wiw	WILLIAMSDALE	Transferral

Landscape— Undulating rises, fans, valley flats and depressions on Silurian volcanics of the Canberra Lowlands. Slopes <10%, local relief 5 - 50 m, elevation 520 - 800 m. Little or no rock outcrop. Completely cleared woodland and grassland.

Soils— Moderately deep (50 - 150 cm), moderately well-drained Red and some Brown Chromosols (Red and Yellow Podzolic Soils) and Red and Brown Kandosols (Red and Yellow Earths), shallow (<50 cm) Leptic Tenosols and Rudosols (Lithosols) and moderately to very deep (100 - >150 cm), imperfectly to moderately well-drained Brown and Yellow Chromosols (Yellow Podzolic Soils, Solodic Soils and Solodized Solonetz Soils) and Brown Kandosols (Yellow Earths).

Qualities and limitations— localised shallow soils, widespread complex soils, localised poor moisture availability, localised non-cohesive soils, widespread foundation hazard, widespread complex terrain, localised dieback, widespread recharge zone, widespread discharge zone, localised salinity hazard, localised wind erosion hazard, widespread gully erosion hazard, widespread sheet erosion hazard, widespread streambank erosion hazard, widespread high run-on, localised poor drainage, localised permanently high watertables, widespread seasonal waterlogging, localised flood hazard.

LOCATION AND SIGNIFICANCE

Extensive occurrences of undulating rises, fans, valley flats and depressions on Silurian volcanics of the Canberra Lowlands, including a majority of the urban area of Canberra. Long, low angle footslopes are the dominant landform element. Also occurs extensively outside of the ACT on the Canberra (Jenkins 2000) and the Michelago (Jenkins 1993) 1:100 000 map sheets. Type location is near Fairburn RAAF base and the Canberra airport (MGA grid reference 700600E, 6089900N, grid zone 55).

Variants

None.

Included landscapes

Often Burra (bau) soil landscape grades into Williamsdale (wiw) and some overlap is inevitable.

LANDSCAPE

Landform

Undulating rises, fans, valley flats and depressions with gently inclined slopes to flats <10%, local relief between 5 - 50 m and elevation 520 - 730 m. Little or no rock outcrop. Waning footslopes are the dominant landform element. A number of pediplains have been identified for the Canberra region (van Dijk 1959; Craft 1931a, b, c, d, 1932 a, b, 1933 a, b. The process of ‘pedimentation’ involves the destruction and levelling of older land surfaces to a new base level by escarpment retreat. This is particularly evident (and relevant to the Williamsdale (wiw) soil landscape) in the area around Canberra airport.

Geology

Silurian volcanics including the Colinton volcanics, Mount Painter Volcanics, Laidlaw Volcanics, and the Cappanana Formation. Large areas of Canberra's northern suburbs are mapped as the Canberra formation and include more common sedimentary units. Lithologies include various Ignimbrites and tuffs with minor siltstone, shale, sandstone and limestone. Alluvial material is common.

Bedrock tends to be highly weathered.

Source: Abell 1991, DMR 2002.

Vegetation

The original woodland has been almost completely cleared. Grasslands, which occurred on waterlogged or frost hollow areas, have been extensively altered with the introduction of exotic grasses. The few remaining trees and tree stands include Eucalyptus bridgesiana (apple box) and E.melliodora (yellow box). Acacia dealbata (silver wattle) is a common shrub. The original grassland included Themeda australis (kangaroo grass), Stipa spp. (speargrasses) and Poa spp. (snow grasses).

Land use

Urban and rural. The vast majority of Canberra's suburbs have been developed on this soil landscape, along with much of Canberra airport. Rural areas include land to the west of the Murrumbidgee River and adjacent to South Tuggeranong. Native and improved grasslands occur along the Jerrabomberra Creek and much of the military land in the Majura valley. Rural land use is mainly sheep and some cattle production, on a mix of native and improved pasture.

Land degradation

Minor gully erosion is common and widespread. Areas of high-intensity stocking such as small horse paddocks, watering points and gateways can suffer from severe sheet erosion revealing easily erodible subsoils. Overgrazing is a serious land degradation issue in this soil landscape resulting in moderate to severe sheet and wind erosion and contributes to gully erosion. Some localised salinity has been observed in the Williamsdale urban area.

