

# WAD Waddington Bluff Land System

<b>Area:</b>	137 km <sup>2</sup>
<b>Landscape:</b>	Series of arcuate parallel, rolling to occasionally steep, ranges, north-west of Paratoo. The rocky hills and low rises abut calcareous pediments and outwash plains which drain towards the north-west. Shallow rocky soils tend to have formed on quartzite and other resistant rocks, whereas deeper calcareous soils form on softer calcareous parent rocks on gentler rises.
<b>Annual rainfall:</b>	225 - 275 mm average, with over 80% receiving 250 - 275 mm average
<b>Geology:</b>	Appila Tillite forms the arcuate, resistant, dominant ridges running through the land system. More gently sloping hard rock rises are formed on Saddleworth Formation slates, shales, siltstones and dolomites. Gentler outwash slopes are formed on variable deposits derived from adjacent basement rises. Alluvial sediments fill the broad, gently sloping valley floors.
<b>Topography:</b>	Gently undulating broad valleys are contained within folded ridges converging to the north-east.
<b>Elevation:</b>	The valley floors are gently sloping upwards to the north-east rising from around 290 to 360m asl. The ridges also reach higher elevations in a north-easterly direction, rising from 300 to 400m asl.
<b>Relief:</b>	Relief increases from a few metres in the southwest, to around 50m in the north-east.
<b>Soils:</b>	About one third are rubbly calcareous gradational soils associated with texture contrast soils. These are typically found on pediments with gentle slopes. Shallow calcareous loam over rock soils are typical of the ridges and ranges, where rock outcrop is also common.
<b>Main soils:</b>	<p><i>Pediments and gentle slopes</i></p> <p><b>A5</b> Rubbly calcareous loam to clay loam on clay</p> <p><b>D4</b> Loam to clay loam over pedaric red clay</p> <p><i>Rises</i></p> <p><b>A2</b> Shallow calcareous loam</p> <p><b>L1a</b> Shallow stony sandy loam</p>
<b>Minor soils:</b>	<p><i>Pediments and gentle slopes</i></p> <p><b>A3</b> Deep moderately calcareous loam</p> <p><b>A4</b> Deep (rubbly) calcareous sandy loam</p> <p><i>Rises</i></p> <p><b>B2</b> Shallow calcareous loam on calcrete</p> <p><b>D1</b> Clay loam to loam over clay on rock</p> <p><b>D7</b> Clay loam over poorly structured clay on rock</p> <p><b>L1b</b> Shallow stony loam</p> <p><b>RR</b> Rock outcrop</p>



**Summary** The Waddington Bluff Land System consists of a series of elongate ranges which converge to the northeast. Deep rubbly calcareous soils are commonly found in association with pedaric (crumbly) red texture contrast soils on the gentler slopes and valley floors between the ranges. The soils on the ranges are shallow, often calcareous, with rock outcrop common.

