



Source: Soil and Land Resources of the Hawkesbury-Nepean Catchment *interactive DVD*

Landscape—gently undulating crests and ridges on plateau surfaces of the Mittagong formation (alternating bands of shale and fine-grained sandstones). Local relief to 30 m, slopes <10%. Rock outcrop is absent. Extensively or completely cleared, dry sclerophyll low forest and woodland.

Soils—moderately deep (50–150 cm), hardsetting Yellow Podzolic Soils and Yellow Soloths (Dy2.41); Yellow Earths (Gn2.24) on outer edges.

Limitations—stony soil, low soil fertility, low available water capacity.

LOCATION

Ridge and plateau surfaces on Mittagong Formation. Occurrences are most common in the Macdonald Ranges and on the Hornsby Plateau. Most extensive occurrences are located at Berowra, Forest Glen, Glenorie, Fiddletown, Dural and Glenhaven. Other examples occur at St Ives, South Turrumurra, South Gordon, Beacon Hill, Northbridge, Kogarah and Riverwood.

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 may occur.

Topography

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

Vegetation

Extensively cleared to completely cleared low, eucalypt open-forest and low eucalypt woodland with a sclerophyll shrub understorey. Dominant tree species include turpentine *Syncarpia glomulifera*, smooth-barked apple *Angophora costata*, red bloodwood *Eucalyptus gummifera*, thin-leaved stringybark *E. eugenoides* and scribbly gum *E. haemastoma*. Small scattered areas of native vegetation remain. Larger undisturbed occurrences are found in Ku-ring-gai Chase National Park and Muogamarra Nature Reserve.

Land use

Rural land uses include citrus orchards, market gardens and poultry farms. Grazing of horses and dairy cattle is common on improved, kikuyu dominated pastures. Small rural subdivisions and hobby farms occur on the urban fringes of the metropolitan area. The unit has been developed for urban use at Berowra and St. Ives. Areas of natural bushland, such as Muogamarra Nature Reserve, Ku-ring-gai Chase National Park and crown lands are used for passive recreation.

Existing Erosion

Erosion on this unit is generally low. Minor gully and sheet erosion occurs occasionally along unpaved roads.

Associated Soil Landscapes

Small areas of Faulconbridge (**fb**) soil landscape occur near the edge of this unit.

SOILS

Dominant Soil Materials

1h1—Loose, yellowish-brown sandy loam. This is a loose sandy loam with apedal single-grained structure and porous sandy fabric. It usually occurs as topsoil (A1 horizon). Texture is commonly sandy loam but may range from a loamy sand to a light sandy clay loam. Sand is usually fine. Surface condition is commonly loose but may be friable when organic matter is common. Colour is usually dull yellowish-brown (10YR 4/3), or occasionally very dark brown (7.5YR 2/3). The pH ranges from very strongly acid (pH 4.5) to slightly acid (pH 6.5). Common inclusions are iron coated, platy, fine sandstone rock fragments and charcoal fragments. Roots are also common.

1h2—Bleached, stony, hardsetting sandy clay loam. This is a bleached, stony, sandy clay loam that has a hardsetting surface, apedal massive structure and slowly porous earthy fabric. This material commonly occurs as an A2 horizon. Textures commonly range with depth from clayey sand to fine sandy clay loam. Sand is generally fine-grained. Colour is commonly dull yellowish-brown (10YR 5/4) and is bleached when dry (10YR 7/3) but may range from brown (7.5YR 4/3) to bright yellowish-brown (10YR 6/6). Pale yellow and brown mottles are often present and are commonly associated with faunal casts and burrows. The pH ranges from strongly acid (pH 4.0) to slightly acid (pH 6.0). Fine sandstone fragments and rounded iron nodules are abundant and are often concentrated at depth. Platy, iron coated stones are stratified, reoriented and angular to subrounded. Traces of charcoal are commonly present, but roots are rare.

