Seacombe land system (Sm)

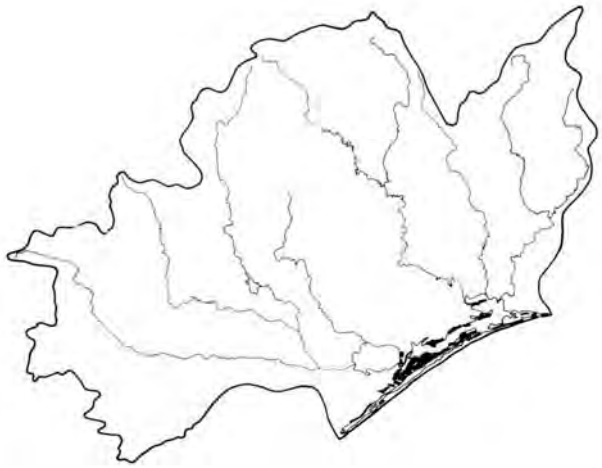
Area: 85 sq. km (0.4%)

Seacombe land system occurs on parts of the prior and inner barriers. Where the inner barrier is still intact there is an undulating sand sheet, produced by a series of broad but closely spaced beach ridges parallel to the coastline. The formation is of Pleistocene age, but more recent aeolian disturbance producing an incipient dune-like surface has occurred in areas like Sperm Whale Head. More severe, peripheral, aeolian attack of these beach ridges has created larger, mostly parabolic dunes; these dunes are mapped in Banksia land system.

In other areas, the inner and prior barriers suffered partial dissection during the last major sea level fall and have since undergone lacustrine re-working to produce beach ridges of lower relief. The orientation of the beach ridges varies with the orientation of the paleo-lacustrine shores, rather than being parallel to the coastline. Often the beach ridges are no longer distinct and a sand sheet with an uneven surface occurs. Where there has been significant aeolian disruption of these lower ridges, the water table has been excavated and dunes with swampy cores occur.

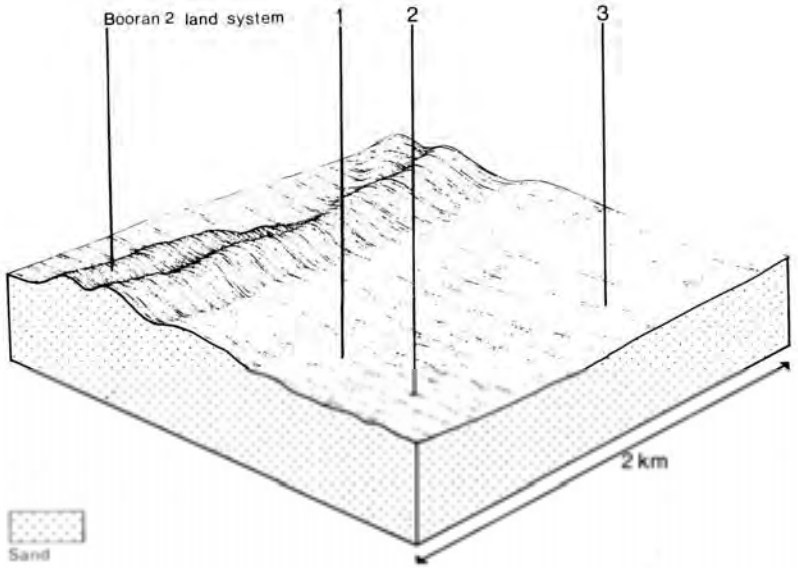
The sands may originally have contained shell fragments and carbonates, but now the soils are leached, infertile and strongly acidic, particularly in the topsoil. They also generally appear to have developed iron-indurated pans (coffee-rock) mostly at greater depths (deeper than 1.5 m) than in similar soils elsewhere in the region. Being of sandy texture throughout, the soils are droughty and susceptible to wind erosion. There is a moderate salinity hazard because of a saline, ground-water table close to the surface of the swales and low-lying areas.

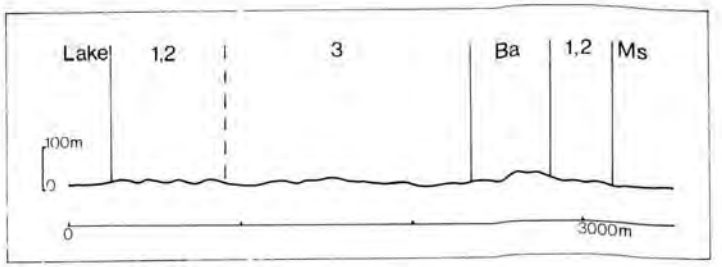
The vegetation is mainly a heathy open woodland of *E. nitida* and *Banksia serrata*. It is replaced by an open woodland of *E. viminalis* var. *racemosa* and *B. serrata* with *Pteridium esculentum* on lower moister sites.