**Soil Landscape Unit summary:** 30 Soil Landscape Units (SLUs) mapped in the Waddington Bluff Land System

SLU	% of area	Component	Main soils	Prop#	Notes
ABB	0.3	Rolling rises	L1	D	Rolling rises with linear rocky quartzite outcrops and shallow rocky soils on interbedded fine grained rocks. Relief is less than 30m, slopes are 10-30%. Rock outcrop is common (10-30%). Main soils: <u>shallow stony sandy loam - L1a</u> , with <u>rock outcrop - RR</u> .
AYA	7.5	Undulating rises	L1	D	Hills and rises on fine grained rocks, especially siltstones of the Tapley Hill Formation, with shallow stony sandy loam soils. About 20% of underlying rocks are calcrete capped. <b>AYA</b> Undulating rises with shallow stony soils and limited rocky outcrop. Relief is less than 30m, slopes are 3-10%. <b>AYB</b> Rolling rises with shallow stony soils and extensive rocky outcrop. Relief is less than 30m, slopes are 10-30%. <b>AYC</b> Rolling low hills with extensive rock outcrop. Slopes are 10-30%, relief is 30-90m. <b>AYD</b> "Waddington Bluff" - steep low hills with mostly rock outcrop or very shallow stony soils. Relief is 30-90m, slopes are 30-50%. <b>AYH</b> Rolling rises with eroded watercourses (10-20% landscape); around 5% scalded. Relief: 30-90m, slopes: 10-30%. Extensive rock outcrop. <b>AYW</b> Very steep low hills dominated by rock outcrop and scree slopes. Limited soil cover. Relief is 30-90m; slopes are 50-100%. Main soils: <u>shallow stony sandy loam - L1a</u> and <u>rock outcrop - RR</u> , with <u>shallow calcareous loam - A2</u> and <u>shallow calcareous sandy loam on calcrete - B2</u> .
AYB	0.7	Rolling rises	L1RR	D	
AYC	6.2	Rolling low hills	L1RR	D	
AYD	0.4	Steep low hills	RRL1	D	
AYH	3.2	Rolling rises	L1RR	D	
AYW	0.4	Very steep low hills	RR	D	
DTC	1.0	Undulating rises	D1D7	D	Undulating rises with clay loamy soils over fine grained rock. Relief is 9-30m, slopes are 3-10%. Main soils: <u>clay loam over (pedaric) red clay on rock - D1</u> and <u>clay loam over poorly structured clay on rock - D7</u> , with <u>rock outcrop - RR</u> , and <u>shallow stony loam - L1b</u> .
EHV	2.4	Gently sloping plain	A2	V	Gently sloping pediment plains and rises on calcareous siltstones and limestones of the Tapley Hill Formation. Moderately scalded. 10-20% low rises with rocky outcrops. Main soils: <b>Plains and pediments:</b> <u>calcareous loam on rock - A2</u> , with <u>rock outcrop - RR</u> , and <u>shallow calcareous sandy loam on calcrete - B2</u> . <b>Rocky rises:</b> <u>rock outcrop - RR</u> , with <u>shallow stony sandy loam - L1a</u> and <u>shallow calcareous sandy loam on calcrete - B2</u> .
		Rocky outcrops	RR	L	
EOQz	6.9	Gently sloping pediments	A2	D	Gently sloping pediment plains formed mainly on limestones, calc-siltstones and dolomites. Moderately gullied and severely scalded, with moderately saline soils. Slopes are 1-3%. Main soils: <u>shallow calcareous loam - A2</u> , with <u>deep (rubbly) calcareous sandy loam - A4</u> and <u>shallow stony loam - L1b</u> .
EVB	1.0	Gently und. rises	A2	V	Rises formed on fine grained calcareous rocks with 20-30% of area mainly rock outcrop. <b>EVB</b> Gently undulating rises. Slopes are 1-3%, relief is less than 30m. <b>EVC</b> Undulating rises. Slopes are 3-10%, relief is less than 9-30m.
		Rocky outcrops	RR	C	
EVC	11.1	Undulating rises	A2	V	<b>EVI</b> Gently undulating rises with moderate gullying and scalding. Slopes are 1-3%, relief is less than 30m.