Erosion hazard

Land use	Non-concentrated flows	Concentrated flows	Wind
cultivation	high	high	high
grazing	moderate	high	moderate
urban	moderate	high	high

SOILS

Soil variation and distribution

Moderately deep (50 - 150 cm), moderately well-drained Red and some Brown Chromosols (Red and Yellow Podzolic Soils) and Red and Brown Kandosols (Red and Yellow Earths) occur on upper slopes of rises and fans with shallow (<50 cm) Leptic Tenosols and Rudosols (Lithosols) occur where bedrock is close to the surface. Lower slopes and drainage lines are dominated by moderately to very deep (100 - >150 cm), imperfectly to moderately well-drained Brown and Yellow Chromosols (Yellow Podzolic Soils, Solodic Soils and Solodized Solonetz Soils) with some Brown Kandosols (Yellow Earths).

Soils on slopes range from texture-contrast Yellow Chromosols to more massive and gradational Red and Brown Kandosols (Red and Yellow Earths). Intergrades between the Chromosols and Kandosols are common. In drainage lines, soils are usually poorly drained, texture contrast and sodic.

As part of her PhD Thesis, Hook (1990) examined a small portion of the Williamsdale (wiw) soil landscape. She noted that “ ...a considerable range in profile form occurs within a small area... this variation leads to major differences in classification.”

On better drained low sloping land, Red and Brown Kandosols (up to 25% of the landscape) are found in preference to Yellow Chromosols.

QUALITIES AND LIMITATIONS

Land capability			
Urban Capability	C	**Soil Regolith Class**	R2 (R3, R4)
Limitations to land use			
Grazing	slight to moderate	**Cultivation**	high to very high
Urban	moderate to high		
Landscape			
Steep slopes	not observed	**Mass movement hazard**	not observed
Rock outcrop	not observed	**Rockfall hazard**	not observed
Foundation hazard	widespread	**Complex terrain**	widespread
Productive arable land	not observed		
Soils			
Shallow soils	localised	**Complex soils**	widespread
Poor moisture availability	localised	**Non-cohesive soils**	localised
Hydrology			
High run-on	widespread	**Poor drainage**	localised
Permanently high watertables	localised	**Permanent waterlogging**	not observed
Seasonal waterlogging	widespread	**Flood hazard**	localised
Erosion			
Wind erosion hazard	localised	**Wave erosion hazard**	not observed
Gully erosion hazard	widespread	**Sheet erosion hazard**	widespread
Streambank erosion hazard	widespread		
Salinity			
Recharge zone	widespread	**Discharge zone**	widespread
Salinity hazard	localised	**Seepage scalds**	not observed
Salt stores	moderate		

