

1h

LUCAS HEIGHTS

Residual (Assoc.)



Landscape—gently undulating crests, ridges and plateau surfaces of the Mittagong Formation (alternating bands of shale and fine-grained sandstones). Local relief 10–50 m. Slopes <10%. Rock outcrop is absent. Extensively or completely cleared, dry sclerophyll low open-forest and low woodland.

Soils—moderately deep (50–150 cm), hardsetting Yellow Podzolic Soils and Yellow Soloths (Dy2.41) and Lateritic Podzolic Soils (Dy3.61) on crests; Yellow Earths (Gn2.24) on outer edges of crests. Earthy Sands (Uc5) in valley flats.

Limitations—stoniness, low soil fertility, low available water-holding capacity.

LANDSCAPE

Geology

Mittagong Formation—interbedded shale, laminite and fine- to medium-grained quartz sandstone. The Mittagong Formation is located stratigraphically between the Ashfield Shale and Hawkesbury Sandstone. It is often relatively shallow. Minor areas of Hawkesbury Sandstone and minor areas of Ashfield Shale sporadically form surface soil materials within this landscape. Localised laterite outcrops occur.

Topography

Gently undulating plateau surfaces and ridges, 200–1 000 m wide, with level to gently inclined slope gradients of <10%. Local relief is <30 m. Rock outcrop is absent.

Vegetation

Extensively cleared low open-forest and low woodland with a shrub understorey. Dominant tree species include turpentine (*Syncarpia glomulifera*), smooth-barked apple (*Angophora costata*), red bloodwood (*Eucalyptus gummifera*), black ash (*Eucalyptus sieberi*) and sydney peppermint (*Eucalyptus piperita*). Understorey and shrub species include blue mountains mallee ash (*Eucalyptus stricta*) and heath banksia (*Banksia ericifolia*).

LOCATION

Ridge and plateau surfaces on Mittagong Formation. Examples occur on the southern reaches of the Woronora Plateau.

Land Use

Uncleared bushland.

Existing Erosion

Erosion on this soil landscape is generally low. Minor gully and sheet erosion occur occasionally along unpaved roads.

SOILS**Dominant Soil Materials****lh1—Loose greyish brown fine sandy loam (topsoil)**

Colour greyish brown (7.5YR 5.2) to yellowish brown (10YR 5/6)
Texture fine sandy loam to light sandy clay loam
Structure apedal single-grained
Fabric sandy
pH 4.5–6.5
Stones common, iron-coated platy <10 cm
Roots common

lh2—Bleached stony hardsetting yellow orange sandy clay loam (topsoil)

Colour yellow orange (10YR 8/6) (bleached 10YR 7/3 when dry) to bright yellowish brown (10YR 7/6)
Texture sandy clay loam
Structure apedal massive
Fabric earthy
pH 4.0–6.0
Stones 50% stratified, re-oriented, angular to sub-rounded
Roots rare

lh3—Mottled earthy yellowish brown sandy clay loam (subsoil)

Colour yellowish brown (2.5Y 5/6) to dull yellow orange (10YR 7/2)
Texture sandy clay loam
Structure apedal massive
Fabric earthy
pH 4.5–6.0
Stones 50% stratified and re-oriented
Roots rare

