-10%. Main soils: <u>clay loam over (pedaric) red clay on rock</u> - D1 , <u>shallow calcareous clay loam</u> - A2 and <u>shallow stony loam</u> - L1b .
DDD	0.8	Rolling rises	D1L1C2	D	Rolling rises formed on fine grained rocks with clayey soils. Rock outcrops occur in places. Relief: 9-30m, slopes: 10-30%. Main soils: <u>clay loam over (pedaric) red clay on rock</u> - D1 , <u>shallow stony clay loam</u> - L1b and <u>gradational loam on rock</u> - C2 .
EPC	2.5	Undulating rises	A2L1	D	Undulating rises; dissected remnants of calcareous pediments and basement rocks with mainly loamy calcareous soils. Relief is less than 30m, slopes are 3-10%. Main soils: <u>shallow calcareous loam</u> - A2 and <u>shallow stony loam</u> - L1b .
JAD	1.8	Rolling pediments	E2C3C2	D	Rolling pediments formed on fine grained outwash and weathering rock, with clayey to clay loamy soils. Relief is less than 9m, slopes are 10-30%. Surface gravels are common. Main soils: <u>red cracking clay</u> - E2 , <u>friable gradational clay loam</u> - C3 and <u>gradational loam on rock</u> - C2 , with <u>shallow stony clay loam</u> - L1b .



JMI	1.3	Pediments	D2	V	Complex of quartz gravelly pediment plains on fine grained outwash, and gently undulating basement rock rises with slopes 1-3%. 5-20% of pediments are gullied, and 50% are scalded. Slopes are 1-3%. Main soils: Pediments: clay loam over red clay - D2 , with clay loam over pedaric red clay - D4 . Rises: <u>shallow stony loam</u> - L1b and <u>loam over (pedaric) clay on rock</u> - D1 , with <u>loam over poorly structured clay on rock</u> - D7 .
		Gently undulating rises	L1D1	C	
KPH	1.3	Undulating pediments	A3A4	D	Undulating pediments with sandy loam soils, formed on coarse grained alluvium. 5-10% gullied. Slopes: 3-10%. Main soils: <u>deep moderately calcareous sandy loam</u> - A3 and <u>deep (rubbly) calcareous sandy loam</u> - A4 .

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)

Detailed soil profile descriptions:

- A2** Shallow calcareous loam to clay loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous stony loam to clay loam grading to soft or rubbly carbonate over weathering dolomite or calc-siltstone within 50 cm.
- A3** Deep moderately calcareous sandy loam (Regolithic, Calcic Calcarosol)
Calcareous sandy loam grading to a loamy to clayey subsoil without a significant carbonate accumulation in the subsoil, grading to medium to fine grained alluvium.
- A4** Deep (rubbly) calcareous sandy loam (Regolithic, Hypercalcic / Lithocalcic Calcarosol)
Calcareous sandy loam grading to a very highly calcareous sandy clay loam to light clay with variable rubble, continuing below 120 cm.
- C2** Gradational sandy loam to loam on rock (Calcic / Hypercalcic Red Dermosol)
Sandy loam to loam grading to a friable red clay loam to clay with soft Class I carbonate within 50 cm, grading to weathering rock within 100 cm.
- C3** Friable gradational clay loam (Calcic / Hypercalcic Red Dermosol)
Clay loam grading to a friable red clay with abundant soft Class I carbonate within 50 cm, overlying alluvium within 100 cm.
- D1** Clay loam to loam over clay on rock (Hypercalcic / Calcic, Red Chromosol)
Medium thickness hard gravelly loam to clay loam over a friable and finely structured red clay, calcareous with depth, grading to weathering basement rock within 100 cm.
- D2** Clay loam over red clay (Calcic / Hypercalcic, Red Chromosol)
Hard setting clay loam (with variable quartzite stones) abruptly overlying a well structured red clay with soft Class I carbonate at depth.
- D4** Clay loam over red friable clay (Calcic, Pedaric, Red Sodosol)
Thin to medium thickness clay loam over a finely structured friable red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.



- D7** Loam over poorly structured clay on rock (Calcic / Hypercalcic, Red Sodosol)
Medium to thick hard sandy loam to loam sharply overlying a coarsely structured dispersive red clay, calcareous with depth, grading to highly weathered kaolinized siltstone or quartzite.
- E2** Red cracking clay (Epicalcareous, Epipedal, Red Vertosol)
Dark strongly structured clay grading to a well structured red calcareous medium to heavy clay continuing below 100 cm. Often containing gypsum segregations in subsoil.
- L1a** Shallow stony loamy sand to sandy loam on quartzite (Paralithic, Leptic Tenosol)
Shallow stony loamy sand to sandy loam, often calcareous with depth, overlying quartzite shallower than 50 cm.
- L1b** Shallow stony loam to clay loam on fine grained rock (Paralithic, Leptic Tenosol)
Shallow stony loam, often calcareous with depth, overlying weathering fine grained rock shallower than 50 cm.
- RR** Rock outcrop

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

