CUC Currency Creek Land System

Gentle slopes between the ranges and the Currency Creek estuary

Area: 34.5 km^2

Annual rainfall: 480 – 610 mm average

Geology: The land is underlain by clayey sediments, probably alluvium and colluvium from the ranges to the west. There are common sandy lenses within the clay. On the lower lying areas towards the east, Pleistocene heavy clay (Blanchetown Clay equivalent) is a more typical substrate. Adjacent to Currency Creek, mixed sandy, silty and clayey sediments occur. These were apparently deposited by relatively recent flooding. There are minor sandy rises probably derived from deposits to the east.

Topography: The landscape is essentially a broad outwash fan flanking the ranges to the west and extending to the estuary of Currency Creek. Slopes are up to 6% on the western margin, but gradually flatten out until the fans merge with a flat in the east characterized by gilgai microrelief. Currency Creek has cut a channel through the fans and flats as the sea progressively retreated during the Quaternary period, so that the plains are now about 20 m above sea level. Moderately steep banks and terrace complexes flank the lower reaches and estuary of Currency Creek. An intermittent water course flows in a south easterly direction from the ranges into the northern side of the estuary. Sandy rises are a minor component of the System.

Elevation: 0 m on the shores of the estuaries to 70 m adjacent to the escarpment on the western side.

Relief: Up to 20 m on the dissection slopes adjacent to the estuaries. Elsewhere, the land surface is a gentle uniform grade with less than 5 m of relief.

Soils: The soils are mostly deep, but have poorly structured subsoils. Loamy surface soils overlying brown or red dispersive clay subsoils are most common, with grey brown cracking clays subdominant.

Main soils
Soils of sandy flats
G4 Sand over poorly structured clay
Soils of sandy loam flats
D3a Loam over poorly structured red clay
F2 Sandy loam over poorly structured brown clay
Soils of clayey flats
E3 Brown-grey cracking clay

Minor soils
Soils of sandy flats
G2a Bleached sand over sandy clay loam
Soils of sandy loam flats
D5 Hard loamy sand over red clay
Soils of sandy rises
G2b Bleached sand over sandy clay loam
G3 Thick sand over clay
Soils of creek banks and terraces
D2 Loam over red clay

D3b Sandy loam over poorly structured red clay
M4 Gradational red sandy loam
G1 Sand over red sandy clay

Main features: The Currency Creek Land System is dominated by gentle slopes and flats with sandy loam to sandy surfaced texture contrast soils. These are deep but often imperfectly drained due to poorly structured and often sodic subsoil clays. The loamier surfaced soils are moderately fertile, but the sandier types are less productive. Flats on the eastern side are characterized by gilgai microrelief caused by seasonal shrinking and swelling of Pleistocene clay at shallow depth. The typical clayey soils are fertile but imperfectly drained and difficult to work. Fertile loamy soils and well drained deep sandy soils near the estuary are potentially productive, but moderate slopes and complex terrain limit land use options. Minor sandy rises are infertile and prone to wind erosion.

Soil Landscape Unit summary: 15 Soil Landscape Units (SLUs) mapped in the Currency Creek Land System:

SLU	% of area	Main features #
GOC	0.8	Low rises with slopes of up to 5%, formed on medium to coarse grained alluvium. Main soil: Thick sand over clay - **G3** (D) This soil is naturally infertile and prone to wind erosion and water repellence. Although water perches on the clayey subsoil, the thick sandy surface prevents waterlogging from being a serious constraint.
GRB	0.3	Gently undulating low rises formed on clayey sands and sandy clays, overlain by very highly calcareous Woorinen Formation Class III carbonates, with varying amounts of rubble. Slopes are up to 4%. Low sand dunes occur sporadically. There is no surface drainage pattern and minor surface calcrete stone. Soils are generally sandy surfaced, often with rubbly calcrete at shallow depth. Main soils: Sand over poorly structured clay - **G4a** (V) on rises Shallow sand over clay on calcrete - **B7a** (L) on rises Sand over poorly structured clay **- G4b** (L) on flats Bleached sand over sandy clay loam - **G2b** (M) on sandhills These soils have low natural fertility and restricted water holding capacities due to the often shallow depth to dispersive clayey subsoils and hostile carbonate layers. They are susceptible to wind erosion, and water erosion on sloping sites. Most have marginally saline subsoils. Some deeper sands are prone to acidification.
GSB	0.9	Gently undulating rises formed on Tertiary or Pleistocene sandy clays to clays, variably calcified by soft to rubbly Class III carbonates of the Woorinen Formation. Slopes are up to 4% and there is minor surface calcrete. There is no defined surface drainage pattern. Soils are mostly sandy. Main soil is: Bleached sand over sandy clay loam - **G2b** (D) This soil is moderately deep to deep and moderately well drained, but of low fertility and prone to wind erosion.
GcA	6.8	Flats formed on Pleistocene sandy clay to heavy clay. Soils are deep sandy to loamy texture contrast types with sodic subsoils. Main soils: Sand over poorly structured clay - **G4** (V) Sandy loam over poorly structured brown clay - **F2** (C) These soils are imperfectly drained due to the tendency of water to perch on their dispersive clay subsoils. Root growth is also impeded by these clays. Salinity is moderately high in the subsoil. Fertility is low (sandy soils) to moderate (loamy soils).
GeA	1.3	Gently undulating plains and swales formed on Pleistocene sandy clay to heavy clay. The land occupies slightly higher topographic positions than **GcA**. Soils are dominantly sandy surfaced with sodic clay subsoils. Main soil: Sand over poorly structured clay - **G4** These soils are imperfectly drained due to the tendency of water to perch on the dispersive clay subsoils. Root growth is also impeded by these clays. Salinity is moderately high in the subsoil. Fertility is low.
GhA	3.3	Swales and flats formed on clayey sands to sandy clays. Soils are mixed sandy or sandy

		loam surfaced texture contrast types. Main soils: Hard loamy sand over red clay - **D5** (E) Bleached sand over sandy clay loam - **G2a** (C) Sand over poorly structured clay - **G4** (L) D5 soils are moderately well drained, moderately fertile and have fair to good subsoil structure. G4 soils are imperfectly drained with low fertility and fair to poor subsoil structure. G2a soils are infertile.
HaA HaB HaC	10.1 23.7 20.8	Outwash fans formed on weakly calcified clayey sediments. **HaA** Flats with slopes of less than 1%. **HaB** Very gentle slopes of 1-3%. **HaC** Gentle slopes of 3-6% Soils are loamy to sandy texture contrast types. Main soils: Loam over poorly structured red clay - **D3a** (E) Sand over poorly structured clay - **G4** (E) Sandy loam over poorly structured brown clay - **F2** (L) Poor subsoil structure, restricting water movement and root growth is the main limitation. Otherwise, the soils are deep and moderately (D3a and F2) to marginally fertile (G4). Water erosion is a potential problem on long slopes in the west.
HwAD HwD	1.1 4.7	Terraces and banks adjacent to Currency Creek. Underlying sediments are mixed sandy, silty and clayey alluvials. **HwAD** Complex of small terraces and banks. **HwD** Banks up to 20 m high with slopes ranging from 5% to 25%. Main soils: Loam over red clay - **D2** (E) Sandy loam over poorly structured red clay - **D3b** (C) Gradational red sandy loam - **M4** (C) Sand over red sandy clay - **G1** (L) These soils are moderately fertile and deep, although drainage is impeded by the poorly structured subsoils of D3b. The moderate slopes and the un-evenness of the terrace - bank complex make this land difficult to manage. Erosion is a potential problem on slopes.
TTA	22.4	Flats formed on Pleistocene Clay and characterized by gilgai microrelief. Soils are variable, but always underlain by heavy clay within 100 cm. Main soils: Brown-grey cracking clay - **E3** (E) Sandy loam over poorly structured brown clay - **F2** (C) Sand over poorly structured clay - **G4** (C) These soils are moderately fertile (exception is the sandy G4), and deep, but are susceptible to waterlogging, mild salinity and boron toxicity.
Vt-	0.2	Small flats adjacent to Currency Creek. Discontinuous sections of lake shore. No soils data. Erosion is the main concern.
XYW	3.3	Water course flowing from the footslopes of the ranges, across the Longmarsh Peninsula and into the Currency Creek estuary. The soils are highly variable, but brown clays overlying buried soils typical of the adjacent landscapes are common. Seasonal waterlogging and minor salinity are the important features of the landscape.
XqL	0.3	Small flat in the Currency Creek valley at the point at which it widens into its estuary. No soils data, but land is waterlogged for significant periods.