Very low sand ridges form a large uneven sand plain typical of Seacombe land system

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 500 - 800; lowest January (30 - 50), highest October (40 - 70) Annual 12 - 14; lowest July (9 - 10), highest February (19 - 20) Temperature <10°C (av.): No months Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	 Pleistocene sandy coastal barrier deposits
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Marine and lacustrine sand sheets formed from a series of relict beach ridges 0 - 20 0 - 5 Nil 0
PRESENT LAND USE	Mostly uncleared: within the Gippsland Lakes Coastal Park, The Lakes National Park and Blond Bay State Game Reserve; apiculture; bush grazing of cattle (very limited) Minor cleared areas: grazing of sheep and cattle





LAND COMPONENT Percentage of land system Diagnostic features	1 40 Closely spaced beach ridges forming gently undulating surface	2 8 Swales	3 52 Sand sheets of low and uneven relief. Occasional swamps in low-lying areas
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	Variable, (0 - 20) Convex and concave	<1, (0 - 2) concave	1- 2, (0 - 5) Straight but uneven
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	Marine and lacustrine sand, locally redistributed by wind Limited observations — leached acidic sand, black or dark grey at the surface, pale brown or whitish in the subsurface often over contrasting dark yellowish brown sand or coffee rock; light yellowish coloured sandy subsoil. Depth to coffee rock or the dark yellowish brown sand variable, probably between 1 and 2 m Podzols, Siliceous Sands Uc4.31, Uc2.32, probably also Uc4.2-, Uc2.2- and Uc1.21 Sand Loose or soft when dry >2.0 Very low Very low Very rapid Somewhat excessive 0 Nicholson (1978), profile 755	- -	
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Mainly heathy open woodland I: *E. nitida, Banksia serrata* (either predominant) Understorey dominated mostly by *Leptospermum myrsinoides* or *Thryptomene micrantha* On moister sites, ferny open woodland I: *E. viminalis* var. *racemosa+*, ***B.*** *serrata, Pteridium esculentum*		Mainly open woodland I: *E. viminalis* var. *racemosa+* with *Pteridium esculentum* Swamps with *Gahnia* spp. *or Juncus maritimus* and/or *Lepidosperma longitudinale* and usually with fringe *of Melaleuca ericifolia* or *M. squarrosa*

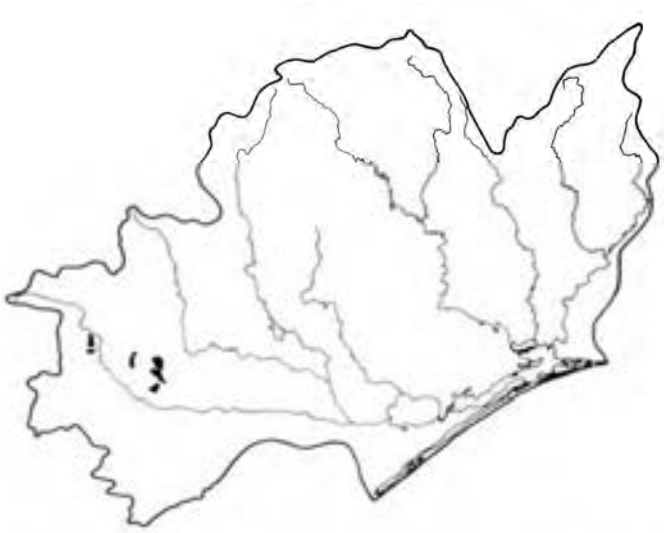
Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in: a) increased deep percolation and leaching	Nutrient loss	1,2,3; high	Not determined	Removal of trees	Increased movement of water to groundwater
	b) raised groundwater table	Salting	2,3; low	Uncommon: isolated occurrences	Reduced plant water use in the catchment	Raised groundwater table
Increased exposure of surface soil	Increased wind velocity over soil and increased detachment of sand	Wave erosion	2,3; moderate	Uncommon	Clearing, burning, overgrazing, road building and other earth-moving activities, trafficking by stock and vehicles.	Increased turbidity of water
		Wind erosion	1,2,3; high	Uncommon: but locally severe		Encroachment by sand
Increased physical pressure on soil	Increased compaction	Structure decline	1; low 2,3; low	Uncommon	Increased trafficking, overgrazing, export of organic matter	-
Increased soil disruption	Increased loosening of sand	Wind erosion	1,2,3; high	Uncommon: locally severe	As for wind erosion above	Encroachment by sand
		Wave erosion	2,3; moderate	Uncommon	As for wave erosion above	Increased turbidity of water
Comments: Regeneration of vegetative cover poor in areas exposed to wind and wave erosion and expensive remedial works may be required. An area of salting occurs just south east of Lake Wellington.						

Stewart land system (Sw)

Area: 41 sq. km (0.2%)

