



Source: Soil Landscapes of the Penrith 1:100,000 Sheet report

Landscape—level to gently undulating crests and ridges on plateau surfaces of the Hawkesbury Sandstone. Local relief <20 m, slopes <5 m. Infrequent rock outcrop. Partially cleared eucalypt woodland.

Soils—shallow (<50 cm) Earthy Sands (Uc4.21, Uc5.22) and Yellow Earths (Gn1.21, Gn2.21, Gn2.24); some Siliceous Sands/Lithosols (Us1.2) associated with rock outcrop.

Limitations—shallow, highly permeable soil, rock outcrop, very low soil fertility.

LOCATION

Ridge and plateau surfaces on the Hawkesbury Sandstone of the Macdonald Ranges and Hornsby Plateau. Examples occur at Cobar and Fagan Ridges. Smaller areas occur at Forest Glen, Muogamarra Nature Reserve and in Ku-ring-gai Chase National Park.

LANDSCAPE

Geology

Hawkesbury Sandstone consisting of medium to coarse-grained quartz sandstone with minor shale and laminite lenses.

Topography

Level to gently undulating, broad crests and ridges on plateau surfaces. Local relief <20m and slopes <5%. Broad convex ridge crests (300–800 m) are the dominant landform element. Rock outcrop is occasionally present.

Vegetation

Partially cleared low eucalypt woodland with a dry sclerophyll shrub understorey. The low woodland includes red bloodwood *Eucalyptus gummifera*, narrow-leaved stringybark *E. oblonga* and brown stringybark *E. capitellata*. Other species include Sydney peppermint *E. piperita*, and scribbly gums *E. haemastoma* and *E. racemosa*. The open, dry sclerophyll shrub understorey is dominated by the families Proteaceae, Fabaceae, Epacridaceae and Myrtaceae.

Land use

Mostly uncleared bushland. This includes areas of Muogamarra Nature Reserve, Ku-ring-gai Chase National Park, Maroota State Forest and crown land. Bushwalking, horse and trail bike riding and driving of off-road vehicles are common activities.

Existing Erosion

Minor sheet erosion occurs as sheetwash. Minor trail erosion.

Associated Soil Landscapes

Small areas of Lucas Heights (**lh**) soil landscape may have been included in this unit.

SOILS

Dominant Soil Materials

fb1—Loose, olive brown loamy sand. This is loose sand to fine sandy loam with apedal single-grained structure and porous sandy fabric. It generally occurs as topsoil (A horizon). Colour is usually olive brown (2.5Y 4/3) and may range from very dark brown (10YR 2/2) to dark greyish-yellow (2.5YR 5/2). This soil material is often water repellent. The pH ranges between strongly acid (pH 4.0) and slightly acid (pH 6.0). There are a few sandstone rock fragments. Charcoal fragments and roots are common.

fb2—Earthy, yellow clayey sand. This is yellow clayey sand with apedal massive structure and earthy porous fabric. It generally occurs as shallow subsoil (A2 horizon). The texture may increase gradually with depth to a sandy clay loam. The colour is commonly brownish-yellow (10YR 5/8, 6/6, 6/8) or light olive brown (2.5Y 4/6). Faint yellow or orange mottles are occasionally present. This material is commonly water repellent. The pH ranges from moderately acid (pH 5.5) to slightly acid (pH 6.5). Few sandstone rock fragments and charcoal fragments occur. Roots may either be common or rare.

fb3—Yellow, earthy sandy clay loam. This is a yellow sandy clay loam with apedal massive to weakly pedal structure and porous earthy fabric. It usually occurs as subsoil (B horizon). The texture can increase gradually with depth to sandy clay. Colour is commonly brownish-yellow (10YR 5/8, 6/6, 6/8) or yellowish-brown (2.5Y 5/6, 5/4). Orange mottles may occur with depth. The pH ranges from very strongly acid (pH 4.5) to slightly acid (pH 6.0). Sandstone fragments are common, but charcoal fragments and roots are rarely present.

