

# WWY Walloway Land System

<b>Area:</b>	69 km <sup>2</sup>
<b>Landscape:</b>	Rolling to undulating rises and gently sloping pediments, forming a low range, west of the former Walloway township, northwest of Orroroo.
<b>Annual rainfall:</b>	300 - 350 mm average range, but over 75% has 325 – 350 mm average
<b>Geology:</b>	Predominantly calc-siltstones of the Tapley Hill Formation.
<b>Topography:</b>	Undulating to rolling rises with stony upper slopes and broad lower slopes, often gullied
<b>Elevation:</b>	500 m asl in the south-west to 550 m asl in the north-east
<b>Relief:</b>	5 - 6% slopes are common with relief of 70 m over 1.2 km. Slopes are broad and landforms are rounded. Gully erosion along narrow drainage lines is typical of the land system.
<b>Soils:</b>	<p>Loam over red friable clay grading into weathered rock (Sodosols/Chromosols) often with soft carbonate segregations or even thin, brittle calcrete occur on mid to upper slopes of rises.</p> <p>Shallow calcareous loam over weathering calc-siltstone (Calcarosols/Tenosols) occur on crests and upper slopes of rises, where rocks outcrop commonly. Scalding may be associated with these soils.</p> <p>Calcareous loam/clay loam grading to highly calcareous clay with soft carbonate segregations (Calcarosols) occurs on pediments, often with rocky rises and spurs.</p>
<b>Main soils:</b>	<p><b>A2</b> (19%) Calcareous loam on rock (Paralithic Calcarosol)</p> <p><b>L1</b> (14%) Shallow soil on rock (Rocky Rudosol-Tenosol)</p> <p><b>B2</b> (10%) Shallow calcareous loam on calcrete (Petrocalcic Calcarosol-Rudosol)</p>
<b>Minor soils:</b>	<p><b>D2</b> (7%) Loam over red clay (Calcic-Hypercalcic Red Chromosol-Sodosol)</p> <p><b>C3</b> (7%) Friable gradational clay loam (Calcic-Hypercalcic Red Dermosol-Calcarosol)</p> <p><b>C2</b> (6%) Gradational loam on rock (Shallow Red Dermosol-Kandosol-Calcarosol)</p> <p><b>RR</b> (6%) Bare rock</p> <p><b>A6</b> (5%) Gradational calcareous clay loam (Pedal Hypercalcic-Lithocalcic Calcarosol on clayey subsoil)</p> <p><b>A5</b> (5%) Rubbly calcareous loam on clay (Supracalcic-Lithocalcic Calcarosol on clay)</p> <p><b>C1</b> (4%) Gradational sandy loam (Calcic-Hypercalcic Kandosol-Calcarosol)</p> <p><b>C4</b> (4%) Hard gradational clay loam (Calcic-Hypercalcic Sodic Red Dermosol-Calcarosol)</p> <p><b>D1</b> (4%) Loam over clay on rock (Shallow Calcic-Hypercalcic Red Chromosol)</p>
<b>Summary:</b>	The Walloway Land System consists of an elongate landscape of low rises and gently sloping pediments bounded on the east by the hilly Oladdie Hills Land System and the very gently undulating Eurelia land system on the west. Soils are variable but predominantly have gradational texture profiles, and are commonly calcareous throughout. They are relatively shallow over rock, with rocky rises a common feature in the landscapes. Tapley Hill Formation siltstones are the common parent materials. Scalding and gullying affect significant parts of the landscape. Soil salinity levels are moderate, mostly in subsoils.



