SMB Smith Bay Land System

This land system consists of rises, and outwash slopes which surround the higher-level Wisanger Hills Land System. The area is bordered by the sea to the north; the higher plateau area to the west; and low-lying plains and some rises to the east and south.

Area: 98.7 km^2

Annual rainfall: 525 - 625 mm average

Geology: The majority of the area consists of unconsolidated clayey deposits, some of which is outwash alluvium/colluvium (Pooraka Formation) derived from the basalt capped Wisanger Hills, some is probably glacially deposited colluvium (Cape Jervis Formation), while some is sedentary material overlying weathered rock at depth. This latter material is highly weathered Pliocene-Quaternary colluvial material which is often capped by ironstone gravel. Many of these clayey sediments consist of cracking clay, however this is often covered by loamy to clay loamy topsoil. Much of this area was subjected to Permo-Carboniferous age glacial activity (around 280 million years ago), which can be evidenced by smooth and somewhat rounded stones and gravel, especially on the surface of cracking clay soils. There is evidence that a glacier moved in a north-westerly direction into Smith Bay; other evidence of glacial flows can be seen in small valleys on the aerial photographs.

Areas where Cambrian age basement rock is at or near the surface occur. This consists of early Cambrian age rock which is around 550 million years old. These rocks are part of Kangaroo Island's North Coast Formations, which are not as hard as the more metamorphosed Cambrian age Kanmantoo Group plateau rocks. These rocks include Stokes Bay Sandstone; Mt. McDonnell Formation siltstone and mudstone; and Smith Bay Shale, including upper sandstone facies and lower shale facies with mudstone and siltstone.

A flat-topped rise occurs in this system which is capped by Jurassic age Wisanger Basalt; the remnant of lava flows around 150 million years ago when the Antarctic continent was beginning to break away from Australia.

Younger and less common deposits include a small patch of Miocene age remnant Mannum Limestone(?); and wind-deposited Pleistocene age Bridgewater Formation in the form of calcreted calcarenite on rises and cliff-tops near the north coast.

Pleistocene lacustrine sediment forms a small saline lagoon; and there are small areas of recent alluvium which has deposited on drainage area flats.

Topography: Rises cut by drainage lines. The area is drained southward into the Cygnet River, and northward into the sea. Coastal cliffs occur which rise up to 90 m above sea level. Slopes generally range from 0 to 8%, with areas of steeper slopes occurring.

Elevation: From just over 10 m in the east, to almost 130 m just south of Cape D'Estaing. Elevations are typically from 20 to 70 m.

Relief: Relief varies from 10 to 50 m, but is typically from 10 to 20 m.

Main Soils:

E3-**E2**-**E1**	Cracking clay
F2-**F1**	Loamy topsoil over sodic clay
J2	Ironstone soil

Minor soils:

M2	Gradational clay loamy soil
K4-K3-K2-K1	Stony topsoil over clay on weathered rock
D7-C2	Stony topsoil over clay on weathered rock (+ fine carbonate)
L1	Rocky soil
B2-B3	Shallow soil on calcrete
C2b	Stony red soil on basalt
M1-M4	Deep alluvial soil

Main Features: The numerous slopes give rise to potential water erosion problems; while relatively impermeable subsoils limit infiltration, increasing runoff, and limiting plant available moisture. Cracking clay soils are fertile but difficult to manage due to their heavy surface textures and often poor surface structure. Ironstone gravel reduces soil fertility principally by 'fixing' phosphorous. Minor areas of saline seepage occur especially along drainage lines. Coarse fragments and hard carbonate rubble create some management difficulties where they occur.

Soil Landscape Unit summary: Smith Bay Land System (SMB)