Occurrence and Relationships

Up to 10 cm of loose, olive brown loamy sand (**fb1**) overlies sandstone bedrock producing Lithosols or Siliceous Sands (Uc1.2) or it can overlie 15–30 cm of earthy, yellow clayey sand (**fb2**)

and up to 30 cm of yellow, earthy, sandy clay loam (**fb3**) [Earthy Sands (Uc5.22) or Yellow Earths (Gn2.24, Gn1.21, Gn2.21)]. The boundaries between **fb1** and **fb3** are usually clear. There is a diffuse to gradual boundary between **fb2** and **fb3**. Total soil depth is usually 30–100 cm.

LIMITATIONS TO DEVELOPMENT

Urban Capability

High capability for urban development.

Rural Capability

Capable of being grazed with careful management.

Landscape Limitations

Shallow soil

Rock outcrop

Soil Limitations

fb1 High permeability
 Low available water capacity
 Low fertility
 High aluminium toxicity
 Very strongly acid

fb2 Very low fertility
 Localised stoniness
 Very strongly acid
 High aluminium toxicity

fb3 Low available water capacity
 Stoniness
 Very low fertility
 Very strongly acid
 Very high aluminium toxicity

Fertility

Very low fertility. The soil materials are very strongly acid, have low waterholding capacities, are shallow, highly permeable, with low organic matter content and very low CEC. They are often severely deficient in the nutrients nitrogen and phosphorus.

Erodibility

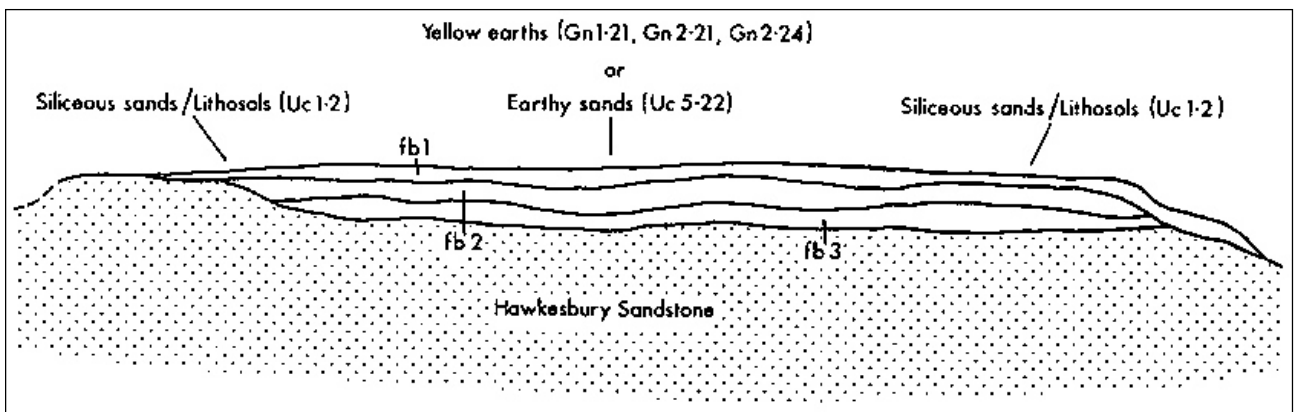
fb1 consists of highly permeable, coarse, loose, sand grains which have a very low to low erodibility depending on organic matter present. **fb2** and **fb3** are very low in organic matter and consist of fine sand grains which are weakly cemented in a clay matrix and are moderately erodible.

Erosion Hazard

The erosion hazard for non-concentrated flows is low to moderate. Calculated soil loss during the first twelve months of urban development ranges up to 6 t/ha for topsoil, and up to 38 t/ha for exposed subsoil. Soil erosion hazard for concentrated flows is also low.

Surface Movement Potential

Shallow depths and low clay contents make these soils stable to slightly reactive.



Schematic cross-section of Faulconbridge soil landscape illustrating the occurrence and relationship of the dominant soil materials.