wb WARRAGAMBA Colluvial (Assoc.)

Landscape—narrow convex crests and ridges, steep colluvial sideslopes on Narrabeen Group. Local relief 80–130 m. Slopes >35%. Tall open-forest and remnant closed-forest in sheltered positions.

Soils—shallow to deep (50–150 cm) Lithosols (Uc6.1) on crests, Brown Earths (Gn3.2) and Red Podzolic Soils (Dr3.41) on upper slopes and Yellow Podzolic Soils (Dy4.41) on lower slopes.

Limitations—mass movement hazard, steep slopes, severe soil erosion hazard, rock fall.

LOCATION

Moderate to very steep slopes and ridges of Illawarra Escarpment. Examples include Barren Grounds Nature Reserve and southern region of Lake Avon.

LANDSCAPE

Geology

Narrabeen Group—fine-grained lithic sandstone occasionally interbedded with thin shale lenses.

Topography

Moderate to very steep slopes and narrow ridges. Relief 80–130 m. Slope gradients 20–50%. Narrow sandstone and colluvial benches with abundant sandstone boulders. Closely spaced incised drainage lines.

Vegetation

Predominantly uncleared tall open-forest and pockets of closed-forest. Common canopy species include sydney blue gum (*Eucalyptus saligna*), blackbutt (*Eucalyptus pilularis*) and turpentine (*Syncarpia glomulifera*). In sheltered locations closed-forest species include coachwood (*Ceratopetalum apetalum*), sassafras (*Doryphora sassafras*) and cabbage tree palm (*Livistona australis*).

Land Use

Undisturbed bushland, Water Board Catchment areas and plateau edge of Barren Grounds Nature Reserve.

Existing Erosion

Moderate sheet erosion on steep hillslopes. Signs of previous landslip and rock fall have occurred on steep slopes with wet, unstable and disturbed soils.

Included Soil Landscapes

Small pockets of Hawkesbury **(ha)** soil landscape and Faulconbridge **(fb)** soil landscape have been included within this soil landscape.

SOILS

Dominant Soil Materials

wb1—Friable brownish black loamy sand (topsoil)

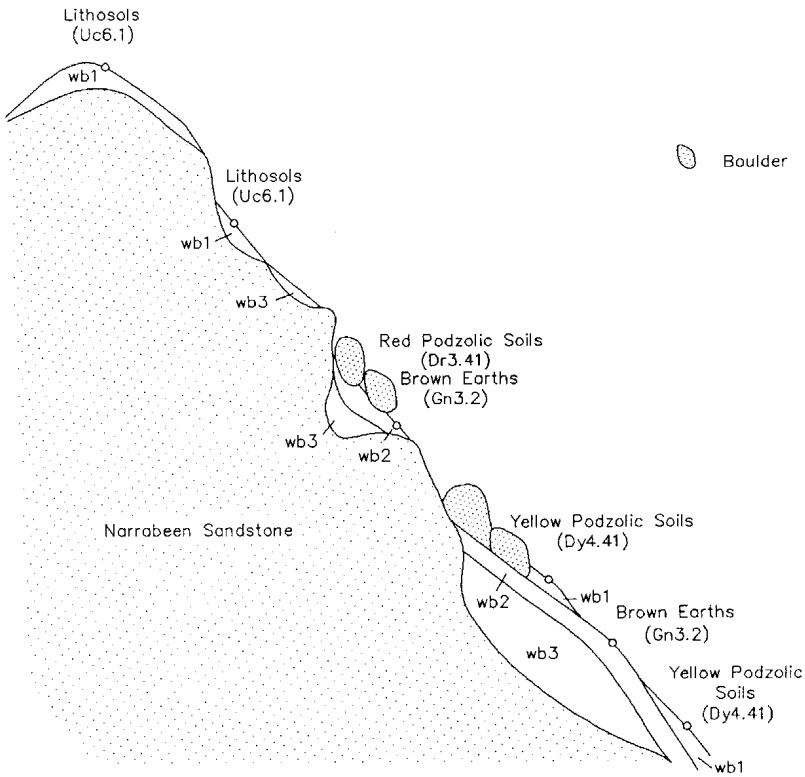
Colour	brownish black (10YR 2/2) to yellowish brown (10YR 5/6)
Texture	loamy sand
Structure	apedal single-grained
Fabric	sandy
pH	3.5
Stones	2–10% <2 mm angular, dispersed
Roots	abundant

wb2—Very dark reddish brown clayey sand (topsoil and subsoil)

Colour	very dark reddish brown (5YR 2/3) to yellowish brown (10YR 5/6)
Texture	clayey sand to light sandy clay loam
Structure	weakly pedal <2 mm crumb to polyhedral peds
Fabric	sandy (slowly) porous to rough-faced, porous
pH	3.5–5.0
Stones	common 60–200 mm angular and sub-angular, dispersed
Roots	common, ex-ped

wb3—Dull brown strongly pedal medium clay with faint mottles at depth (topsoil and subsoil)

Colour	dull brown (7.5YR 5/4) to reddish brown (5YR 4/6) yellow and red mottles 50%
Texture	clay loam to medium clay
Structure	strongly pedal, 20–50 mm angular blocky peds
Fabric	rough-faced, porous
pH	3.5–4.0
Stones	>10% 2–6 mm angular, dispersed
Roots	nil



■ ***Schematic cross-section of Warragamba soil landscape illustrating the occurrence and relationship of the dominant soil materials.***

Occurrence and Relationships

Crests and ridges. Friable brownish black loamy sand **(wb1)** overlies bedrock [Lithosols (Uc6.1)]. The soil depth is usually <50 cm.

Sideslopes. Up to 35 cm clayey sand **(wb2)** overlies <70 cm dull brown strongly pedal medium clay **(wb3).** Boundary between materials is gradual [Brown Earths (Gn3.2)]. Total soil depth is <100 cm. Occasionally **wb2** is absent and **wb3** exposed to the surface.

LIMITATIONS TO DEVELOPMENT

Soil Limitations

wb1 Stoniness
High permeability
Very strongly acid
Low fertility
Low available water-holding capacity

wb2 Stoniness
Erodibility (localised)
High permeability
Very strongly acid
High potential aluminium toxicity
Low fertility
Low available water-holding capacity

wb3 Stoniness
High erodibility (localised)
Very strongly acid
High potential aluminium toxicity
Low fertility

Fertility

Fertility is low to moderate. The soil materials are very strongly acid and have low or moderate available water-holding capacities, very low nutrient status, with low nitrogen and very low phosphorus levels and low to moderate CEC. The subsoils may have low permeability and potential aluminium toxicity.

Erodibility

The **wb1** soil material has low to moderate erodibility, consisting dominantly of highly permeable coarse sand grains held together by organic matter. The other soil materials have moderate erodibility as they are well graded with porous and coherent fabric.

Erosion Hazard

Despite the low to moderate erodibility of the soil materials, steep slopes produce an erosion hazard for non-concentrated flows which is extreme. Calculated soil loss during the first 12 months of development ranges up to 650 t/ha for topsoil and 500 t/ha for exposed subsoil. Soil erosion hazard for concentrated flows is high to extreme.

Surface Movement Potential

Soils are generally shallow and therefore slightly reactive. Large variations in soil properties occur over short distances.

Landscape Limitations

Severe erosion hazard
Steep slopes
Water erosion hazard
Shallow soils (localised)
Surface movement potential (localised)
Mass movement hazard
Rock fall hazard (localised)
Rock outcrop

Urban Capability

Generally high to severe limitations for urban development.

Rural Capability

Generally high to severe limitations for regular cultivation and grazing.