

THB Thistlebeds Land System

Area: 28 km²

Landscape: Gently sloping pediments adjacent to ranges. They are weakly to moderately dissected by creeks. Soils are calcareous, often rubbly, and occasionally shallow over calcrete. Some gently undulating hard rock rises occur in places

Annual rainfall: 200 - 375mm average range, but 75% receives 275 - 350mm average

Geology: Quaternary alluvial/fluviol sediments ranging from Pleistocene to Holocene ages.

Main soils: **A3** (34%) Deep moderately calcareous loam (Calcic Calcarosol)
A4 (30%) Deep (rubbly) calcareous loam (Hypercalcic-Lithocalcic Calcarosol)

Minor soils: **A5** (9%) Rubbly calcareous loam on clay (Supracalcic-Lithocalcic Calcarosol on clay)
M4 (9%) Deep hard gradational sandy loam (Hard Brown-Dark Kandosol- Dermosol)
D4 (6%) Loam over pedaric red clay (Pedaric Red Sodosol-Dermosol)
M3 (4%) Deep gravelly soil (Gravelly Kandosol-Tenosol)
A2 (3%) Calcareous loam on rock (Paralithic Calcarosol)

Soil Landscape Unit summary: The Thistlebeds Land System consists of gently sloping pediments and plains adjacent to ranges with gradational calcareous soils.

SLU	% of area	Component	Main soils	Prop#	Notes
AJA	0.1	Rises	L1A2	D	Gently undulating rises with shallow soils formed on fine-grained rocks (Umberatana Group tillites). Less than 20% of soils have secondary carbonate. Soils on rises are shallow over calcareous rocks with deeper soils on fans. AJA and fans. Slopes are 1-3%, relief is less than 30m. Main soils: Shallow stony soils on rock - L1 and <u>Calcareous loam on rock</u> - A2 .
EEZ	5.7	Plateau surface	A2A4	D	Plateau summit surface with mostly gradational calcareous soils, containing carbonate concretions or hard calcrete fragments. Main soils: <u>Calcareous loam on rock</u> - A2 and <u>Deep (rubbly) calcareous sandy loam</u> - A4 .
ELB	0.0	Rises	A2L1	D	Gently undulating rises-pediment complex with shallow soils formed on Grampus Quartzite or Ketchowla Siltstone Formations and alluvium. Slopes are 1-3%, relief is 9-30m. Main soils: <u>Calcareous loam on rock</u> - A2 and Shallow stony soils on rock - L1 .
ETB	1.0	Rises	A2	D	Undulating rises with very shallow soils and more than 20% outcrop of ABC Range Quartzite Formation rocks, including siltstones and quartzite. Slopes are 3-10%, relief is less than 9-30m. Main soils: <u>Calcareous loam on rock</u> - A2 .
JLp	0.7	Flats	D4	D	Flats with more than 20% pedaric, texture contrast (loam over crumbly red clay) soils. Moderately gullied (stable banks) and scalded (10-50%). Main soils: <u>Clay loam over pedaric red clay</u> - D4 .



JPe	0.2	Drainage depressions	D4A3	D	<p>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 pedaric (fine crumbly structure in subsoils).</p> <p>JPe Drainage depressions. Moderately gullied and up to 10% saline land.</p> <p>JPo Drainage depressions. Moderately gullied (10-20%) and scalded (10-50%).</p> <p>JPoo Creek flats. Severely gullied and moderately scalded.</p> <p>JPp Plains. Severely scalded (over 50%).</p> <p>JPU Flats, 10-50% scalded.</p> <p>JPvw Gently sloping pediment, severely gullied (over 20%) and severely scalded (over 50%).</p> <p>Main soils: <u>Clay loam over pedaric red clay - D4</u> and <u>Deep moderately calcareous loam - A3</u>.</p>
JPo	0.2	Drainage depressions	D4A3	D	
JPoo	0.4	Creek flats	D4A3	D	
JPp	0.2	Plains	D4A3	D	
JPU	0.7	Flats	D4A3	D	
JPvw	3.7	Gently sloping pediment	D4A3	D	
KFA	0.5	Low rises and flats	A5A4	D	<p>Pediments and plains with calcareous gradational soils and more than 20% red pedaric texture contrast soils.</p> <p>KFA Low rises and flats. Slopes are less than 1%.</p> <p>KFB Gently sloping fan.</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>KFq Gently sloping fans. Severely scalded (over 50%).</p> <p>KFU Flats and low, gentle rises, 10-50% scalded.</p> <p>KFV Gently sloping fan. 5-10% scalded</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>KFY Valley floor with deep moderately calcareous loam or loam over crumbly red clay. Moderately scalded (10-50%).</p> <p>Main soils: <u>Rubby calcareous loam on clay - A5</u>, <u>Deep (rubby) calcareous sandy loam -A4</u>.</p> <p><u>Shallow calcareous loam on calcrete - B2</u> dominates some rises.</p>
KFB	3.5	Fan	A5A4	D	
KFq	1.0	Fan	A5A4	D	
KFU	3.0	Flat	A5A4	V	
		Rise	B2A4	C	
KFV	9.5	Fan	A5A4	D	
KFY	0.1	Valley Floor	A5A4	D	
KgB	7.7	Gently undulating pediment	A3A4 M3	D	<p>Pediments and flats with over 50% gradational calcareous soils of which most have more than 20% gravel or stone (non-pedogenic).</p> <p>KgB Gently undulating pediment</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>KgGG Gently undulating pediments. Severely gullied.</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>Kgl Gently undulating pediments. Moderately gullied (10-20%) and scalded (5-10%).</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>Kgoo Creek flat with deep loam, often calcareous and rubby. Over 50% scalded (severe) and over 20% gullied (severe).</p> <p>Main soils: <u>Deep moderately calcareous loam - A3</u>, <u>Deep (rubby) calcareous sandy loam -A4</u> and <u>Deep gravelly soil -M3</u>.</p>
KgGG	0.2	Gently undulating pediment	A3A4 M3	D	
Kgl	2.7	Gently undulating pediment	A3A4 M3	D	
Kgoo	1.2	Creek flat	A3A4 M3	D	
KKU	0.3	Plains	A3A4	D	<p>Plains formed on outwash sediments with mostly gradational calcareous soils (Calcarosols) and more than 10% of associated soils have clayey surfaces. Moderately scalded (10-50%).</p> <p>Main soils: <u>Deep moderately calcareous loam - A3</u> and <u>Deep (rubby) calcareous sandy loam -A4</u>.</p>
KLB	2.3	Flat	A4A5	V	
		Rise	B2A4	C	
KLE	0.2	Drainage depression	A4A5	D	
KLHH	0.5	Undulating rises and fans	A4A5	D	
KLJ	0.5	Drainage depression	A4A5	D	