SLU	% of area	Main features #
APA APm APq	0.1 4.7 1.3	Mostly non-arable rocky slopes. Main soils: mostly stony topsoil over clay on weathered rock – loamy topsoil over brown clay on weathered sandstone, or sometimes shale **K4-K2-D7** (*stony Brown Sodosol*). With some rocky soils – shallow rocky soils **L1** (*rocky Tenosol*), and some loamy topsoil over sodic clay – deeper loamy texture contrast soils **F2-F1** (*Brown Sodosol*), some with ironstone gravel **J2** (*Ferric Brown Sodosol*). With deep alluvial soils – deeper loamy soils in the minor areas of creek flats **M1** (*deep Tenosol*). **APA** – crest and slopes (2-20%, 3-4e) **APm** – creek slopes and creek lines (10-40%, 5e) **APq** – creek slopes and creek line (10-40%, 5e) with some saline seepage in creek line (2-1 ^{o}s)
BkC	0.4	Semi-arable slopes and crests Main soils: stony topsoil over clay on weathered rock – smooth loam to clay loam, over brown usually sodic clay, mostly overlying weathered shale **K2-K1** (*stony Brown Sodosol-Dermosol*). With minor to limited areas of ironstone soil **J2** (*Ferric Brown Sodosol*). **BkC** – slopes and crests (3-10%, 3e)
CBB CBC CBD CBE CBM CBI	0.5 2.0 0.6 0.6 4.9 1.3	Semi-arable: slopes and creeklines. Main soils: stony topsoil over clay on weathered rock – often stony sandy loam, often with some ironstone, over brown clay, on weathered sandstone or possibly siltstone, mudstone or even shale **K4-K2** (*stony Brown Chromosol-Sodosol*). With loamy topsoil over sodic clay and some ironstone soil – loamy topsoils over brown clay, often with ironstone gravel: **F2-F1** and some **J2** (*Brown Sodosol* and some *Ferric Brown Sodosol*). With deep alluvial soils in the minor areas of creek flats **M1-M4** (*deep Tenosol-Kandosol*). **CBB** – slopes (1-2%, 2-1e) **CBC** – slopes (3-10%, 3e) **CBD** – slopes with drainage lines (8-20%, 4-3e, 3g) **CBE** – drainage line and slopes (3-6%, 3e, 5g*) **CBM** – creek slopes and drainage lines with <10% saline seepage (5-15%, 3-4e, 3g, 3-2^{o}s-3-2^{+}s) **CBI** – creek slopes and creeks (8-20%, 4e)
DGD	0.5	Semi-arable crests and slopes with loamy to clay loamy texture contrast soils. Main soils: stony topsoil over clay on weathered rock – stony smooth loam to clay loam over red or brown clay on weathered shale or possibly sandstone **D7-C2** (*stony Brown Sodosol-Dermosol*). Some rounded quartzite stones/rocks can occur. **DGD** – slopes and crests (3-20%, 4-3e)
DKA DKC	1.4 2.7	Semi-arable to arable stony areas with calcrete rubble. Main soils: stony topsoil over clay on weathered rock – often stony loamy topsoil over red sodic clay