**Soil Landscape Unit summary:** Walloway Land System (WWY)

SLU	% of area	Component	Main soils	Prop#	Notes
ADB	0.2	Rolling rises	L1	D	<p>Non-arable rocky rises with thin soil cover formed on limestone and calc-siltstone with very shallow loamy soils.</p> <p>Relief is less than 30m, slopes are 3-10%.</p> <p><b>ADB</b> Rolling rises as above.</p> <p>Relief is 9-30m, slopes are 10-30%.</p> <p><b>ADj</b> Steep low hills as above, with eroded watercourses and scalding.</p> <p>Relief is 30-90m, slopes are 30-50%.</p> <p>Main soils: calcareous loamy, <u>Shallow stony soils on rock - L1</u>; <u>gradational red clay-loam over clay</u> (Red clayey pedaric Dermosols) - <b>C2</b> and <u>Calcareous clay loam on rock - A2</u>.</p> <p>Non-arable, limited pastoral use.</p>
ADj	0.7	Steep low hills	L1RR	D	
DNC	9.9	Undulating rises	D2D1	D	<p>Rises and plains with shallow texture contrast soils formed on fine-grained rocks, typically Brachina Shale Formation. The soils have sandy clay loam surface textures.</p> <p><b>DNC</b> Undulating rises. Relief is 9-30m, slopes are 3-10%.</p> <p><b>DND</b> Rolling rises. Relief is 9-30m, slopes are 10-30%.</p> <p>Main soils: <u>Loam over red clay - D2</u> and <u>Clay loam over pedaric red clay on rock - D1</u>.</p>
DND	0.8	Rolling rises	D2D1	D	
EFB	2.1	Gently undulating rises	A2D7 L1	D	<p>Rises and plains with moderately shallow soils overlying hard calcareous rocks, typically Hawker Group siltstones and limestones.</p> <p><b>EFB</b> Gently undulating rises with only minor scalding. Slopes are 1-3%, relief is less than 30m.</p> <p><b>EFC</b> Undulating rises with only minor scalding.</p> <p>Relief is less than 30m, slopes are 3-10%.</p> <p>Main soils: <u>Calcareous loam on rock - A2</u>, <u>Loam over poorly structured clay on rock - D7</u> and <u>Shallow stony soils on rock - L1</u>.</p>
EFC	3.5	Undulating rises	A2D7 L1	D	
EHC	1.5	Undulating rises	A2L1	V	<p>Rises and pediments on calcareous siltstones and limestones such as those of the Tapley Hill Formation, Wonoka Formation and the ABC Range Quartzite of the Wilpena Group. The soil-landscape units are also associated with Bunyeroo Formation shales with some outwash contribution from calcareous Wonoka Formation calc-siltstones.</p> <p><b>EHC</b> Undulating rises and pediments.</p> <p>Relief is less than 30m, slopes are 3-10%.</p> <p><b>EHH</b> Undulating rises and pediments.</p> <p>Relief is less than 30m, slopes are 3-10%.</p> <p>Gullying affects up to 20% of land.</p> <p><b>Ehk</b> Gently sloping fans and pediments with low, gentle rocky rises in places. Severely scalded (40-50% of land affected) and gullied (20% of land affected).</p> <p>Main soils:  <b>Rocky rises:</b> <u>Calcareous loam on rock - A2</u> and <u>Shallow stony soils on rock - L1</u>.  <b>Fans and pediments:</b> <u>Calcareous loam on rock - A2</u>.  <b>EHn</b> Dissected rolling rises with shallow calcareous soils on Cambrian Hawker Group limestone and calc-siltstone. Some areas of shallow red clay soils occur on crests (She-oak/Allocasuarina groves are associated with these). Severely scalded (40-50% of land affected) and gullied (20% of land affected).  Main soils: <u>Calcareous loam on rock - A2</u> and <u>Shallow (often clayey) stony soils on rock - L1</u>.  <b>EHW</b> Undulating rocky rises with pediments.  Relief is less than 30m, slopes are 3-10%. 5-50% of land is scalded.</p>
		Undulating pediments	A2	C	
EHH	1.4	Undulating rises	A2L1	V	
		Undulating pediments	A2	C	
EHk	5.4	Plains	A2D7 L1	V	
		Rocky rises	A2L1	C	
EHn	6.8	Rolling rises	A2L1	V	
		Pediments	A2	C	
EHW	5.3	Undulating rises	A2L1	V	
		Undulating pediments	A2	C	



