

OLP Oladdie Plain Land System

Area:	191.9 km ²
Landscape:	Flat alluvial plain of the Oladdie, Pekina and Yadena Creeks and tributaries north of Orroroo.
Annual rainfall:	255 – 310 mm average
Geology:	Holocene alluvium.
Topography:	Mostly a flat plain with some low swampy depressions where creeks converge. Low gypsum hummocks occur on the eastern edge of the swampy areas. Isolated calcareous rises also occur on the plain.
Elevation:	400 m asl near Orroroo, gradually sloping to round 340 m asl in the broad, swampy depressions on the northern Oladdie Plain.
Relief:	Mostly flat, but there are a few low rises of < 5m elevation above the surrounding plain. The plain grades from about 5m in 5km in the north, to about 5m in 1.5km in the south near Orroroo. Drainage lines are mostly broad, but exhibit gullying and scalding often.
Soils:	Crusty thin loam to clay loam over red friable clay with lime and gypsum at depth. (pedaric Sodosols) occur commonly across the land system and are often severely scalded. Deep calcareous clay loam with soft carbonate segregations at depth. (Calcarosols/Tenosols) Thin dark organic loam over dark structured clay (brown Chromosols and Dermosols) occurs on swampy samphire flats in the northern part of the land system. Yellow powdery sandy loam with much gypsum (Rudosols) occurs in low dunes and sandy rises on the northeast and occasionally on the central part of the plain.
Main soils:	D4 (18%) Loam over pedaric red clay (Pedaric Red Sodosol-Dermosol) A5 (13%) Rubbly calcareous loam on clay (Supracalcic-Lithocalcic Calcarosol on clay) M1 (13%) Deep sandy loam (Brown-Grey-Red Kandosol-Tenosol) D2 (12%) Loam over red clay (Calcic-Hypercalcic Red Chromosol-Sodosol)
Minor soils:	A8 (9%) Gypseous calcareous loam (Gypseous Calcarosol) A6 (8%) Gradational calcareous clay loam (Pedal Hypercalcic-Lithocalcic Calcarosol on clayey subsoil) G4 (7%) Sand over poorly structured clay (Sandy Brown-Red Sodosol-Chromosol) M3 (5%) Deep gravelly soil (Gravelly Kandosol-Tenosol) C3 (5%) Friable gradational clay loam (Calcic-Hypercalcic Red Dermosol-Calcarosol) E2 (4%) Red cracking clay (Red Vertosol)
Summary:	The Oladdie Plain Land System consists of lower pediment slopes and alluvial plains, forming an enclosed basin. Pediments along the western edge have drainage towards the east and northeast. Drainage is impounded against the pediments of the adjoining Erskine Land System on the eastern edge, creating increasingly saline alluvial plains in the lower parts of the basin. The main soils on the pediments are red texture contrast soils and calcareous rubbly gradational soils. The alluvial plains contain deep, weakly developed, uniform-textured soils as well as saline and gypseous variants of the texture contrast and calcareous soils.



Soil Landscape Unit summary: Oladdie Plain Land System (OLP)

