PAS Paskeville Land System

A plateau area with level to gently undulating plains and slopes

Area: 99.3 km^2

Landscape: The Paskeville plateau consists of an elevated gently undulating plains, plateau surfaces, slopes, and a few lower lying plains. This area is a remnant bedrock high – directly comparable to the Bute plateau area to the north. There is little evidence of soils forming in rock – although minor fragments of hard rock were seen on a plateau surface in the south of the system. The bedrock is overlain by reddish clayey sediments (Hindmarsh Clay) – most likely derived from the weathering of the bedrock or former bedrock – and the majority of soils are formed in this clay. Much more recent accessions of fine carbonate dust have infused into the upper layers of this clay. Calcareous loess (Woorinen Formation) has been deposited in places, especially in the south and northwest of the system, and is usually relatively thin (less than one metre thick). Carbonate nodules and concretions are often associated with this material. The oldest deposits of calcareous loess have become calcreted in some areas in the south of the system. The most recent deposition has been that of calcareous siliceous sand (Molineaux Sand), which has formed mallee sand sandy rises in the northwest of the system. Reworking of calcareous loess sediments may have played a part in the formation of these sandy rises. The sandy rises are typically low and broad – possibly an indication of spreading via wind erosion since clearing and settlement – and have the northwest-southeast orientation characteristic of inland dunes on the Peninsula.

Annual rainfall: 365 – 425 mm average

Main soils:

A6	*gradational calcareous clay loam*
A5-**A4**	*calcareous loam*
C4-D3	*clay loam to loam over red clay*

Minor soils:

B2	*shallow calcareous loam on calcrete*
H2	*calcareous siliceous sand*

Main features: The land system is predominantly arable. The most common soil has a calcareous to non-calcareous clay loamy to loamy topsoil grading to a reddish clayey subsoil. In places, moderate depth to deep calcareous loams and clays loams overlie clay. The land is used for rotational cropping and some grazing. The main limitations include boron and sodium accumulations in clayey subsoils; restricted internal drainage where clayey subsoils occur; fine carbonate and alkaline soil conditions limiting the availability of certain nutrients, especially in those soils which have the highest surface soil fine carbonate contents.

Careful management is needed to maintain good surface condition on the numerous soils with clay loamy and light clayey surfaces.

In the few areas where they occur, sandy soils need careful management due to their low fertility and potential for wind erosion. Where shallow soils and/or hard carbonate fragments occur: these limit moisture holding capacity and hence production potential.

Soil Landscape Unit summary: Paskeville Land System (PAS)

SLU	% of area	Main features
IAA IAB IACg	19.6 12.3 3.8	Plains and slopes with soils dominantly formed in clayey sediments. Main soils: *gradational calcareous clay loam* **A6**. And limited to common areas of *gradational clay loam* **C4**, possibly with some *loam over red clay* **D3**. **IAA** – somewhat elevated gently undulating plains (slopes 0-1.5%). **IAB** – slopes (slopes 1-3.5%). **IACg** – slopes with drainage channels (slopes 1-5%).
IDZ	6.3	Plateau surface with soils dominantly formed in clayey sediments. Main soils: *gradational calcareous clay loam* **A6**. **IDZ** – plateau surface (slopes 0-1%).
IFA IFB	0.6 1.1	Plains and slopes with soils dominantly formed in clayey sediments. Main soils: *gradational calcareous clay loam* **A6** with vertic (reactive) clayey subsoils, possibly including minor *gradational clay loam* **C4** or even *loam over red clay* **D3** with vertic subsoils. With limited to common calcareous *red-brown cracking clay* **E2**-**E3** **IFA** – gently undulating plains with gilgai microrelief with small crabholes (slopes 0-1%). **IFB** – slopes with gilgai microrelief with small crabholes (slopes 0.5-2.5%).
IMA IMB IMBg IMZ	1.9 8.0 2.3 1.6	Plains, slopes and plateau surfaces with soils dominantly formed in clayey sediments. Main soils: *gradational calcareous clay loam* **A6**. And limited to common areas of *gradational clay loam* **C4**, possibly with some *loam over red clay* **D3**. With limited to common areas of *calcareous loam* **A5**-**A4**. **IMA** – gently undulating plains (slopes 0-1%). **IMB** – slopes and rises (slopes 0.5-2.5%). **IMBg** – slopes and rises with drainage lines (slopes 0.5-3.5%). **IMZ** – plateau surface (slopes 0-1%).
INA	0.3	Plains with soils dominantly formed in clayey sediments. Main soils: *gradational calcareous clay loam* **A6**. And limited to common areas of *gradational clay loam* **C4**, possibly with some *loam over red clay* **D3**. With limited to common areas of *rubbly calcareous loam* **A5**-**A4**. **INA** – plains (slopes 0-1%).
IOA IOB IOC IOCg	1.0 3.4 1.6 4.7	Plains and slopes with soils dominantly formed in clayey sediments and calcareous loess. Main soils: *gradational calcareous clay loam* **A6**. And extensive areas of *calcareous loam* **A5**-**A4**. With limited to common areas of *gradational clay loam* **C4**, possibly with some *loam over red clay* **D3**. **IOA** – gently undulating plains (slopes 0-1%). **IOB** – slopes (slopes 0.5-2.5%). **IOC** – slopes with some ill-defined drainage ways (slopes 1.5-4%). **IOCg** – slopes with drainage lines (slopes 1-5%).
IRB IRC IRK	1.4 0.3 0.6	Slopes with soils dominantly formed in clayey sediments. Main soils: *gradational calcareous clay loam* **A6**. With limited to common areas of *calcareous loam* **A5**-**A4**, and *shallow calcareous loam on calcrete* **B2**. **IRB** – lower slopes (slopes 1-3%). **IRC** – slopes (slopes 2-7%). **IRK** – lowest slight slopes with some saline seepage (slopes 0.5-2%).
QfB QfC	0.4 0.7	Slopes dominated by shallow calcreted soils. Main soils: *shallow calcareous loam on calcrete* **B2**, possibly including some *shallow sandy loam on calcrete* **B3**. With limited to common areas of *gradational calcareous clay loam* **A6** grading toward *gradational clay loam* **C4** or even *loam over red clay* **D3**, in low lying patches; and *rubbly calcareous loam* **A5**-**A4**. **QfB** – slopes (slopes 0.5-3%). **QfC** – rise, with non-arable very stony upper slopes (slopes 1-10%).
QTC	0.5	Slopes dominated by shallow calcreted soils. Main soils: *shallow calcareous sandy loam on calcrete* **B2**, possibly including some *shallow sandy loam on calcrete* **B3**. With limited to common areas of *calcareous loam* **A5**-**A4**. **QTC** – upper slope (slopes 2-8%).