DKD DKI	1.1 1.0	on weathered sandstone or shale, often with hard carbonate rubble **D7** (*stony Red-Brown Sodosol*). With shallow soil on calcrete or calcrete rubble – rubbly loamy soil **B2**-**B3** (*Petrocalcic-Lithocalcic Calcarosol*). Some rocky soils – shallow soils over rock occur **L1** (*rocky Tenosol*). **DKA** – raised plain (0-3%, 1-2e) **DKC** – slopes (3-10%, 3e) **DKD** – slopes with drainage line (7-20%, 4-3e, 2g) **DKI** – slopes and drainage lines (10-25%, 4-5e, 4g)
DNB DNZ	0.2 1.0	Mostly arable crests and upper slopes. Main soils: usually greater than 50% of soils have loamy topsoils over sodic clay; these are mostly formed on rock; surface soils often have some basalt and/or other rock fragments; subsoils are brown, with possibly some red sodic clay; overlying weathered rock, probably mostly basalt and/or claystone; especially found on crests **D7** (*stony Brown-Red Sodosol*). And usually greater than 30% deeper cracking clay soil and gradational clay loamy soil, especially found on upper slopes: **E3**-**E2** and **M2** (*Brown-Red Vertosol* and *Brown-Red Dermosol*). Soils usually have fine carbonate in their lower subsoils. **DNB** – crest (1.5-3.5%, 2e) **DNZ** – crests and upper slopes (2.5-8%, 3-2e)
EKC EKZ	0.2 0.1	Semi-arable summit surface and slopes with soils formed on basalt. Summit surface is mostly grey and red cracking clays; while slopes are mostly rocky soils on basalt; with red cracking clays especially on lower slopes. Main soils: grey and red cracking clay soil with basalt fragments and fine carbonate in lower subsoil **E3**-**E2** (*Vertosol*). With stony red soil on basalt – stony/rocky clay loam over well structured red clay on basalt, with fine carbonate in lower subsoil **C2b** (*stony Red Dermosol-Ferrosol*). **EKC** – slopes (4-10%, 3-2e) **EKZ** – summit surface
FBA FBB FBC FBL FBO	14.6 9.7 3.4 0.4 0.7	Mostly arable slopes and raised plains with ironstone soils with 'vertic' subsoil and other texture contrast soils. Main soils: ironstone soil – loamy topsoil with ironstone gravel over brown clay, which is often sodic and cracking **J2** (*Ferric Brown Sodosol*). With loamy topsoil over sodic clay – brown clay subsoil which is often sodic and cracking **F2**-**F1** (*Brown Sodosol*). Minor areas of cracking clay soil **E3** (*Brown Vertosol*) and some stony topsoil over clay on weathered rock – loamy texture contrast soils formed on weathered rock or hard rock **K4** (*stony Brown Sodosol*). Minor areas with shallow soil on calcrete or calcrete rubble may occur in the east of the land system **B2**-**B3** (*Petrocalcic-Lithocalcic Calcarosol-Tenosol*). **FBA** – raised plain (0-2%, 1-2e). Ironstone gravel thicker and more extensive on these summits. **FBB** – slopes (1-4%, 2-1e, 1-2s) **FBC** – slopes and drainage lines (3-10%, 3-2e, 2g, 2s) **FBL** – slopes (1.5-4%, 2e, 2-3s) **FBO** – non-arable drainage depression and arable slopes with <10% saline seepage in drainage depression (3-10%, 3e, 2-3^{o}s-2-3^{+}s, 4g)
FDC FDH	1.1 4.4	Arable to semi-arable slopes and drainage lines with ironstone soils with 'vertic' subsoil, and soils formed on weathered rock. Main soils: ironstone soil with some loamy topsoil over sodic clay – loamy topsoil, usually with ironstone gravel over brown clay: **J2** with some **F2**-**F1** (*Ferric Brown Sodosol* with some *Brown Sodosol*). With stony topsoil over clay on weathered rock – stony loamy topsoil over brown clay, mostly on weathered sandstone, some over kaolinized claystone, especially near the Wisanger Hills **K4** (*stony Sodosol*). Minor areas of cracking clay soils: **E3**. **FDC** – slopes (3-8%, 3e) **FDH** – slopes with drainage lines (3-15%, 3-4e, 3g)
FVZ	0.1	Arable crest with ironstone soils with neutral to acid subsoil, some formed on weathered rock. Main soils: ironstone soil – sandy loam to light sandy loam with ironstone gravel on brown clay **J2** (*Ferric Brown Chromosol-Sodosol*). With rocky soil – sandy soil with ironstone fragments on weathered sandstone **L1** (*rocky Tenosol*). **FVZ** – crest. Glacial deposit?
HBB HBC	0.2 1.4	Mostly arable slopes with texture contrast soils and some cracking clays. Main soils: loamy topsoil over sodic clay – loamy topsoil over brown sodic clay, some formed on