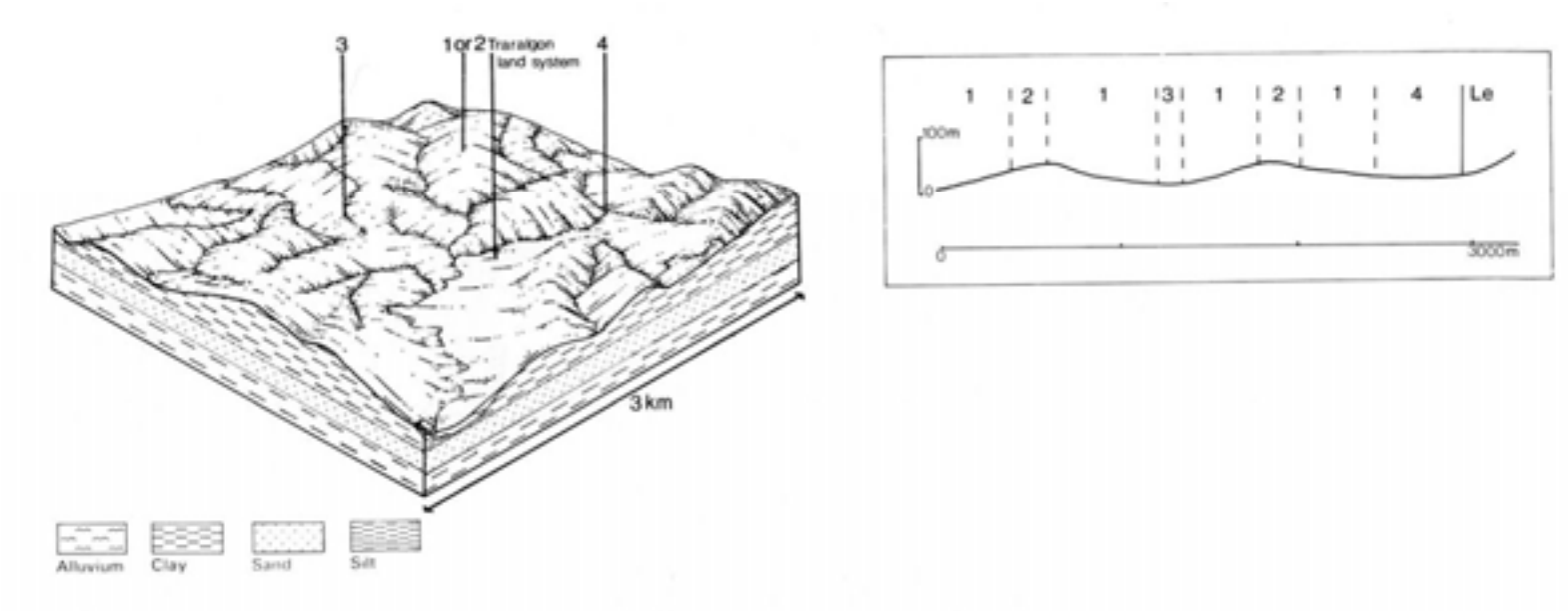
Extremely silty areas of Tertiary and adjoining Devonian sediments have been mapped in Stewart land system. These areas have rounded hills with moderate slopes and some undulating terrain. Broad alluvial floors in concave valleys are fed by seepage from the hills and carry water all year. These floors are characteristically swampy, with peaty surface materials. A diagnostic feature of this land system is the heathy nature of the vegetation which occurs on most of the slopes despite the relatively high rainfall. The silty and clayey parent materials and the moderate to gentle slopes have promoted the development of duplex and gradational soils. These have been strongly leached and are strongly to moderately acidic. The very high silt contents often result in poor internal drainage and this, along with the common, extremely low nutrient contents, leads to the heathy vegetation. Land with moderate slopes and slowly pervious soils is likely to cause a higher proportion of surface run-off, increasing the erosion risk. The badly-eroding road batters indicate that the soils are highly susceptible to erosion.

The vegetation is often a heathy open woodland I or heathy woodland I, though open forest II occurs on better sites. Well-drained alluvial terraces support open forest II or III, often layered or shrubby while swampy drainage areas have a closed scrub or shrubby woodland I.



Closed scrub of Melaleuca squarrosa *(scented paper-bark) and* Gleichenia microphylla *(scrambling coral fern) growing in a seepage area.*

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 700 - 1200; lowest January or February (40 - 70), highest August or October (90 - 120) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): May - September Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	Mainly Tertiary silts and clays; minor Devonian sandstones, siltstones and mudstones
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	Rounded hills and undulating terrain with broad swampy valley floors 100 - 280 60 - 120 Dendritic 1.8
PRESENT LAND USE	Mostly uncleared: hardwood forestry (minor timber products); apiculture Minor proportion cleared: grazing of beef and dairy cattle on improved pastures



LAND COMPONENT Percentage of land system Diagnostic features	1 45 Slopes with very silty soils and heathy woodlands	2 35 Slopes with silty soils and forests	3 15 Swampy drainage depressions	4 5 Well drained terraces
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	15 - 20, (5 - 30) Convex and concave	15 - 20, (5 - 30) Convex and concave	<1, (0 - 2) Straight	<2, (0 - 5) Straight but uneven
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	Silt and clay; minor sandstone, siltstone and mudstone Dark greyish brown sand to silty loam topsoil, abrupt or gradual change to mottled, yellowish brown or yellow, generally blocky structured clay (sometimes sandy clay loam) subsoil Yellow Podzolic Soils, Yellow Earths Dy3.41, Dy5.21, Gn4.81 Sand to silty loam Soft to hard when dry >1.0 Extremely low Low to moderate Slow Poor to somewhat poor 0 53		Alluvium and plant debris Black organic loam over variable mottled grey mineral layer; shallow peat in places Humic Gleys, Acid Peats Uc1.41, O Loam Friable to firm when moist >2.0 Low to moderate Moderate to high Variable Very poor to poor 0 -	Alluvium Single observation — probably undifferentiated brown stratified soils, often mottled at depth Alluvial Soils/Yellow Earths Um2.3- - - >2.0 Low to moderate Variable Variable Somewhat poor, in places good 0 -
		Low to moderate Low to moderate Slow Somewhat poor to moderately good 0 -		
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Heathy open woodland I, heathy woodland I: *E. consideniana*+ and/or *E. cephalocarpa*+	Open forest II: *E. consideniana*+; *E. obliqua*+, *E. radiata*+ in areas of better drainage	Closed scrub: *Melaleuca squarrosa* Shrubby woodland I: *E. ovata*+, *E. radiata*, with an understorey *of Melaleuca squarrosa* and/or *Leptospermum* spp.	Limited data — probably shrubby or layered open forest II, III: *E. obliqua*+ with *E. viminalis* and *E. radiata* observed; *E. ovata* presumed

