

le

LEYCESTER



Landscape—level to gently undulating broad to extensive (500–>1 500 m) alluvial plains of extremely low relief, draining the MacKellar Hills. Extensively cleared closed- and open-forest.

Soils—deep (>200 cm), poorly to moderately well-drained alluvial Black Earths (Ug5.15, Ug5.17) and Structured Clays (Uf6.42) occur throughout the floodplains. Wetter areas, such as ox-bow floors, have deep (>200 cm), poorly drained Weisenboden (Ug5.15, Ug5.17). Deep (>200 cm), well-drained Earthy Sands (Uc5.21) line channels.

Limitations—moderately erodible, moderately plastic soils with low wet bearing strength, moderate shrink-swell and localised waterlogging. Flooding, stream bank erosion.

low relief. Slope ranges from 0–2%, with local steeper areas on channel scours, ox-bows and terrace faces (<25%). Narrow (<50 m) inset terraces are common. Local relief is <5 m overall and up to 15 m on the banks of scours, terraces and channels. Gilgai is occasionally present in undisturbed areas. Streams are alluvial and channels are moderately deep (10 m) on floodplains but are often incipient in backplain areas.

Vegetation

Extensively cleared open-forest (wet sclerophyll). Current vegetation consists of a closed sod grassland ground cover with isolated trees. Main grasses are kikuyu (*Pennisetum clandestinum*), paspalum (*Paspalum dilatatum*) and setaria (*Setaria sphacelata*). *Juncus* spp. occurs in wetter areas.

Forest red gum (*Eucalyptus teriticornis*), cabbage gum (*Eucalyptus amplifolia*) and broad-leaved apple (*Angophora subvelutina*) occur as isolated trees throughout the landscape.

Stands of open-forest line channels and are dominated by river oak (*Casuarina cunninghamiana*), silky oak (*Grevillea robusta*) and less commonly hoop pine (*Araucaria cunninghamii*).

Camphor laurel (*Cinnamomum camphora*) is a common exotic.

LOCATION

Lower alluvial plains of the main tributary streams of the Richmond River Alluvial Plain, including Leycester, Terania, Back, Pelican and Fawcetts Creeks and much of the Richmond River. Type location is the area around Tuncester, on Lismore-Kyogle road (Area reference 5 23***E, 68 14***N).

LANDSCAPE

Geology

Quaternary alluvial valley in-fill sediments—dominantly alluvial clay with minor sand and river gravels. Fine-grained sediments of the less intensely weathered basalt areas predominate.

Topography

Level to gently undulating broad to extensive (500–1 500 m) alluvial plains and backplains of extremely

Land Use

Beef and dairy cattle grazing on improved pastures. Cultivation for soybeans and fodder crops such as rye grass and sorghum in some areas. Some tea-tree plantations.

Existing Land Degradation

Stream bank erosion is common and active. Slumps have occurred on ox-bow/scour edges. Induced soil acidity and soil structure decline are becoming more common on cultivated land.

Included Soil Landscapes

Small areas of Disputed Plain (**dp**) soil landscape occur where fans extend into the floodplain and small areas of Terania (**te**) and Tatham (**ta**) soil landscapes have been included near the boundaries of the Leycester soil landscape.

SOILS

Dominant Soil Materials

le1—Self-mulching black light clay (topsoil—A₁₁ and A₁₂ horizons)

Colour brownish black (7.5YR 3/1, 5YR 2/1, 10YR 2/2), to dark reddish brown (5YR 3/2), faint orange and brown mottles (<10%)

Texture light medium clay, ranging between light clay and medium clay

Structure moderately to strongly structured, 2–5 mm polyhedral peds in self-mulched surface; 10–50 mm sub-angular blocky peds with depth

Fabric smooth-faced, moderately dense when dry, dense when wet, clay coatings are common

Exposed condition cracked (2–5 mm), moderately firm to strong when dry

pH 6.0–6.5

Course fragments few dispersed basalt (2–6 mm) and ferromanganese nodules (2–6 mm)

Roots common in top 5 cm, few with depth

Permeability moderate

Type location batter west of bridge (Grid Ref. 5 185**E, 68 163**N). Soil Data System card 153, 0–10 cm

le2—Cracking medium heavy clay (subsoil—B₁₁, B₁₂, B₂ horizons)

Colour brownish black (7.5YR 2/2, 10YR 3/2) to dark reddish brown (2.5YR 3/2), faint red and brown mottles (<2%)

Texture medium to heavy clay

Structure moderate to strongly structured (appears massive when moist), sub-angular blocky peds (usually 20–50 mm, but can be up to 200 mm) parting to polyhedral (10–20 mm), large (>500 mm) lenticular ped surfaces evident

Fabric smooth-faced, dense when moist, distinct clay and stress cutans common, slickensides often present

Exposed condition cracked (2–5 mm)

pH 7.0–8.0

Coarse fragments very few, dispersed fine gravels (2–6 mm), generally basalt

Segregations strongly effervescent calcium carbonate nodules (6–20 mm) common at 100 cm and deeper

Roots few (if any)

Permeability slow to moderate

Type location batter west of bridge (Grid Ref. 5 185**E, 68 163**N). Soil Data System card 153, 40–100 cm