HBH	0.8	weathered rock **F2**-**F1** (*Brown Sodosol*). With 10-20% cracking clay soil and gradational clay loamy soil: **E3** and **M2** (*Brown Vertosol* and *Brown Dermosol*). Minor areas of with soil hard carbonate rubble. **HBB** – slopes (1-3.5%, 2-1e, 2s) **HBC** – slopes and crests (3-8%, 3e, 2g, 2s) **HBH** – slopes and drainage lines (3-15%, 3-4e, 3g, 2s)
HPA HPB HPC HPD HPG HPH	0.5 1.6 4.1 0.2 0.2 1.8	Mostly arable slopes and drainage lines with texture contrast soils and cracking clay and clay loam soils. Main soils: greater than 20% gradational clay loamy soil and cracking clay soil: **M2** and **E3** (*Brown Dermosol* and *Brown Vertosol*). And loamy topsoil over sodic clay with some ironstone soil – loamy topsoils over sodic clay, some with ironstone gravel: **F2**-**F1** with some **J2** (*Brown Sodosol* with some *Ferric Brown Sodosol*). Possibly minor areas with hard carbonate rubble. **HPA** – raised plain. **HPB** – slopes (1-4%, 2e) **HPC** – slopes (3-8%, 3e, 2g) **HPD** – semi-arable slopes (10-20%, 4e, 2g) **HPG** – slopes with drainage lines (1-3.5%, 2e, 2g) **HPH** – slopes and drainage depressions (3-10%, 3e)
HXB	0.3	Arable slopes around lagoonal depression, and soils with red clay subsoils. Main soils: clay loamy to loamy topsoil over red clay with abundant fine carbonate in lower subsoil **C4**-**D3** (Hypercalcic Red Chromosol-Sodosol-Dermosol). **HXB** – slopes (1-3.5%, 2-1e, 2s)
KTB KTC KTH KTc	0.9 4.2 3.7 0.2	Mostly arable outwash slopes and drainage lines with cracking clay soils. Main soils: Red, brown, grey and black cracking clay soil **E2**-**E3**-**E1** (*Red-Brown-Black Vertosol*). With some gradational clay loamy soil – clay loamy topsoils over red or brown clay, often over weathered rock **M2** (*Red-Brown Dermosol*). With minor to limited loamy topsoil over sodic clay – loamy topsoils over brown sodic clay **F2**-**F1** (*Brown Sodosol*). Minor areas of shallow soil on calcrete or calcrete rubble **B2**-**B3** (*Petrocalcic-Lithocalcic Calcarosol-Tenosol*). Rounded quartzite stones/rocks are common. **KTB** – outwash slopes with <10% saline seepage (1.5-4%, 2e, 2g, 2-3s) **KTC** – outwash slopes (4-13%, 3e, 2g, 2s) **KTH** – outwash slopes with creek lines (3-13%, 3e, 3g, 2-3s). Creek lines have some saline seepage. **KTc** – outwash drainage areas with <10% saline seepage (4-8%, 3e, 3-2^{+}s, 3g)
KWE KWK KWL	0.1 0.6 0.03	Mostly arable outwash slopes, plains and flats with clay loamy and clayey soils and sodic soils with gilgai landscape features. Main soils: cracking clay soil **E3**-**E2** (*Brown-Red Vertosol*) and gradational clay loamy soil with brown or red clay subsoil **M2** (*Brown-Red Dermosol*). With loamy topsoil over sodic clay with some ironstone soil – loamy topsoil over brown clay, some with ironstone gravel: **F2**-**F1** with some **J2** (*Brown Sodosol* with some *Ferric Brown Sodosol*). Some soils have weathered rock at moderate depth (at 80-100cm). **KWE** – outwash drainage flat (2s) **KWK** – outwash plains with <10% saline seepage (3s) **KWL** – outwash slopes with <10% saline seepage (1-3%, 2-1e, 3s)
KXF	0.2	Mostly arable outwash drainage flat. Main soils: clay loamy to loamy topsoils over brown light clay or clay loam **M2b** (Brown Kandosol-Tenosol). With around 10% cracking clay soils **E3** (*Brown Vertosol*). **KXF** - outwash drainage flat with creek gully (1-2%, 1-2e, 3g)
QoB OoC	1.1 0.4	Semi-arable slopes with mostly loamy soils on calcrete. Main soils: shallow soil on calcrete or calcrete rubble – rubbly loamy grey calcareous and non-calcareous soils **B2**-**B3** (*Petrocalcic-Lithocalcic Calcarosol-Tenosol*). With sandy loam over red clay, sometimes with hard carbonate fragments, in lows where calcrete has been 'dissolved' **D3** (Red Chromosol-Sodosol); or with gradational clay loamy soil and loamy topsoil over sodic clay – loamy to clay loamy topsoil over brown sodic-cracking clay, sometimes with hard carbonate fragments: **M2** and **F2**-**F1** (*Brown Dermosol* and *Brown Sodosol*). Some stony topsoil over clay on weathered rock – soils with rock at shallow to moderate depth **D7** (*stony Brown-Red Sodosol*). **QoB** – slopes (1-4%, 2-1e) **QoC** – slopes (3-10%, 3e)
TGA	1.1	Arable raised plains and slopes, with cracking clay soils that have gilgai landscape features; and some