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1,2; moderate - high	Uncommon	Clearing, logging, burning, overgrazing, road building and other earth-moving activities, rabbit burrowing, trafficking by stock and vehicles.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1,2,4; moderate 3; high 1,2; moderate - high	Uncommon Uncommon	Increased trafficking, overgrazing, export of organic matter As for sheet and rill erosion above	- Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion Streambank erosion	1,2; high 4; moderate	Uncommon Uncommon	As for sheet and rill erosion above As for sheet and rill erosion above	Increased sediment load Increased sediment load
Comments: Road batters are prone to collapse and erode, probably aided by perched water tables and lateral seepage. Some minor salting may occur to the east of Newry.						

Stockdale land system (St)

Area: 368 sq. km (1.8%)

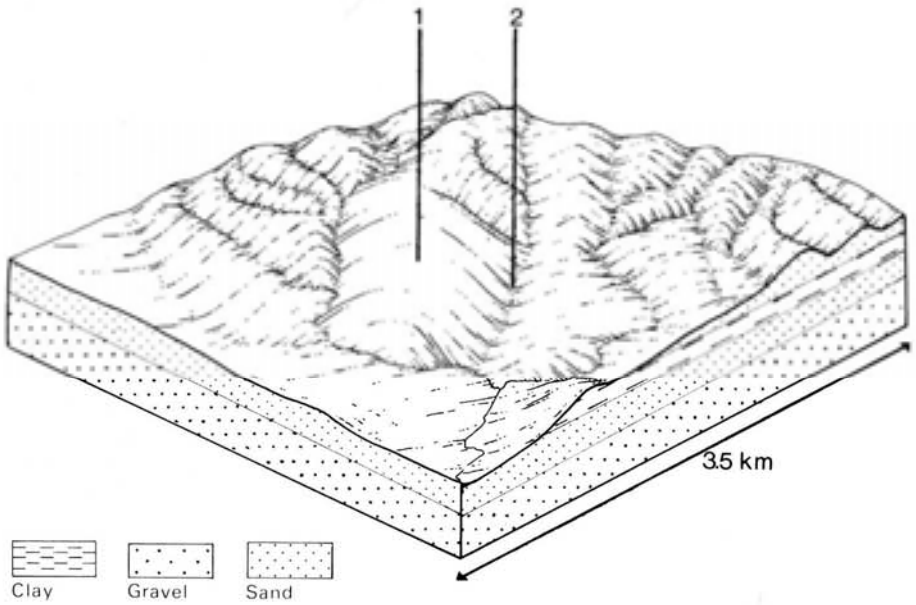
Stockdale land system occurs mainly on dissected Tertiary fan deposits close to the East Victorian Uplands. Dissection is deeper than usual for the Eastern lowlands due to high elevation, the steep slopes of the deposits and the coarse unconsolidated materials. Rounded hills occur with moderately steep slopes and a broad drainage pattern. Small landslides are very common in Stockdale land system, and larger examples have been noted on steeper slopes. Geology and topography are similar to Anderson 1 and 2 and Salt Creek land systems, but Stockdale land system is mapped on the sandier deposits. As sandy materials may be difficult to detect on air photographs, the boundaries must be considered as somewhat tentative.

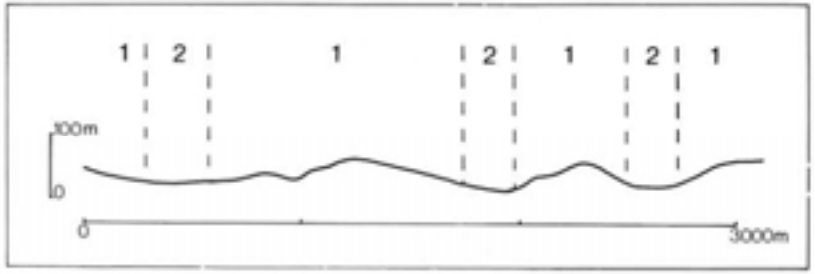
Although the deposits are mainly sands, silty and clayey beds have been observed. The presence of a drainage system and landslides also point to the existence of less permeable strata at depth. Because of these strata and their effects on hydrological processes, Stockdale has been placed in a different geomorphological province from other land systems of sandy deposits. The sediments were weathered prior to deposition in the Tertiary and further weathering and leaching have occurred since. The soils are, therefore, mostly low in nutrients. Deep, moderately to strongly acidic Podzols and Earthy Sands predominate. Podzols also occur over clayey substrata where the clays are deeper than about 1.2 m. Where the clays are close to the surface, the soils are duplex with blocky subsoils and an acidic reaction.