					<p>Main soils:  <b>Rocky rises:</b> <u>Shallow stony soils on rock - L1</u> and <u>Bare rock - RR</u>.  <b>Plains and Pediments:</b> <u>Calcareous loam on rock - A2</u>, <u>Loam over poorly structured clay on rock - D7</u> and <u>Shallow stony soils on rock - L1</u>.</p>
ELH	20.1	Undulating rises	L1C2 B2	D	<p>Rises with shallow soils formed on Appila Tillite Formation and alluvium.  <b>ELH</b> Undulating rises-pediment complex. Gullyng affects over 20% of land, scalding affects 5-10%. Subsoils are moderately saline. Slopes are 3-10%, relief is 9-30m.                  Main soils: <u>Shallow stony soils on rock - L1</u>, <u>Gradational red clay-loam over clay</u> (Red clayey pedaric Dermosols) - <b>C2</b> and <u>Shallow calcareous loam on calcrete - B2</u>.</p>
EVI	8.3	Rolling rises	A2	V	<p>Rises with rock outcrops and shallow calcareous soils formed on fine-grained calcareous rocks.  <b>EVI</b> Rolling rises. More than 20% of land is gullied. Relief is 9-30m, slopes are 10-30%.</p>
		Rocky outcrops	RR	C	
EVX	3.1	Rolling rises	A2	V	<p><b>EVX</b> Rolling rises 5-15% of land is scalded and subsoils have moderate salinity. Relief is 9-30m, slopes are 10-30%.                  Main soils: <u>Calcareous loam on rock - A2</u> and <u>Bare rock - RR</u>.</p>
		Rocky outcrops	RR	C	
EWD	0.1	Rolling rises	L1C2 RR	D	<p>Rolling rises with shallow red, uniform or gradational texture soils formed on tillite, siltstone or quartzite. Rocky outcrops are common. Ironstone gravelly sometimes. Relief is 9-30m, Slopes are 10-30%.                  Main soils: <u>Shallow stony soils on rock - L1</u> and <u>Gradational loam on rock - C2</u>. Bare rock - <b>RR</b> is common.</p>
JFA	0.4	Plains	D2D4 C1	D	<p>Plains and pediments with mostly red texture contrast soils with clay loam surfaces, calcareous soils occupy more than 20% and other gradational soils occupy more than 10%.  <b>JFA</b> Level plains. Slopes are less than 1%, relief is less than 9m.  <b>JFB</b> Gently undulating pediments Slopes are 1-3%, relief is less than 9m.  <b>JFo</b> Creek flat with more than 20% with unstable gullies and 5-10% is scalded.                  Main soils: <u>Loam over red clay - D2</u>, <u>Loam over pedaric red clay - D4</u> and <u>Gradational sandy loam - C1</u>.</p>
JFB	0.7	Gently undulating pediments	D2D4 C1	D	
JFo	3.3	Creek flat	D2D4 C1	D	
JNJ	0.8	Creek flat	D4A6 E2	D	<p>Creek flats with non-stony pedaric, texture contrast soils with calcareous subsoils. Surface textures are clay loamy most commonly. 0-5% of land is gullied.                  Main soils: <u>Loam over pedaric red clay - D4</u>, <u>Gradational calcareous clay - A6</u> and <u>Red cracking clay - E2</u>.</p>
JXB	1.1	Gently undulating pediments	D2	V	<p>Gently undulating pediments with texture contrast soils in complex with rocky rises. Most soils have clay-loam surfaces. Slopes are 1-3%.                  Main soils on pediments: <u>Loam over red clay - D2</u>. <u>Loam over clay on rock - D1</u> soils are associated with rocky rises.</p>
		Rocky rises	D1	C	
KGB	5.0	Gently undulating pediments	C3C1	D	<p>Pediments and plains with sandy surface-textured red gradational soils with calcareous subsoils.  <b>KGB</b> Gently undulating pediments, with minor scalding and gullyng. Slopes are 1-3%, relief is less than 9m.</p>