KLl	4.5	Gently undulating pediments	A4A3	D	<p>KLJ Drainage depression, moderately gullied.</p> <p>KLl Gently undulating pediments. Moderately gullied (10-20%) and scalded (5-10%).</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>KLo Drainage depressions. Moderately gullied (10-20%) and scalded (10-50%).</p> <p>Main soils: <u>Deep (rubbly) calcareous sandy loam -A4</u>, <u>Rubbly calcareous loam on clay - A5</u> and <u>Deep moderately calcareous loam - A3</u>.</p> <p><u>Shallow calcareous loam on calcrete - B2</u> dominates some rises.</p>
KLo	0.2	Drainage depressions	A4A3	D	
KQc	0.7	Fan	A3	V	<p>Pediment and basement-rise complexes with mostly calcareous gradational soils.</p> <p>KQc Undulating pediments and rises, moderately gullied (10-20%) and up to 10% salinity.</p> <p>Slopes are 3-10%, relief is less than 9m.</p> <p>KQGG Gently sloping fans. Severely gullied (over 20%).</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>KQHH Undulating fans. Severely gullied (over 20%).</p> <p>Slopes are 3-10%, relief is less than 9m.</p> <p>Main soils:</p> <p>Fans: <u>Deep moderately calcareous loam - A3</u>.</p> <p>Rises: <u>Calcareous clay loam on rock - A2</u> and <u>Shallow stony soils on rock - L1</u></p>
		Rise	A2L1	E	
KQG G	1.3	Gently sloping fans	A3	D	
KQH H	0.3	Undulating fans	A3	D	
KVA	1.5	Flats	A3A4	D	<p>Pediments and plains formed on calcareous outwash sediments derived from basement rock. More than 90% of soils are calcareous throughout (Calcarosols).</p> <p>Moderately saline soils throughout.</p> <p>KVA Flats</p> <p>KVB Gently sloping plains.</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>KVb Gently sloping plains. and up to 10% saline land.</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>KVG Gently sloping fans. Moderately gullied (5-10%).</p> <p>Slopes are 1-3%, relief is less than 9m.</p> <p>KVH Undulating fans.</p> <p>5-10% is gullied, 0-5% is scalded and subsoils are moderately saline.</p> <p>Slopes are 3-10%, relief is less than 9m.</p> <p>KVj Drainage depression; moderately gullied (5-10%); saline (up to 10%).</p> <p>KVJJ Drainage depression; severely gullied (over 20% of land affected).</p> <p>KVU Flats, 10-50% scalded.</p> <p>KVZ Summit or plateau surface.</p> <p>Main soils:</p> <p>Fans: <u>Deep moderately calcareous loam - A3</u> and <u>Deep (rubbly) calcareous sandy loam -A4</u>.</p> <p>Summit surface: <u>Deep (rubbly) calcareous sandy loam -A4</u> and <u>Shallow calcareous loam on calcrete - B2</u>.</p>
KVB	34.9	Gently sloping plains	A3A4	D	
KVb	4.0	Gently sloping plains	A3A4	D	
KVG	0.9	Gently sloping fans	A3A4	D	
KVH	2.2	Undulating fans	A3A4	D	
KVj	0.4	Drainage depression	A3A4	D	
KVJJ	0.5	Drainage depression	A3A4	D	
KVU	0.2	Flats	A3A4	D	
KVZ	0.7	Summit surface	A4B2	D	
XFT	0.3	Eroded creek	M3M1	D	<p>Eroded creek with gravelly alluvium on hilly land.</p> <p>Main soils: <u>Deep gravelly soil -M3</u> and <u>Deep alluvial loam - M1</u>.</p>
XGB	1.2	Alluvial plain	M3A3	D	<p>Alluvial plain with gravelly alluvium; eroded.</p> <p>Main soils: <u>Deep gravelly soil -M3</u> and <u>Deep moderately calcareous loam - A3</u>.</p>

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

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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/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 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
- A5** Rubbly calcareous loamy sand on clay (Supracalcic-Lithocalcic Calcarosol on clay)
Calcareous loamy sand topsoil grading into loamy-clay loamy subsoil on a clayey substrate. Usually rubbly. Clayey substrate occurs at >60cm and <120cm.
- B2** Shallow calcareous loam on calcrete (Petrocalcic Calcarosol-Rudosol)
Shallow, grey to reddish calcareous sandy to clay loamy soil on calcrete. This includes calcareous Petrocalcic Rudosols.
- 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.
- M3** Deep gravelly soil (Gravelly Kandosol-Tenosol)
Deep uniform loamy alluvial soils with at least 50% gravel in the major part of the profile.

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