Associated Soil Materials

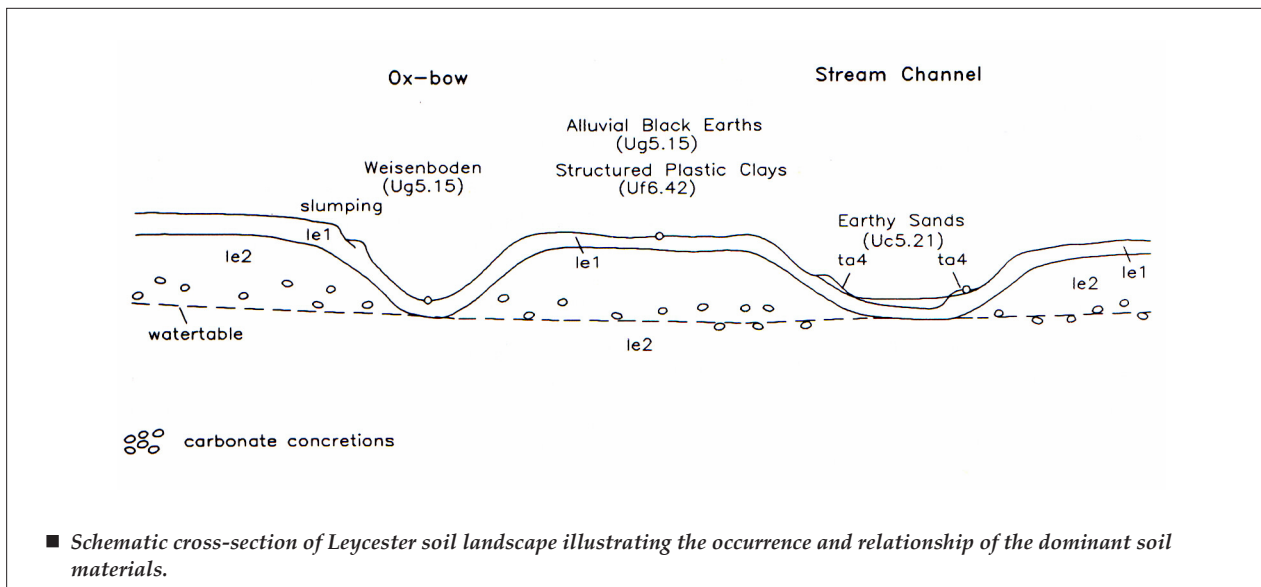
Dark brown loamy to clayey sand (ta4). Often lines channels

Dark brown well-structured clay loam to light medium clay. May occur in areas adjacent to Coffee Camp (**cc**) soil landscape. This material occurs as a Prairie Soil/Black Earth intergrades.

Occurrence and Relationships

Soil relationships on the Leycester soil landscape are very uniform.

Usually up to 50 cm of self-mulching black light clay (**le1**) overlies cracking medium heavy clay (**le2**). Boundaries are gradual to diffuse [poorly to moderately well-drained Black Earths (Ug5.15, Ug5.17), Structured Clays (Uf6.42)] Total soil depth is >200 cm.



Less well-drained areas. Slope-alluvial plain boundaries, ox-bow floors and channel scours exhibit the above soil relationships but the profile is often waterlogged [poorly drained Weisenboden (Ug5.15, Ug5.17)]. Total soil depth is >150 cm.

Channels. Dark brown loamy to clayey sand (**ta4**) lines channels [well-drained Earthy Sands (Uc5.21)]. Total soil depth is >200 cm.

LIMITATIONS TO DEVELOPMENT

Soil Limitations

- le1** Moderate erodibility
Moderate plasticity
Low wet bearing strength
- le2** Moderate shrink swell
High erodibility
Moderate plasticity
Low wet bearing strength
Low permeability

Fertility

Soil Materials as Growth Media. Moderate suitability (**le1**, **le2**). Soil materials have high water storage capacities, very high CEC, and very high nutrient status though potassium is generally deficient. Topsoil **le1** is very well structured and has high organic matter content. Subsoil **le2** often behaves as a massive material and has low levels of organic matter. Shrink-swell within both soil materials would preclude root penetration and/or damage roots. Phosphorus levels are high but so is phosphorus sorption.

Soil Profile Fertility. Soil profile suitability as a growth medium is low to moderate for deep, poorly to moderately well-drained Black Earths and Structured Clays and low for deep, poorly drained Weisenboden. Soil volumes available for root penetration are generally high but swelling soil materials and high watertables may impose restrictions to root growth.

Erodibility

	K factor	Non-concentrated flows	Concentrated flows	Wind
le1	0.036	moderate	high	low
le2	0.049	high	very high	low

Erosion Hazard

	Non-concentrated flows	Concentrated flows	Wind
grazing	slight	slight	slight
cultivation	slight	slight	slight
urban	slight	slight	slight

Landscape Limitations

Flooding
Waterlogging (localised)
Surface movement potential
Stream bank erosion
Mass movement hazard (shallow slumping on terrace edges and scours)

Foundation Hazard

Moderate to high foundation hazard due to reactive (shrink-swell) and plastic subsoils. Seasonal waterlogging and flooding hazard occur throughout the soil landscape. Localised limitations include slump hazard on ox-bow/terrace edges and stream bank erosion. Topsoil depth is 20–50 cm. Total soil depth is >150 cm.

Urban Capability

Generally moderate to high limitations for urban development due to moderate to high foundation hazard and potential for flooding.

Rural Land Capability

Generally moderate limitations for cultivation due to flood hazard. Generally low limitations for grazing.

Septic Absorption

Reactive soils (shrink-swell) with localised waterlogging and high watertables combine to create low suitability for septic disposal systems.

Soil Conservation Considerations

Revegetating stream banks with native riparian species and fencing out these areas to stock are recommended.