KII	1.8	Pediment	C1A2	V	Gently sloping pediment-basement rock complex. Calcareous soils are common but not dominant. <b>Pediment:</b> Slope is 1-3%. Main soils on pediments: <u>Gradational sandy loam - C1</u> and <u>Calcareous loam on rock - A2</u> . <b>Rises:</b> Gently undulating basement rises with shallow rocky soils. Relief is 9-30m, slope is 1-3%. Gullyng affects 5-20% of land and 5-50% is scalded. Main soils: <u>Shallow stony soils on rock - L1</u> , <u>Gradational sandy loam - C1</u> and <u>Calcareous loam on rock - A2</u> .
		Gently undulating rises	L1C1 A2	L	
KJB	0.2	Gently undulating pediments	C4C3 A6	D	Pediments with clay loam surface-textured red gradational soils with calcareous subsoils and gradational calcareous soils. Subsoils are moderately saline.
KJC	9.1	Undulating pediments	C4C3 A6	D	<b>KJB</b> Gently undulating pediments. Slopes are 1-3%, relief is less than 9m.
KJG	1.6	Gently undulating pediments	C4C3 A6	D	<b>KJC</b> Undulating pediments. Slopes are 3-10%, relief is less than 9m.
KJJ	1.0	Drainage line	C4C3 A6	D	<b>KJG</b> Gently undulating pediments with up to 20% gullyng. Slopes are 1-3%, relief is less than 9m.
KJL	1.8	Gently undulating pediments	C4C3 A6	D	<b>KJH</b> Undulating pediments with up to 20% gullyng. Slopes are 3-10%, relief is less than 9m.
KKH	1.8	Undulating pediments	A6A5	D	<b>KJJ</b> Drainage line with more than 20% gullyng. <b>KJL</b> Gently undulating pediments with less than 5% scalding and gullyng. Soils are moderately saline throughout the profiles and 10-50% of the land has patches of high salinity. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Hard gradational clay loam - C4</u> , <u>Friable gradational sandy clay loam - C3</u> and <u>Gradational calcareous clay - A6</u> .
KME	0.9	Creek flat	A5D4	D	Gently undulating pediments formed on outwash sediments with mostly gradational calcareous soils (Calcarosols) and more than 10% of associated soils have clayey surfaces. 10-20% of land is affected by gullyng. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Gradational calcareous clay - A6</u> and <u>Rubbly calcareous loam on clay - A5</u> .
KQJ	1.1	Drainage line	A5	V	Creek flat on which gradational calcareous soils are dominant, and in combination with red texture contrast soils occupy over 90% of the land. Main soils: <u>Rubbly calcareous clay loam on clay - A5</u> and <u>Loam over pedaric red clay - D4</u> . Drainage lines with shallow rises on pediment and basement-rise complexes with mostly calcareous gradational soils. 0-5% of land on pediments is scalded and 10-20% is gullied. The soils have moderately salinity throughout the profiles. Main soils: <u>Rubbly calcareous loam on clay - A5</u> on pediments and <u>Calcareous loam on rock - A2</u> on rises.
		Shallow rises	A2	C	

# 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/L1** Shallow calcareous loam (Paralithic, Hypercalcic / Lithocalcic Calcarosol)(A2) OR Shallow stony loam (Calcareous, Paralithic, Leptic Tenosol)(L1)
- 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 >60 cm and <120 cm.
- A6** Gradational calcareous clay loam (Pedal Hypercalcic-Lithocalcic Calcarosol on clayey subsoil)  
Calcareous loams to clay loams grading into brown-red clay. Often rubbly.
- 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.
- C1** Gradational sandy loam (Calcic-Hypercalcic Kandosol-Calcarosol)  
Friable sandy to loamy topsoil grading into massive red-brown alkaline loamy to clay loamy subsoil.
- 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.
- C4** Hard gradational clay loam Calcic-Hypercalcic Sodic Red Dermosol-Calcarosol)  
Topsoil <30 cm over a poorly structured subsoil. Often hard setting clay loam to loam grading into prismatic/poorly structured/sodic red (-brown) alkaline clayey to clay loamy subsoil. Includes eroded former texture contrast soils.
- 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.
- D2** Hard loam over red clay (Calcic / Hypercalcic, Red Chromosol)  
Hard setting sandy loam to clay loam (with variable quartzite stones) abruptly overlying a well structured red clay with soft Class I carbonate at depth.
- 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.
- D7** Loam over dispersive red clay on rock (Calcic / Hypercalcic, Red Sodosol)  
Medium to thick hard sandy loam to clay loam sharply overlying a coarsely structured dispersive red clay, calcareous with depth, grading to highly weathered kaolinized siltstone.
- 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.
- L1** Shallow stony loam (Paralithic, Leptic Tenosol)  
Shallow stony loam, often calcareous throughout or with depth, overlying weathering rock shallower than 50 cm.
- RR** Bare rock.

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