SbA	0.7	Plains dominated by soils formed in rubbly calcareous loess. Main soils: *rubbly calcareous loam* **A5**-**A4**. With limited to common areas of *gradational calcareous clay loam* **A6**, possibly including some *loam over red clay* **D3** or *gradational clay loam* **C4**, in low lying patches. **SbA**
SdA SdZ	0.4 0.9	Plains and plateau surfaces dominated by soils formed in rubbly calcareous loess. Main soils: *rubbly calcareous loam* **A5**-**A4**. With limited to common areas of *gradational calcareous clay loam* **A6**, possibly including some *loam over red clay* **D3** or *gradational clay loam* **C4**, in low lying patches; and *shallow calcareous loam on calcrete* **B2**, possibly grading to *shallow loam on calcrete* **B3**. **SdA** – somewhat elevated gently undulating plain (slopes 0-1%). **SdZ** – plateau surface (slopes 0-1%).
ShA	0.5	Plains dominated by soils formed in rubbly calcareous loess. Main soils: *rubbly calcareous loam* **A5**-**A4**. With limited to common areas of *shallow calcareous loam on calcrete* **B2**. **ShA** – gently undulating plain (slopes 0-1.5%).
SOB SOZ	5.9 3.2	Plateau surface and slopes dominated by soils formed in calcareous loess. Main soils: *calcareous loam* **A5**-**A4**. With limited to common areas of *gradational calcareous clay loam* **A6**, possibly including some *loam over red clay* **D3** or *gradational clay loam* **C4**, in low lying patches. **SOB** – slopes (1-3.5%). **SOZ** – plateau surface (slopes 0-1%).
SSA SSB SSZ	10.5 2.8 2.7	Plains and slopes dominated by soils formed in calcareous loess. Main soils: *calcareous loam* **A5**-**A4**. With limited to common areas of *gradational calcareous clay loam* **A6** in low lying patches, and *calcareous siliceous sand* **H2** on mallee sand sandy rises. Sandy variants of *calcareous loam* **A4** may occur on sandy rises and adjacent areas. **SSA** – somewhat elevated plains with some sandy rises (slopes 0-1%). **SSB** – slopes with some sandy rises (slopes 0.5-2.5%). **SSZ** – gently undulating elevated plain with some broad and low sandy rises (slopes 0-1.5%).

Detailed soil profile descriptions:

Main soils:

A6 *gradational calcareous clay loam* [Pedal Hypercalcic Calcarosol]
Medium thickness calcareous brown to red brown light clayey to loamy topsoil grading to a reddish clayey subsoil with abundant fine carbonate, which is underlain by blocky heavy red clay (Hindmarsh Clay). The most common surface texture is clay loam. Some soils have reactive clay (vertic) subsoils which shrink and swell on wetting and drying. These soils grade to **C4**-**D3** soils.

A5-**A4** *calcareous loam* [Regolithic Hypercalcic-Lithocalcic Calcarosol]
Grey brown to brown medium thickness calcareous clay loamy to sandy topsoil grading to light clayey to loamy subsoil with abundant fine carbonate. Profiles range from having minor to abundant carbonate rubble. The majority of these soils are underlain by a clayey substrate within 120 cm of the surface (soil **A5**). Sandy variants with sandy loam subsoils are found on or adjacent to sandy rises. Typically found on slight highs.

C4-D3 *clay loam to loam over red clay* [Sodic Hypercalcic Red Dermosol-Chromosol]
Red brown medium thickness non-calcareous to slightly calcareous clay loamy to loamy topsoil over reddish clayey subsoil with abundant fine carbonate. This is underlain by blocky heavy red clay (Hindmarsh Clay). Found on flats, depressions and slopes. Closely related to soil **A6**, but either texture contrast or gradational with non calcareous to slightly calcareous surfaces.

Minor soils:

B2 *shallow calcareous loam on calcrete* [Petrocalcic Calcarosol]
Grey brown to brown calcareous loams, sandy loams, and clay loams overlying calcrete at shallow depth.

H2 *calcareous siliceous sand* [Arenic Calcarosol]
Moderate depth to deep brown loamy sands. Soils are calcareous throughout. An accumulation of fine carbonate occurs in the subsoil or lower subsoil. Found on mallee sand sandy rises.

Further information: DEWNR Soil and Land Program