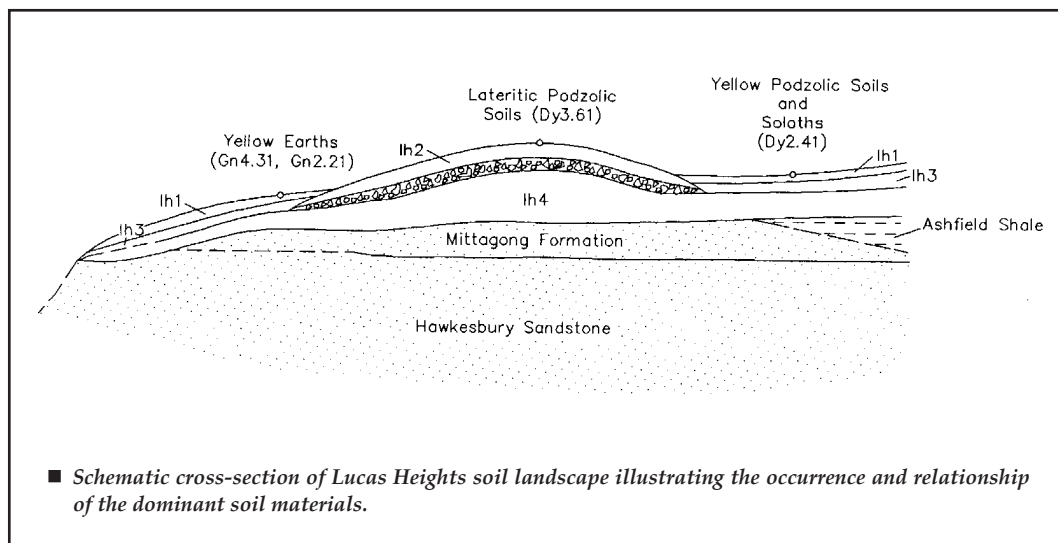
lh4—Strongly pedal bright yellowish brown sandy clay (subsoil)

Colour bright yellowish brown (10YR 7/6) to dull yellowish orange (10YR 6/4)
Texture sandy clay to heavy clay
Structure strongly pedal, 10–50 mm polyhedral to sub-angular blocky
Fabric rough-faced, porous
pH 4.0–5.0
Stones >50% stratified bands, iron-coated fragments
Roots nil

Occurrence and Relationships

Crests and slopes. Loose greyish brown sandy loam (**lh1**) overlies mottled earthy yellowish brown sandy clay loam (**lh3**) [Yellow Earths (Gn2.24)].

Crests and plateau surfaces. 10–20 cm bleached stony hardsetting yellow orange sandy clay loam (**lh2**) usually overlies strongly pedal yellowish brown sandy clay (**lh4**) which extends to depth of 100 cm [Yellow Podzolic Soils and Soloths (Dy2.41, Dy2.21)]. Ironstone is often abundant, especially



in elevated positions. The boundary between the soil materials is clear [Lateritic Podzolic Soils (Dy3.61)]. The total soil depth is <100 cm.

Valley flats and depressions. Loose sands and sandy loams (**lh1**) [Earthy Sands (Uc5)]. Depth varies from 100–200 cm.

LIMITATIONS TO DEVELOPMENT

Soil Limitations

- lh1** Stoniness
 - High permeability
 - Low available water-holding capacity
 - Low fertility
- lh2** High erodibility
 - Stoniness
 - Low available water-holding capacity
 - Hardsetting surface
 - Low permeability
 - Very low fertility
 - Localised sodicity
- lh3** Stoniness
 - Low available water-holding capacity
 - Very low fertility
 - Sodicity
- lh4** Low wet bearing strength
 - Stoniness
 - Low permeability
 - Low available water-holding capacity (localised)
 - Very low fertility
 - Strongly acid
 - High potential aluminium toxicity

Fertility

Fertility of soil materials is low. The soils have low available water-holding capacity and low CEC as well as low to very low intrinsic nutrient levels. Topsoils are hardsetting and stony. The subsoils

are occasionally sodic and impermeable. General fertility is moderate as soils are moderately deep and well structured.

Erodibility

lh1 is moderately erodible as it consists of loose fine sand grains with moderate amounts of organic matter. **lh2** is highly erodible when disturbed as it is dominated by fine sand. This material is hardsetting and coherent and usually resists erosion if not disturbed. **lh3** is highly erodible as it is dominated by fine sand weakly bound in a clay matrix. **lh4** is moderately erodible. It consists of fine sand and clay with a very low organic matter content.

Erosion Hazard

The erosion hazard for non-concentrated flows is generally moderate but ranges from slight to extreme. Calculated soil loss during the first 12 months of development ranges up to 10 t/ha for both topsoil and exposed subsoil. Soil erosion hazard for concentrated flows is high.

Surface Movement Potential

Soils are generally slightly reactive but may be moderately reactive where depth exceeds 1.5 m.

Landscape Limitations

Surface movement potential

Urban Capability

Generally low limitations for urban development.

Rural Capability

Generally high to severe limitations for regular cultivation. Low to moderate limitations for grazing.