WTO Witto Creek Land System

Area: 131 km^2

Landscape: The Witto Creek drainage system is an extensive alluvial plain extending from Collinsville southward and east to near Kia-Ora. Erosion in the past has created deep gullies in the upper parts of this system. The soils are deep and erodible, with many areas on the flats and drainage lines scalded. Calcareous rises occur as "islands" in the drainage lines.

Annual rainfall: 200 – 275 mm average

Geology: Alluvial deposits ranging from Pleistocene through Holocene to present day sediments.

Main soils:
D4 (31%) Loam over pedaric red clay (Pedaric Red Sodosol-Dermosol)
A3 (31%) Deep moderately calcareous loam (Calcic Calcarosol)
A6 (16%) Gradational calcareous clay loam (Pedal Hypercalcic-Lithocalcic Calcarosol on clayey subsoil)
C3 (13%) Friable gradational clay loam (Calcic-Hypercalcic Red Dermosol-Calcarosol)

Minor soils: **A4** (7%) Deep (rubbly) calcareous loam (Hypercalcic-Lithocalcic Calcarosol)

Summary: The Witto Creek drainage system is an extensive alluvial plain. The soils are deep and erodible, with many scalded and gullied areas. Calcareous rises occur as "islands" in the drainage lines. Most common soils are deep calcareous gradational soils and sodic, friable (pedaric) red texture–contrast soils.

Soil Landscape Unit summary: Witto Creek Land System (WTO)

SLU	% of area	Component	Main soils	Prop#	Notes
AYA	0.6	Rise	A2L1	D	Undulating rises with shallow calcareous loam on calcareous siltstone or other fine grained rocks. Relief: < 30m, slopes: 3-10%. Main soils: Calcareous loam on rock – **A2** and Shallow stony soils on rock **- L1**.
JPA	2.7	Flat	D4	D	Fans 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). **JPA** Flats. **JPl** Gently sloping fans with 10-20% land gullied and 5-10% scalded. Relief is less than 9m, slopes are 1-3%. **JPp** Level plains. Severely scalded (over 50%). **JPU** Plains, 10-50% scalded. **JPY** Creek flats, 10-50% scalded. **JPy** Creek flats. Moderately gullied, severely scalded. Main soils: Loam over pedaric red clay - **D4**.
JPl	1.1	Fan	D4	D	
JPp	20.2	Flat	D4	D	
JPU	2.5	Flat	D4	D	
JPY	6.4	Drainage depression	D4	D	
JPy	3.5	Flat	D4	D	
KFB	1.4	Gently undulating plain	A4	V	Fans and plains with calcareous gradational soils and more than 20% red pedaric texture-contrast soils. **KFB** Gently undulating plains and level flats. Slopes are 1-3%, relief is less than 9m. **KFE** Flats. **KFU** Gently undulating plains and level flats. 10-50% scalded. **KFV** Gently undulating plains and level flats. 5-10% scalded Slopes are 1-3%, relief is less than 9m.
		Flat	A3A6	C	
KFE	21.3	Flat	A3A6	D	
KFU	1.6	Gently und. plain	A4	V	
		Flat	A3A6	C	

KFV	2.5	Gently undulating plain	A4	V	**KFyy** Alluvial flat. Severely gullied (over 20%) and scalded (over 50%). Main soils: ***Gently undulating plains:*** Deep (rubbly) calcareous sandy loam - **A4** ***Flats:*** Deep moderately calcareous loam - **A3** and Gradational calcareous clay loam - **A6**, with over 20% Loam over pedaric red clay - **D4**.
		Flat	A3A6	C	
KFyy	15.1	Flat	A3A6	D	
KLA	3.2	Flat	A3D4	E	Alluvial plains with clay loamy calcareous soils. **KLA** Flats and gently undulating plains. **KLB** Gently undulating plains. Slopes: 1-3%, relief: less than 9m. **KLV** Gently undulating plains with 0-5% gullying and 5-10% scalding. Slopes are 1-3%, relief is less than 9m. Main soils: ***Flats:*** Deep moderately calcareous loam - **A3** and Loam over pedaric red clay - **D4**. ***Gently undulating plains:*** Deep (rubbly) calcareous sandy loam - **A4** and Deep moderately calcareous loam - **A3**.
		Gently undulating plain	A4A3	E	
KLB	5.1	Gently undulating plain	A4A3	D	
KLV	1.2	Gently undulating plain	A4A3	D	
KVA	0.5	Flat	A3	D	Pediments and plains formed on calcareous outwash sediments derived from basement rock. More than 90% of soils are calcareous throughout (Calcarosols). Moderately saline soils throughout. **KVA** Flats. 10-50% scalded. Main soils: Deep moderately calcareous loam - **A3**.
KVY	11.3	Plain	A3	D	

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

- D Dominant in extent (>90% of SLU)
- V Very extensive in extent (60–90% of SLU)
- E Extensive in extent (30–60% of SLU)
- C Common in extent (20–30% of SLU)
- L Limited in extent (10–20% 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 CO_3 buildup in the subsoil (<20% CO_3 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 CO_3 buildup in the subsoil. Often rubbly. Soil usually >120 cm in depth

A6 Gradational calcareous clay loam (Pedal Hypercalcic-Lithocalcic Calcarosol on clayey subsoil)
Calcareous loams to clay loams grading into brown-red clay. Often rubbly.

D4 Loam over red friable clay (Calcic, Pedaric, Red Sodosol)
Thin to medium thickness fine sandy loam to loam over 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.

Further information: DEWNR Soil and Land Program