TGK TGL	1.9 0.7	ironstone soils. Often, rounded quartzite fragments occur. Main soils: cracking clay soil and gradational clay loamy soil: **E3** and **M2** (*Brown Vertosol* and *Brown Dermosol*). With ironstone soil and loamy topsoil over sodic clay – loamy topsoils over brown sodic clay, usually with ironstone, on flats in gilgai landscapes: **J2** and **F2**-**F1** (*Ferric Brown Sodosol* and *Brown Sodosol*). Crabhole soils, if not cracking clays, have loamy topsoils over brown clay, without ironstone, and usually not bleached – loamy topsoil over sodic clay **F2** (*Brown Sodosol*). **TGA** – raised plain (0-2%, 1-2e) **TGK** – raised plain (0-2%, 1-2e) with <10% saline seepage (2-3s) **TGL** – slopes (1.5-4%, 2e) with <10% saline seepage (2-3s)
TMO TMT	1.2 2.0	Mostly non-arable drainage depression with cracking clays and texture contrast soils. Main soils: cracking clay soil and gradational clay loam soil: **E3** and **M2** (*Brown Vertosol* and *Brown Dermosol*). With loamy topsoil over sodic clay – loamy topsoil over brown sodic clay **F2**-**F1** (*Brown Sodosol*). With minor deeper brown loamy soils, and minor soils formed over rock. **TMO** – drainage depression and slopes with <10% saline seepage (3-10%, 3e, 4g, 3-2^{o}s-3-2^{+}s) **TMT** – drainage depression and slopes with 10-50% saline seepage (2-8%, 3e, 4g, 4-3*s)
TNA TNB TNC TND	0.1 1.5 1.8 0.3	Arable to semi-arable slopes, raised plains and drainage lines with cracking clay and clay loam soils. Main soils: cracking clay soil and gradational clay loamy soil: **E3** and **M2** (*Brown Vertosol* and *Brown Dermosol*). Minor to limited loamy topsoil over sodic clay and ironstone soil – loamy texture contrast soils, some with ironstone gravel: **F2**-**F1** with **J2** (*Brown Sodosol* and *Ferric Brown Sodosol*). **TNA** – raised plain (2s) **TNB** – slopes (1.5-3.5%, 2-1e, 2s) **TNC** – slopes with creek lines (3-10%, 3-2e, 3g, 2s) **TND** – slopes with creek line (10-20%, 4e, 3g, 2s). With some stony soils over weathered sandstone or hard sandstone.
TRA TRC TRD TRE TRG TRM TRN	0.4 0.6 2.4 0.1 1.8 0.5 0.6	Mostly arable crests and slopes with cracking clay and clay loam soils and texture contrast soils. Main soils: >50% cracking clay soil and gradational clay loamy soil, many formed on weathered rock: **E3**-**E2** and **M2** (*Brown-Red Vertosol* and *Brown Dermosol*). With loamy topsoil over sodic clay and some ironstone soil – loamy topsoils over brown sodic clay, some with ironstone gravel: **F2**-**F1** with **J2** (*Brown Sodosol* with some *Ferric Brown Sodosol*). Minor soil with calcrete or calcrete rubble. Some soils with rock at shallow or moderate depth. **TRA** – raised plain (2s) **TRC** – crests and slopes (2.5-8%, 3-2e, 2g, 2s) **TRD** – slopes and drainage lines (10-20%, 4e, 3g, 2s) **TRE** – drainage depression area (1-4%, 2e, 2s) **TRG** – slopes and drainage lines with <10% saline seepage (1-4%, 2e, 2g, 3-2^{o}s) **TRM** – slopes and drainage lines with <10% saline seepage (5-15%, 3-4e, 3g, 3s) **TRN** – slopes and drainage lines with <10% saline seepage (10-20%, 4e, 3g, 3-2^{o}s)
WAB	0.1	Non-arable unconsolidated coastal cliffs. Calcarenite cliffs topped with fine shell sand dunes. Cliffs around 20m high. **WAB** – coastal cliffs (>100%).
WBA WBB	0.3 0.6	Non-arable rocky coastal cliffs, steep slopes and coastal gullies. Cliffs from 10 to 90m high. Rocks are sandstone, also with conglomerate and shale. **WBA** – coastal steep slopes and gullies (30-100%) **WBB** – coastal cliffs (>100%)
ZA-	0.4	Saline drainage depression, with >50% saline seepage (3e, 5g*, 5s) Main soils: loamy topsoil over sodic clay - loamy topsoil over brown sodic clay **F2**-**F1** (*Sodosol*). With minor to common areas of cracking clay soil **E3** (*Vertosol*).
ZS-	0.2	Highly saline lagoon (8s); salt encrusted.
Xl-	0.03	Dam

Classes in the 'Soil Landscape Unit summary' table (eg. 2-1e, 3w, 2y, etc) describe the predominant soil and land conditions, and their range, found in Soil Landscape Units. The number '1' reflects minimal limitation, while increasing numbers reflect increasing limitation. Letters correspond to the type of attribute:

a - wind erosion e - water erosion f - flooding g - gullying
r - surface rockiness s - salinity w - waterlogging y – exposure

Detailed soil profile descriptions:

Main Soils:

E3-**E2**-**E1** Cracking clay (*Brown-Red-Black Vertosol*)
Grey clay topsoil, over coarsely structured brown, red, grey or black clay, over clay with accumulations of fine carbonate. The soil usually cracks to the surface; and the subsoil is usually sodic. The soil profile usually contains some smooth and somewhat rounded coarse fragments: quartzite, sandstone, shale, basalt or quartz. Some soils have some ironstone or hard carbonate segregations. Many of these soils have a surface layer of loam or clay loam which is less than 3cm thick. Found on slopes, crests, flats, and in gilgai landscape areas where soils can be calcareous throughout on gilgai mounds. The landscape in these areas often has a slight 'gilgai' appearance.

F2-**F1** Loamy topsoil over sodic clay (*Brown Sodosol-Chromosol*)
Medium thickness to thick sandy loam, with some loams and a few loamy sands, usually with a bleached layer, over usually sodic brown, or occasionally grey or red, clay. Often there is fine carbonate in the lower subsoil. The subsoil clay is often cracking clay. Some soils have quartz, quartzite or shale fragments; while some have some ironstone segregations. Coarse fragments can be somewhat rounded. Soils formed over shale have smooth loamy surface soils. Some soils may have weathered rock within 1m of the surface. Found on slopes, crests, flats, and some gilgai flats and crabholes.

J2 Ironstone soil (*Ferric Brown Sodosol-Chromosol*)
Medium thickness to thick sandy loam, or occasionally smooth loam, with ironstone gravel and usually a bleached layer, over often sodic brown, or occasionally red clay. Sometimes there is fine carbonate in the lower subsoil. The subsoil clay is often cracking clay. Sometimes some coarse fragments of quartzite, quartz, sandstone or even shale occur. Some soils have weathered rock within the top 1m. Found on crests, slopes, flats and some gilgai flats.

Minor soils:

M2 Gradational clay loamy soil (*Brown-Red Dermosol*)
Thin to medium thickness clay loam or sometimes loamy soil, over brown or red usually cracking clay. Some coarse fragments of quartzite, basalt or quartz can occur; these are usually somewhat rounded. Often to usually with fine carbonate in lower subsoil or subsoil. These are closely related to the cracking clay soils. Found on crests, slopes and gilgai landscape areas.

K4-**K3**-**K2**-**K1** Stony topsoil over clay on weathered rock (*stony Brown-Red Sodosol-Chromosol-Dermosol*)
Medium thickness to thick loamy sand, sandy loam or clay loam, usually with quartz, sandstone, shale or even basalt fragments, over brown or red often sodic clay, on weathered sandstone, sometimes shale, or occasionally claystone or basalt, at moderate to shallow depth. Often with some ironstone segregations. Soils formed over shale have smooth loamy or clay loamy surface textures. Sometimes there is a bleached sub-surface horizon. Found on crests and slopes.

Closer to the coast, especially on the rise south of Cape D'Estaing, variants of these soils often have, mostly loamy topsoils, abundant hard carbonate fragments, and red clay subsoils, and are sometimes calcareous throughout: **D7**-**C2**. Found on crests and slopes.

L1 Rocky soil (*rocky Tenosol*)
Shallow gravelly or stony loamy sand to clay loam over weathered sandstone or sandstone rock. These soils can have a bleached layer. Close to the coast these soils can have abundant hard carbonate fragments. Found on steeper slopes.

B2-B3 Shallow soil on calcrete (*Petrocalcic-Lithocalcic Calcarosol-Tenosol*)
Calcareous to non-calcareous grey, or sometimes black loamy soil with abundant hard carbonate fragments, and sometimes with some sandstone fragments, over calcrete or rubbly calcrete at shallow depth. This layer is usually underlain by highly calcareous loamy to clay loamy material, or sometimes is directly underlain by rock. Crests and slopes, mostly near the coast.

C2b Stony red soil on basalt (*stony Red Dermosol-Ferrosol*)
Loam to clay topsoil with basalt fragments, over red well structured clay with basalt fragments, on basalt rock at shallow to moderate depth. With fine carbonate accumulations occur in the lower subsoil. Found on flat topped rise and adjacent slopes.

M1-M4 Deep alluvial soil (*deep Tenosol-Kandosol*)
Black sandy loam to clay loam over loamy, clay loamy or even sandy soil. Found in creek and drainage flats.]

Further information: DEWNR Soil and Land Program