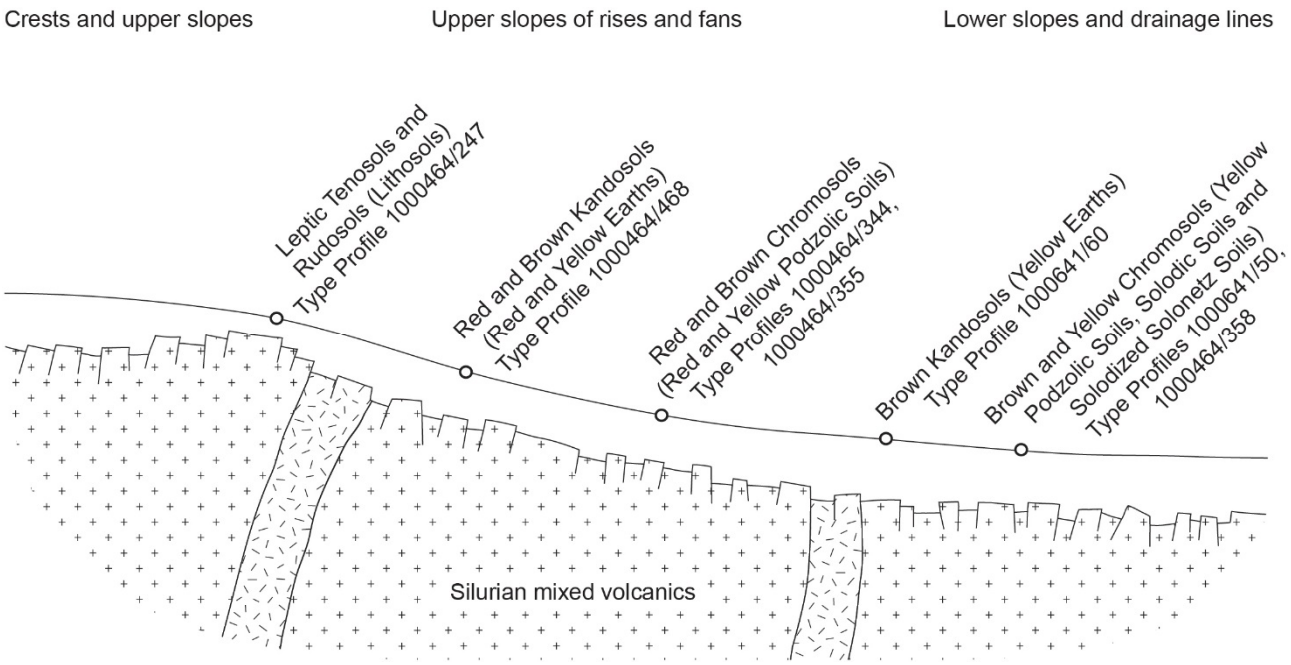
FACETS

wiw(1)— Upper slopes of rises and fan elements

Soils	Moderately deep (50 - 150 cm), moderately well-drained Red and some Brown Chromosols (Red and Yellow Podzolic Soils) and Red and some Brown Kandosols (Red and Yellow Earths). Shallow (<50 cm) Leptic Tenosols and Rudosols (Lithosols) occur where bedrock is close to the surface.
Type Profile(s)	Red Chromosol (Red Podzolic Soil): Soil Landscapes of the Canberra 1:100 000 Sheet (1000464) profile 344 (Master Type Profile) Brown Kandosol (Yellow Earth): Soil Landscapes of the Canberra 1:100 000 Sheet (1000464) profile 468 (Associated Type Profile) Brown Chromosol (Yellow Podzolic Soil): Soil Landscapes of the Canberra 1:100 000 Sheet (1000464) profile 355 (Associated Type Profile) Leptic Tenosol (Lithosol): Soil Landscapes of the Canberra 1:100 000 Sheet (1000464) profile 247 (Associated Type Profile) Red Chromosol (GSG not recorded): MOLONGLO RESOURCE (1000641) profile 51 (Normal Profile)
HGL Reference	Typically corresponds with: HGL 7 (Gungahlin) MA 2/3, MA 4 and MA 6, HGL 13 (Lanyon) MA 2, MA 3/4 and MA 6, HGL 14 (Majura Road) MA 2, MA 3/4 and MA 6, HGL 22 (South Canberra) MA 2/3, MA 4 and MA 6, HGL 23 (Sullivans Creek) MA 2 and MA 6, HGL 11 (Kambah P

wiw(2)— Lower slopes and drainage lines

Soils	Moderately to very deep (100 - >150 cm), imperfectly to moderately well-drained Brown and Yellow Chromosols (Yellow Podzolic Soils, Solodic Soils and Solodized Solonetz Soils) and Brown Kandosols (Yellow Earths).
Type Profile(s)	Brown Chromosol (Yellow Podzolic Soil): Soil Landscapes of the Canberra 1:100 000 Sheet (1000464) profile 358 (Master Type Profile)
	Brown Kandosol (GSG not recorded): MOLONGLO RESOURCE (1000641) profile 60 (Associated Type Profile)
	Brown Sodosol (GSG not recorded): MOLONGLO RESOURCE (1000641) profile 50 (Associated Type Profile)
HGL Reference	Typically corresponds with: HGL 7 (Gungahlin) MA 5 and MA 9/10, HGL 13 (Lanyon) MA 5 and MA 9/10, HGL 14 (Majura Road) MA 5 and MA 9/10, HGL 22 (South Canberra) MA 5 and MA 9/10, HGL 23 (Sullivans Creek) MA5 and MA 9/10, HGL 11 (Kambah Pools) MA 3/5 and M



Schematic cross-section of the Williamsdale (wiw) soil landscape, showing facets and soil types

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NOTES

(1) This report describes reconnaissance soil landscape information mapped at 1:100,000 scale and does not negate the need for site assessment at a scale suitable to the land use or development under consideration.

(2) 'Not observed' means unlikely to be found. 'Localised' means observed to a level considered significant for land management. 'Widespread' means prevalent and significant over most of the landscape. 'None recorded' means no occurrence has been recorded. 'Not assessed' means no result has been recorded for this attribute and it may or may not be present in the soil landscape.