SLU	% of area	Component	Main soils	Prop#	Notes
EBC	0.2	Undulating rise	L1	D	Undulating rises with shallow, mostly calcareous, soils formed on quartzites and siltstones of the ABC Range Quartzite. Relief is 9-30m, slopes are 3-10%. Main soils: <u>Shallow stony soils on rock</u> - L1 .
JGB	2.2	Gently sloping plains	D3D4D2	D	Gently sloping plains and pediments with sandy clay loam surfaced red duplex soils formed in alluvium. Slopes are 1-3%, relief is less than 9m Main soils: <u>Loam over poorly structured red clay</u> - D3 , <u>Loam over pedaric red clay</u> - D4 and <u>Loam over red clay</u> - D2 .
JNA	0.6	Plains	D4D2A5	D	Pediments with non-stony pedaric, texture contrast soils with calcareous subsoils. Surface textures clay loamy most common. JNA Plains. Slopes are less than 1%, relief is less than 9m. JNE Drainage line with stable banks. JNo Creek flats with severe (> 20%) gullying and scalding (> 50%). JNU Level plain; 5-10% scalded. Main soils: <u>Loam over red clay</u> - D2 , <u>Loam over pedaric red clay</u> - D4 and <u>Rubby calcareous loam on clay</u> - A5 . Red clay soils occur in minor association.
JNE	0.6	Valley floor	D4D2A5	D	
JNo	4.5	Creek flats	D4D2A5	D	
JNU	31.9	Plains	D4D2A5	D	
JOB	0.1	Gently undulating plains	JID4	D	Pediments with non-stony pedaric, texture contrast soils with ironstone gravelly surfaces and topsoils and with calcareous subsoils. Surface textures are clay loamy most commonly. JOB Gently undulating plains. Slopes 1-3%, relief < 9m. JOG Gently undulating plains with 10-50% scalding and 0-5% gullying. Subsoils are moderately saline. Slopes 1-3%, relief < 9m. Main soils: <u>Ironstone texture contrast soil with calcareous subsoil</u> - J1 and <u>Loam over pedaric red clay</u> - D4 .
JOG	0.5	Gently undulating plains	JID4	D	
KCk	5.9	Plains	G4	D	Plains and creek flats on outwash sediments with gradational soils with sandy clay loam surface textures. Soils are mostly not calcareous throughout. KCk Plains, with 10-50%scalded land. Gullying affects 5-10%. Slopes are 0-1%, relief is less than 9m. KCo Creek flats with more than 50% gullied and 10-50% scalded. Subsoils are moderately saline. Main soils: <u>Friable gradational sandy clay loam</u> - C3 , <u>Deep moderately calcareous sandy loam</u> - A3 and <u>Deep (rubby) calcareous sandy loam</u> - A4 . Additionally, <u>Deep gravelly soil</u> - M3 is found associated with creek flats.
KCo	1.3	Creek flats	G4	D	
KEV	0.7	Gently undulating pediments	C3C1	D	Pediments and plains formed on outwash sediments with well structured, gradational or uniform textured soils with carbonate enriched subsoils. Texture contrast soils occur as sub-dominant associated soils. KEV Gently undulating pediments with 10-50% scalding and 0-5% gullying. Subsoils are moderately saline. Slopes are 1-3%, relief is less than 9m. Main soils: <u>Friable gradational clay loam</u> - C3 and <u>Gradational sandy loam</u> - C1 .
KGB	0.1	Gently undulating pediments	C3C1	D	Pediments and plains with sandy surface-textured red gradational soils with calcareous subsoils. KGB Gently undulating pediments, with minor scalding and gullying. Slopes are 1-3%, relief is less than 9m. KGE Creek flat. Main soils: <u>Friable gradational sandy clay loam</u> - C3 and <u>Gradational sandy loam</u> - C1 .
KGE	1.1	Creek flat	C3C1	D	