		Rocky outcrops	RR	C	Main soils: <b>Rises:</b> <u>shallow calcareous loam - A2</u> , with <u>rubbly calcareous loam on clay - A5</u> and <u>shallow calcareous loam on calcrete - B2</u> . <b>Rocky areas:</b> <u>rock outcrop - RR</u> with <u>shallow stony loam - L1b</u> .
EVI	4.2	Gently und. rises	A2	V	
		Rocky outcrops	RR	C	
JIB	6.1	Gently sloping plain	D1D4 A5	D	Gently sloping pediment plains formed on fine grained outwash. Main soils: <u>loam over pedaric red clay - D4</u> , <u>loam over clay on rock - D1</u> and <u>rubbly calcareous loam on clay - A5</u> , with <u>deep moderately calcareous loam - A3</u> and <u>shallow calcareous loam on calcrete - B2</u> .
JLq	1.7	Gently sloping plain	D4D1 A5	D	Gently sloping plains formed on fine grained outwash. The land is severely scalded with over 50% affected. Subsoils are moderately saline. Main soils: <u>loam over pedaric red clay - D4</u> , <u>loam over clay on rock - D1</u> and <u>rubbly calcareous loam on clay - A5</u> , with <u>deep moderately calcareous loam - A3</u> and <u>shallow calcareous loam on calcrete - B2</u> .
JPC	1.1	Undulating pediment	D4A5	D	Pediments and plains formed on outwash sediments derived from basement rocks.
JPoo	1.5	Creek flats	D4A5	D	<b>JPC</b> Moderately sloping pediments with slopes of 3-10%.
JPP	0.5	Plains	D4A5	D	<b>JPoo</b> Creek flats, moderately scalded (10-50%) and severely gullied (more than 20%). Moderate subsoil salinity.
JPU	2.4	Plains	D4A5	D	<b>JPP</b> Plains with moderate soil salinity.
JPu	0.4	Plains	D4A5	D	<b>JPU</b> Plains, moderately (10-50%) scalded.
JPV	3.1	Pediments	D4A5	D	<b>JPu</b> Plains, moderately gullied (10-20%) and severely scalded (more than 50%). Subsoils are saline.
JPy	4.9	Creek flats	D4A5	D	<b>JPV</b> Gently sloping pediment, moderately scalded (5-10%). Slopes 1-3%. <b>JPy</b> Creek flats, moderately gullied (10-20%), severely scalded (over 50%). Main soils: <u>loam over pedaric red clay - D4</u> and <u>rubbly calcareous loam on clay - A5</u> , with <u>deep moderately calcareous loam - A3</u> .
JZV	0.7	Pediments	D4A5	D	Pediments with rocky outcrops, and creek flats.
		Rocky outcrops	RR	M	<b>JZV</b> Gently sloping pediments, 1-3% slopes, moderately scalded (5-10%). Up to 10% rock outcrop.
JZy	0.2	Creek flats	D4	D	<b>JZy</b> Creek flats, moderately gullied (10-20%), severely scalded (over 50%). Main soils: <b>Pediments and plains:</b> <u>clay loam over pedaric red clay - D4</u> and <u>rubbly calcareous clay loam on clay - A5</u> , with <u>deep moderately calcareous loam - A3</u> . <b>Rocky rises:</b> <u>rock outcrop - RR</u> , with <u>shallow stony loam - L1b</u> . <b>Creek flats:</b> <u>clay loam over pedaric red clay - D4</u> .
KFB	8.6	Pediments	A5	D	Pediments formed on fine grained outwash.
KFC	4.6	Pediments	A5	D	<b>KFB</b> Gently sloping pediments, slopes 1-3%.
KFV	7.6	Pediments	A5	D	<b>KFC</b> Moderately sloping pediments, slopes 3-10%. <b>KFV</b> Moderately scalded gently sloping pediments, slopes 1-3%. Main soils: <u>rubbly calcareous clay loam on clay - A5</u> with <u>clay loam over pedaric red clay - D4</u> .
KQI	8.0	Pediments	A5	V	Complex of pediments formed on fine grained outwash, and fine grained basement rock rises. <b>KQI</b> Gently sloping pediments and 20-30% low rocky rises, slopes 1-3%. Up to 50% of land on pediments is scalded and over 20% is gullied. Subsoils have moderate salinity. Rises have few or no scalds and gullies. <b>KQm</b> Moderately sloping pediments and 20-30% low rocky rises, slopes 3-10%. 5-10% of land on pediments is scalded and over 20% is gullied. Subsoils have moderate salinity. Rises have few or no scalds and gullies Main soils: <b>Pediments:</b> <u>rubbly calcareous clay loam on clay - A5</u> , with <u>clay loam over pedaric red clay - D4</u> . <b>Rises:</b> <u>shallow calcareous loam - A2</u> , with <u>shallow calcareous loam on calcrete - B2</u> and <u>rock outcrop - RR</u> .
		Low rises	A2	C	
KQm	1.7	Pediments	A5	V	
		Low rises	A2	C	



KYA	1.6	Plains	A5	D	Plains formed on outwash materials with mainly sandy clay loam surfaced soils. Main soils: <u>rubbly calcareous sandy clay loam on clay</u> - <b>A5</b> , with <u>clay loam over pedaric red clay</u> - <b>D4</b> .
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# 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 (Paralithic, Hypercalcic / Lithocalcic Calcarosol)  
Calcareous stony loam grading to soft or rubbly carbonate over weathering dolomite or calc-siltstone within 50 cm.
- A3** Deep moderately calcareous loam (Regolithic, Calcic Calcarosol)  
Calcareous 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.
- A5** Rubbly calcareous loam to clay loam on clay (Regolithic, Supracalcic / Hypercalcic Calcarosol)  
Calcareous loam to clay loam grading to a very highly calcareous rubbly sandy clay loam to light clay, over a clayey substrate deeper than 60 cm, but within 120 cm.
- B2** Shallow calcareous loam on calcrete (Petrocalcic, Calcic / Lithocalcic Calcarosol)  
Stony calcareous sandy loam to loam, often with a very highly calcareous more clayey subsoil, over sheet calcrete within 50 cm. This grades to rubbly carbonate over weathering basement rock within 150 cm.
- D1** Loam to clay 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.
- D4** Loam to clay loam over red friable clay (Calcic, Pedaric, Red Sodosol)  
Thin to medium thickness loam to clay loam over a finely structured friable red clay, calcareous from about 50 cm, grading to fine or medium grained alluvium.
- D7** Clay loam over poorly structured clay on rock (Calcic / Hypercalcic, Red Sodosol)  
Medium to thick hard clay loam sharply overlying a coarsely structured dispersive red clay, calcareous with depth, grading to highly weathered kaolinized siltstone or quartzite.
- L1a** Shallow stony sandy loam on quartzite (Paralithic, Leptic Tenosol)  
Shallow stony sandy loam, often calcareous with depth, overlying medium grained rock shallower than 50 cm.
- L1a** Shallow stony 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](#)