The vegetation is mainly open forest II in which the most common dominant species is *E. globoidea.* Drainage depressions carry open forest I or II, mostly shrubby, or occasionally closed forest II in more protected areas.

Gentle to moderate slope typical of Stockdale land system; bracken indicates the sandy nature of the soils

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 500 - 800; lowest July (30 - 50), highest October (50 - 80) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	Tertiary fan and colluvial apron deposits of unconsolidated gravels, sands, minor silts and clays (Sale Group)
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	Broadly dissected fans; rounded hills with moderate slopes and relief 0 - 210 20 - 100 Dendritic 0.3
PRESENT LAND USE	Mostly uncleared: hardwood forestry (minor timber products); bush grazing of cattle (limited); apiculture; some areas in Glenmaggie Flora and Fauna Reserve Minor proportion cleared: softwood plantations; grazing of sheep and beef cattle





LAND COMPONENT	1	2
Percentage of land system	85	15
Diagnostic features	Gentle to moderate slopes and broad crests with scattered steep short slopes	Unchannelled sandy drainage depressions
PHYSIOGRAPHY	6 - 10, (0 - 30)	<2, (0 - 5)
Slope %, typical and (range)	Variable and uneven	Straight or concave
Slope shape		
SOIL		
Parent material	Sand, silt, gravel and clay, in places covered by windblown and colluvial sand. Substrata variable over short distances	Alluvium, often sandy
Description	Variable due to variation in parent material; dark grey to black loamy sand to coarse sand topsoil grading through lighter grey to yellowish brown sand, sometimes with coffee rock hard pan. Also dark grey to black loamy sand to sandy loam over mottled yellowish brown clay subsoil	Limited observations — probably dark greyish brown light-textured topsoil, sometimes mottled, over stratified variously textured mottled subsoil
Classification	Podzols, Earthy Sands, Yellow Podzolic Soils, Siliceous Sands Uc2.21, Uc3.21, Uc4.32, Uc3.31, Uc4.11, Uc4.22, Uc4.31, Uc5.23, Dy3.21 Dy3.31, Dy5.41	Alluvial Soils, Wiesenboden Uc5.23, Dy5.61
Surface texture	Coarse sand to sandy loam	Probably sand to sandy loam
Surface consistence	Very variable	Probably slightly hard when dry
Depth (m)	>2.0	>2.0
Nutrient status	Low	Low
Available soil water capacity	Low	Low
Perviousness to water	Moderate to rapid	Moderate
Drainage	Good (Podzols, Earthy Sands, Siliceous Sands); somewhat poor (Yellow Podzolic Soils)	Very poor to poor
Exposed stone (%)	0	0
Sampled profile number	8,9,52	-
NATIVE VEGETATION	Open forest II:	Mostly shrubby open forest I or II:
Structure of vegetation and characteristic species of dominant stratum	Mainly mixed forests with composition and predominant species variable. *E. globoidea* most commonly predominant; less common predominants include *E. bosistoana, E. tereticornis, E. muellerana, E. sieberi* and, near the coast, *E. botryoides. E. sideroxylon, E. polyanthemos* or *E. cypellocarpa* often associated	*E. bridgesiana* or *E. ovata* usually predominant; *E. viminalis* often associated Occasional small areas of closed forest II: *Acmena smithii*, climbers, ferns and epiphytes
(+ Predominant species)		

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in: a) increased deep percolation and leaching	Nutrient loss	1; high	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
	b) increased regolith wetness	Landslip	1; moderate	Common	Accelerated by major disturbance of the native vegetation	Increased sediment load
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1; moderate	Uncommon	Clearing, logging, burning, overgrazing, road and dam building and other earth-moving activities, rabbit burrowing, trafficking by stock and vehicles.	Increased flash flows and sediment load.
	Increased wind velocity over soil and increased detachment of sand	Wind erosion	1; low	Uncommon: local occurrences on exposed, cleared sites		Encroachment by sand
Increased physical pressure on soil	Increased compaction	Structure decline	1,2; low	Uncommon	Increased trafficking, cultivation, overgrazing, export of organic matter	-
	With Reduced infiltration	Sheet and rill erosion	1; moderate	Uncommon	As for sheet and rill erosion above	Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1,2; moderate	Uncommon, but locally severe	As for sheet and rill erosion above	Increased sediment load in streams and sedimentation in lower areas
	Increased loosening of sand	Wind erosion	1; low	Uncommon (as for wind erosion above)	As for sheet and rill erosion above	Encroachment by sand
Comments: Most landslips appear to pre-date settlement size of slip correlated to steepness of slope. Some subsoils are very dispersive and road-side drains gully easily.						