PROPORTION codes assigned to soils within Soil Landscape Units (SLU):

(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:

D2 Loam over red clay (Sodic, Calcic, Red Chromosol)

Medium thickness reddish brown loamy sand to clay loam with a pink A2 horizon, overlying a dark reddish brown well structured clay with soft calcareous segregations (Class I or III A carbonate) from 55 cm. The profile grades to brown clayey sand to silty clay loam alluvium from 70 cm.

D3a Loam over poorly structured red clay (Calcic, Subnatric, Red Sodosol)
Medium thickness reddish brown massive sandy loam to fine sandy clay loam with a paler A2 horizon, overlying a reddish brown and greyish brown mottled clay with strong blocky structure and fine Class I carbonate from 55 cm. The soil overlies a dark brown mottled clay with decreasing amounts of carbonate.

D3b Sandy loam over poorly structured red clay (Calcic, Mesonatric, Red Sodosol)
Medium thickness reddish brown massive loamy sand to loam with a pink A2 horizon, overlying a red and brown mottled sandy clay with coarse columnar structure becoming more clayey and prismatic with depth. Soft calcareous segregations (Class I carbonate) from 55 cm.

D5 Hard loamy sand over red clay (Hypercalcic, Red Chromosol)
Medium thickness massive dark brown loamy sand to sandy loam with a paler A2 horizon, overlying a yellowish red sandy clay loam to clay with strong blocky structure and abundant soft to nodular calcareous segregations (Class III A, B or C carbonate) from 45 cm, grading to yellow and brown clayey sand to sandy clay alluvium from 65 cm.

E3 Brown-grey cracking clay (Episodic-Epicalcareous, Pedal, Brown Vertosol)
Thin grey brown, moderately calcareous coarse blocky clay, overlying a yellow brown and brown mottled calcareous heavy clay with coarse blocky structure, and soft carbonate segregations from 25 cm (Class I carbonate). The carbonate grades to Pleistocene Clay at 35 cm.

F2 Sandy loam over poorly structured brown clay (Calcic, Mottled-Subnatric, Brown Sodosol)
Medium thickness grey brown massive loamy sand to sandy clay loam with a paler and sandier A2 horizon, overlying a brown, grey and yellow heavy clay with strong blocky structure, highly calcareous from 50 cm (Class I carbonate). The carbonate grades to Pleistocene Clay at 70 cm.

G1 Sand over red sandy clay (Lithocalcic, Red Chromosol)
Thick loamy sand to sandy loam over a well structured red sandy clay on rubbly Class III C carbonate from about 60 cm, grading to clayey sand to sandy clay alluvium.

G2a Bleached sand over sandy clay loam (Sodic, Eutrophic, Brown Chromosol)
Thick to very thick dark brown sand with a bleached A2 horizon, overlying a reddish yellow massive sandy clay loam to sandy clay, grading to brown, red and yellow massive clayey sand at 80 cm.

G2b Bleached sand over sandy clay loam (Lithocalcic, Mottled-Subnatric, Brown Sodosol)
Very thick pale brown loose sand, overlying a yellowish brown and red mottled clayey sand to light sandy clay loam, grading to a sandy clay loam with soft to rubbly Class III carbonate from 85 cm. The profile becomes sandier with depth.

G3 Thick sand over clay (Eutrophic, Brown Sodosol)
Thick to very thick sand with a bleached A2 layer, sharply overlying a brown, red and grey mottled clay with coarse columnar structure, grading to massive sandy clay loam at about 90 cm.

G4 Sand over poorly structured clay (Calcic, Mottled-Mesonatric, Brown Sodosol)
Medium thickness brown sand to light sandy clay loam with a hard massive bleached A2 horizon, overlying a brown, grey and red mottled clay with coarse columnar structure, calcareous with soft carbonate segregations from 45 cm (Class I carbonate). The carbonate grades to sandy clay or heavy clay at 60 cm.

M4 Gradational red sandy loam (Eutrophic, Red Kandosol / Chromosol)
Thick reddish brown sand to light sandy loam with a gravelly pink A2 horizon overlying a red sandy clay loam to sandy clay, becoming sandier and more gravelly with depth.

Further information: DEWNR Soil and Land Program