KHV	0.3	Gently undulating pediments	A4D4C1	D	Gently undulating pediments formed on outwash with red gradational sandy soils, calcareous at depth. Scalding is severe, with more than 50% of land affected. Subsoils moderately saline. Slopes 1-3%, relief < 9m. Main soils: <u>Deep (rubbly) calcareous sandy loam -A4</u> , <u>Loam over pedaric red clay - D4</u> and <u>Gradational sandy loam - C1</u> .
KLA	0.1	Plains	A5	D	Pediments with clay loamy calcareous soils. KLA level plains. KLB Gently undulating pediment Slopes are 1-3%, relief < 9m. KLV Gently undulating pediment with 0-5% gullying and 10-50% scalding. Slopes are 1-3%, relief is less than 9m.
KLB	0.3	Gently undulating pediment	A5	D	Main soils: <u>Rubbly calcareous clay loam on clay - A5</u> . Minor soils include: <u>Calcareous clay loam on rock - A2</u> , <u>Gradational red-brown clay loam over rock-C2</u> and <u>Shallow calcareous loam on calcrete - B2</u> .
KLV	1.5	Gently undulating pediment	A5	D	
KMU	0.4	Plains	A6A5	D	Plains on which gradational calcareous soils are dominant, and in combination with red texture contrast soils occupy over 90% of the land. Scalding affects 5-10% (with patches of over 50%), Subsoils are moderately saline. Main soils: <u>Rubbly calcareous clay loam on clay - A5</u> and <u>Loam over pedaric red clay - D4</u> .
KQo	0.6	Drainage line	A5	V	Pediment and basement-rise complexes with mostly calcareous gradational soils. KQo Drainage lines with shallow rises. 5-10% of land on drainage line is scalded and 10-0% is gullied, but gullies are now stable. The land is also moderately saline. 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	
SHL	0.3	Gently undulating rises	A3	D	Gently undulating rises with gradational calcareous soils formed in calcareous aeolian calcareous sediments. Patchy salinity and 0-5% scalding (on lower slopes). Slopes are 1-3%, relief < 9m. Main soils: <u>Deep moderately calcareous loamy sand - A3</u> .
XKA	18.2	Alluvial plains	M1M3 D4	D	Alluvial plains with deep silty calcareous clay loamy soils with stable banks and gully walls. Main soils: <u>Deep alluvial loam - M1</u> , <u>Deep gravelly soil -M3</u> and <u>Loam over pedaric red clay - D4</u> .
XOF	24.3	Alluvial plains	M1A6 A8	D	Drainage depressions and swampy plains with calcareous clayey alluvial soils. XOF Alluvial plains, swampy and marginally saline with occasional gypsum hummocks. Main soils: <u>Deep alluvial loam - M1</u> , <u>Gradational calcareous clay - A6</u> and <u>Gypseous calcareous loam - A8</u> .
XOX	0.8	Drainage line	M2A6C3	D	XOX Swampy and marginally saline drainage depressions. Main soils: <u>Deep friable gradational clay loam - M2</u> , <u>Gradational calcareous clay - A6</u> and <u>Friable gradational clay loam - C3</u> .
ZA-	1.7	Saline flats	N2	D	Saline flats with halophytic vegetation. Main soils: <u>Saline soil - N2</u> .
ZM-	1.8	Gypsum Hummocks	A8	D	Low, jumbled gypsum hummocks; over 50% scalded, 10-20% gullied watercourses. Soils are highly saline throughout. Main soils: <u>Gypseous calcareous loam - A8</u> .

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)
- 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 <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.
- A8** Gypseous calcareous loam (Gypseous Calcarosol)
Calcareous soil with a Gypsic horizon (>20% visual gypsum in a horizon which is at least 10cm thick). Found on lunettes, flats, etc.
- C1** Gradational sandy loam (Calcic-Hypercalcic Kandosol-Calcarosol)
Friable sandy to loamy topsoil grading into massive red-brown alkaline loamy to clay loamy subsoil.
- 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.
- 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.
- D3** Hard clay loam over dispersive red clay (Calcic, Red Sodosol / Sodic, Calcic, Red Chromosol)
Medium thickness hard clay loam with up to 50% quartzite stones over a coarsely prismatic dispersive red clay, calcareous with depth over stony and clayey alluvium.
- 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.
- G4** Sand over poorly structured clay (Sandy Brown-Red Sodosol-Chromosol)
Thin sandy texture contrast soil with a sodic /dispersive /poorly structured brown or red clayey subsoil. Topsoil <30 cm over poorly structured subsoil. Can have some ironstone.
- J1** Ironstone soil with calcareous lower subsoil (Ferric Calcic Brown Sodosol-Chromosol-Dermosol)
Ironstone gravelly soil with a brown alkaline clayey subsoil which has a calcareous layer within the profile.
- L1** Shallow stony loam (Paralithic, Leptic Tenosol)
Shallow stony loam, often calcareous throughout or with depth, overlying weathering rock shallower than 50 cm.
- M1** Alluvial loam (Orthic Tenosol)
Very thick loam with variable gritty or more-clayey lenses, formed over recent alluvium.
- M2** Deep friable gradational clay loam (Red-Brown-Grey- Black Dermosol)
Deep well structured red clay loamy soil.
- M3** Deep gravelly soil (Gravelly Kandosol-Tenosol)
Deep uniform loamy alluvial soils with at least 50% gravel in the major part of the profile.
- N2** Saline soil (Salic-Hypersalic Hydrosol).

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