Stratford land system (Sd)

Area: 33 sq. km (0.2%)

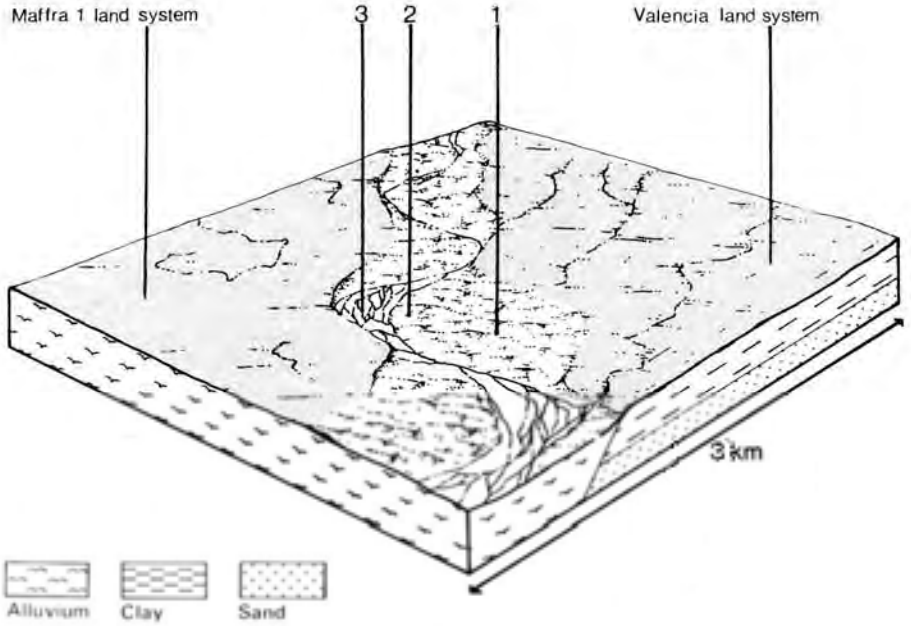
Changes have occurred in the stability of some rivers resulting in alterations to stream form. The changes seem to have occurred since European settlement along rivers where dams, capable of flood control, do not exist upstream, and where the alluvial materials are sandy. The initiating cause is unclear. Change in stream form is most obvious along the Avon River where lateral migration and active streambank erosion have occurred and a new sandy or gravelly terrace level is being constructed. The river has acquired a considerable bedload from the eroding banks and a braided condition has developed. The terraces and braiding channels are mapped in Stratford land system.

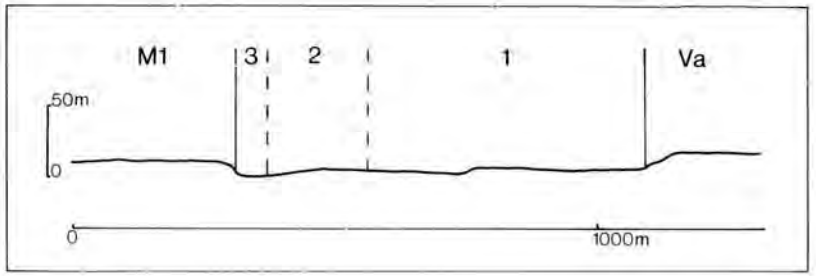
The only `soils' in Stratford land system are the sands on the terraces. Many of these have not undergone significant pedological development since deposition and are likely to be shifted by strong flows before soil development can take place. In some parts, however, the surfaces have become darker due to accumulation of organic matter. The non-terrace areas are characterised by gravel and moving water. Wind erosion may occur on the sandy soils but the presence of moisture at shallow depth tends to reduce their susceptibility. Streambank erosion is a natural feature though this mainly affects the adjacent Maffra or Valencia land systems.

The area now supports a shrubby grassland of mixed native and exotic species.

The gravelly bed and braided channels of the Avon River near Stratford.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 500 - 800; lowest July (30 - 50), highest October (50 - 80) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	Holocene alluvium, re-worked from older deposits
PHYSIOGRAPHY **Landscape** **Elevation range (m)** **Relative relief (m)** **Drainage pattern** **Drainage density (km/km^2)**	Braiding river channels and sandy alluvial terraces 80 0 - 5 Braided meander channel 2.5
PRESENT LAND USE	Cleared: cattle grazing; gravel and sand extraction





LAND COMPONENT Percentage of land system Diagnostic features	1 60 Flood-sculptured sandy terraces	2 25 Gravelly, stony point bars and interchannel areas	3 15 Braided channels, including steep river banks
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	<2, (0 - 5) Mainly convex and uneven	2, (0 - 5) Mainly convex and uneven	<2, (0 - 5) steeply eroding banks Concave
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	 Alluvial sand and minor gravel Undifferentiated stratified sand and gravelly sand brown at the surface, greyish brown at depth Alluvial Soils Uc1.23 Sand to loamy sand Soft when dry >2.0 Very low Very low Very rapid Excessive Mostly 0 17	 Alluvial gravel Undifferentiated gravels — no soils have formed - - - - - - - - 100 -	 - No soils - - - - - - - - -
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species) (*Introduced species)	Shrubby grassland with scattered trees: **Salix* spp., Acacia *mearnsii*, *Hymenanthera dentata*, **Rubus* spp, *Phragmites communis* and other grasses, Cyperaceae, and Juncaceae		