1h3—Earthy, yellowish-brown sandy clay loam. This is a yellowish-brown sandy clay loam with apedal massive structure and earthy porous fabric. It generally occurs as subsoil (B horizon) developed on coarse sandstone. Texture, which is commonly a sandy clay loam on the surface, may increase gradually with depth to sandy clay. Colour is commonly a yellowish-brown (2.5Y 5/6-5/8, 10YR 5/8) or bright yellowish-brown (10YR 6/6, 6/8). Orange mottles may occur with depth. The pH ranges from strongly acid (pH 4.5) to slightly acid (pH 6.0). Iron coated sandstone

fragments are common. They are usually stratified and reoriented. Charcoal fragments and roots are rare.

lh4— Pedal, yellowish-brown clay. This is yellowish-brown sandy clay to heavy clay with strongly pedal sub-angular blocky or prismatic structure and smooth-faced, dense ped fabric. This material usually occurs as subsoil (B and C horizons) developed on fine-grained sandstone. Peds are smooth-faced, dense and range in size from 10–20 mm. Colour is commonly bright yellowish-brown (10YR 6/8) but may range from reddish-brown (5YR 4/6) to bright yellowish-brown (10YR 7/6). Yellow, red and orange mottles are occasionally present. The pH ranges between strongly acid (pH 4.0) and moderately acid (pH 5.0). Undisturbed, stratified bands of platy, iron coated, fine sandstone rock fragments are common. Charcoal fragments and roots are rarely present.

Occurrence and Relationships

Up to 30 cm of loose, yellowish-brown sandy loam (**lh1**) overlies 10–30 cm of bleached, stony, hardsetting sandy clay loam (**lh2**) and up to 100 cm of yellowish-brown, pedal clay (**lh4**) [Yellow Podzolic Soils and Soloths (Dy2.41)]. The boundary between the soil materials is generally clear. The total soil depth is commonly <100 cm. Occasionally **lh1** material is absent.

Near the boundaries to sandstone landscapes up to 15 cm of **lh1** overlies up to 30 cm of **lh2** and up to 30 cm of earthy, yellowish-brown sandy clay loam (**lh3**) [Yellow Earths (Gn2.24)].

LIMITATIONS TO DEVELOPMENT

Urban Capability

High capability for urban development.

Rural Capability

Generally capable of supporting grazing with some localised areas capable of regular cultivation.

Landscape Limitations

Localised surface movement potential.

Soil Limitations

- | | |
|------------|--|
| lh1 | Stoniness
High permeability
Low available water capacity
Low fertility |
| lh2 | High erodibility
Stoniness
Low available water capacity
Hardsetting surface
Very low fertility
Localised sodicity |
| lh3 | Stoniness
Low available water capacity
Very low fertility
Sodicity |
| lh4 | Low wet strength
Stoniness |

- Low permeability
- Low available water capacity (localised)
- Very low fertility
- Strongly acid
- High aluminium toxicity

Fertility

General fertility is low. The soils have low available water capacity and CEC as well as low to very low intrinsic nitrogen and phosphorus values. Topsoils are hardsetting and stony. The subsoils are occasionally sodic and impermeable.

Erodibility

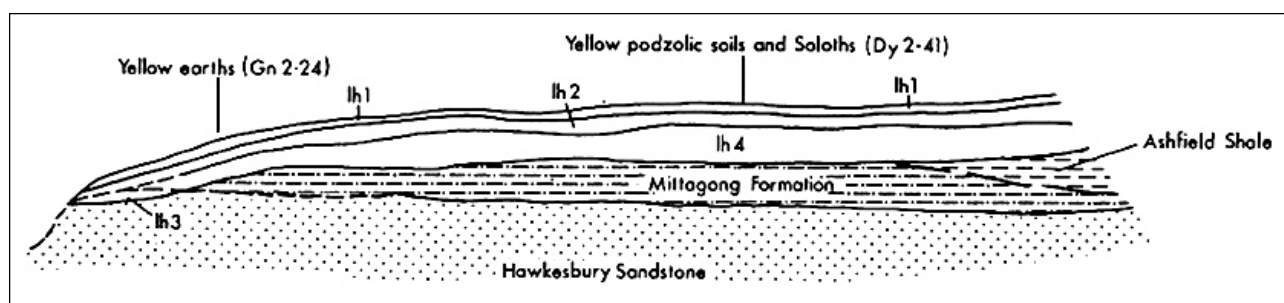
lh1 is moderately erodible as it consists of loose, fine sand grains and moderate amounts of organic matter. **lh2** is low in organic matter and has a very high erodibility rating as it consists of fine sand and some silt grains held in a clay matrix. **lh3** has a high erodibility as it has fine sand and silt grains and a low organic matter content. **lh4** is moderately erodible consisting 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 twelve months of development ranges up to 103 t/ha for topsoil, and 97 t/ha for exposed subsoil. Soil erosion hazard for concentrated flows is high.

Surface Movement Potential

Soils are generally slightly reactive or moderately reactive where they exceed 1.5 m.



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