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation and leaching	Nutrient loss	1; high	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
Increased exposure of surface soil	Increased wind velocity over soil and increased detachment of sand	Wind erosion	1; moderate	Uncommon; local occurrences	Clearing, overgrazing, road building and other earth-moving activities, rabbit burrowing, trafficking by stock, humans and vehicles.	Increased deposition of windblown sand
Increased physical pressure on soil	Increased compaction	Structure decline	1; very low	Uncommon	Increased trafficking and export of organic matter	-
Increased soil disruption	Increased loosening of sand Increased soil break-up	Wind erosion Scour erosion Streambank erosion	1; moderate 1,2,3; high 3; high	Uncommon: local occurrence Common: severe and widespread Common: severe and widespread	As for sheet and rill erosion As for sheet and rill Erosion As for sheet and rill erosion	Increased deposition of windblown sand Increased sediment load in streams and sedimentation in lakes. Increased sediment load in streams and sedimentation in lakes.
Comments: Since European settlement, floods have scoured out large areas of sandy alluvium and produced a wide anastomosing channel system with steep-sided, eroding streambanks						

Talbotville land system (Te)

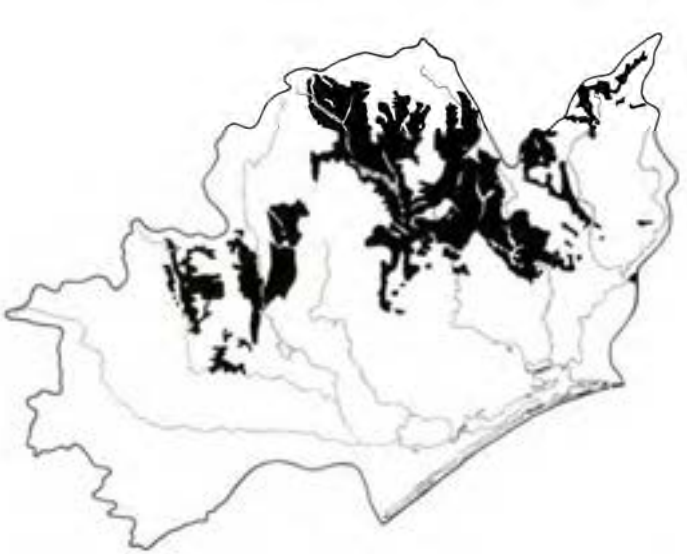
Area: 2954 sq. km (14.5%)

Talbotville land system occurs on the extensive Ordovician, Devonian and Silurian sediments in the East Victorian Uplands. The mountainous ridge-and-ravine terrain has long, steep slopes on which soil creep and other slope processes are active. Rock outcrop is abundant. Major valleys such as those of the Mitchell, Nicholson, Wongungarra and Wonnangatta Rivers have levees and alluvial terraces similar to, but smaller than, those mapped in Walnut land system.

The land is similar in geology and topography to the Birregun land system but the climate is much drier and elevations tend to be slightly lower.

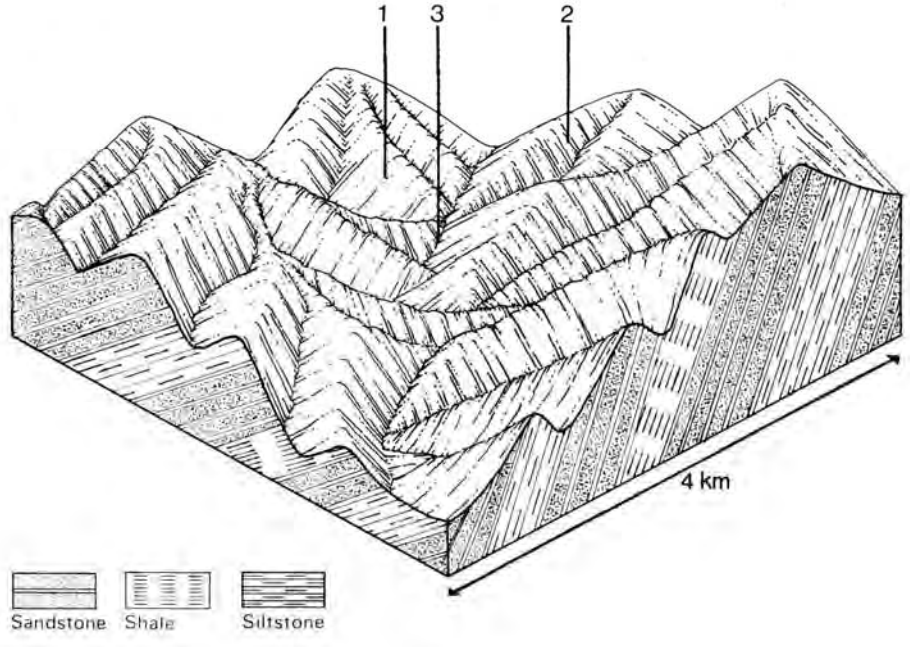
Steep slopes, slow-weathering sedimentary rocks and rainfall, inadequate to support vigorous and dense vegetation, give rise to active, natural erosion and slow soil formation. Thus the soils tend to be shallow, stony, leached, acidic and weakly structured. They would be prone to severe sheet erosion if denuded of vegetation.

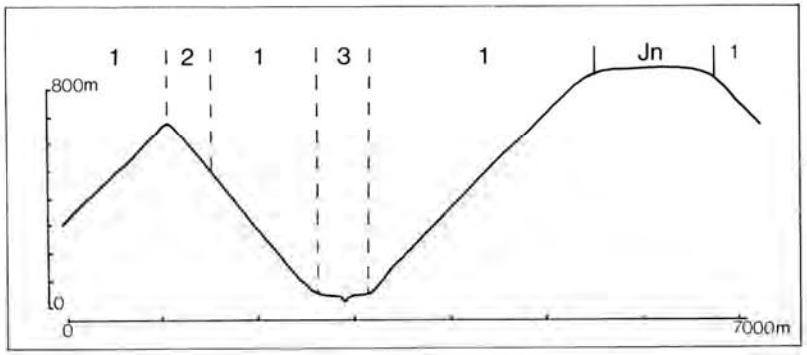
Several vegetation types are found due to the wide geographic and elevation range. Woodland I and II dominate on the drier slopes while open forest I and II are found in more humid areas, notably on protected slopes at higher elevations.



In ridge-and-ravine topography, most drainage channels have little alluvium due to the rate of removal being greater than the rate of deposition. Some of the major rivers, however, have alluvial terraces as, for example, can be seen along the Wonnangatta River where it traverses Talbotville land system.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 800 - 1400; lowest January or February (40 - 80), highest October (100 - 150) Annual 8 - 12; lowest July (3 - 7), highest February (16 - 20) Temperature <10°C (av.): April - October Rainfall < potential evapotranspiration: December - February; occasional winter snow
GEOLOGY Age, lithology	Ordovician, Silurian and Devonian mudstones, siltstones, sandstones and shales, occasionally metamorphosed
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Steep mountains with ridge-and-ravine topography 80 - 1300 120 - 720 Dendritic 2.0
PRESENT LAND USE	Mostly uncleared: hardwood forestry (second quality timber in sheltered areas); bush grazing of cattle (very limited); small area in Baw Baw National Park





LAND COMPONENT Percentage of land system Diagnostic features	1 85 Slopes with drier woodland and forest	2 10 Slopes with more humid forest, usually on protected upper slopes	3 5 Discontinuous narrow terraces and, rarely, old terrace remnants along major drainage corridors
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	35 - 45, (25 - 100) Straight	35 - 45, (25 - 100) Straight	<5, (0 - 10) Straight but uneven
SOIL Parent material	Mudstone, siltstone, sandstone and shale		Mainly locally derived alluvium
Description	Dark clay loam to loamy sand grading into yellowish or reddish brown similar or heavier-textured subsoil; shallow to very shallow, stony and acidic	As in component 1, but topsoil tends to be darker coloured and somewhat deeper	Mainly little differentiated sandy loam to sandy clay loam; gradational or duplex soils on old terrace remnants
Classification	Lithosols, some Red and Brown Earths Um 1.42, Urn 1.43. Um6.13, Um4.31, Gn2.11, Gn2.61, Uc5.11, Uc5.21	Lithosols, minor Brown Earths and Red Podzolic Soils Um6.12, Um4.22, Gn4.14	Alluvial Soils, Yellow Earths; Yellow Podzolic Soils on old terrace remnants Uc4.22, Uc4.31, Gn4.81, Dy3. -
Surface texture	Clay loam to loam, less commonly lighter textures		Loamy sand to sandy clay loam
Surface consistence	Slightly hard when dry friable when moist		Varies with texture
Depth (m)	<0.8, but commonly<0.5		>2.0
Nutrient status	Low		Low
Available soil water capacity	Low to moderate		Low to moderate
Perviousness to water	Moderate		Moderate
Drainage	Good		Varies with position in landscape
Exposed stone (%)	5 -60		0; high on ancient gravel deposits
Sampled profile number	11	-	-
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Because of wide geographic and altitudinal range, varies from woodland Ito open forest II, often shrubby or grassy: *E. bridgesiana, E. dives, E. goniocalyx, E. melliodora,* or *E. sieberi* usually predominant; *E. rubida, E. macrorhyncha, E. pauciflora* (at higher elevations) Rarely closed forest in minor drainage corridors: *Acmena smithii*+ with climbers, ferns and epiphytes		Open forest II, III, often shrubby: *E. viminalis, E. radiata* or *E. goniocalyx* usually predominant; *E. macrorhyncha* and, on old terrace remnants, *E. cephalocarpa* associated

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality — reduction in density of tree roots	Reduced transpiration, resulting in: a) increased deep percolation b) increased regolith wetness Decreased root-binding	 Nutrient loss Landslip and soil creep Landslip and soil creep	 Not determined 1; moderate 2; high 1; moderate 2; high	 determined Common on steep slopes Common on steep slopes	 Removal of trees Accelerated by major disturbance to native vegetation Accelerated by major disturbance to native vegetation	Increased movement of water to groundwater; increased base-flow of streams Increased sediment load Increased sediment load
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1,2; high	Uncommon ; local incidence only	Clearing, logging, burning, overgrazing, road building and other earth-moving activities, trafficking by stock	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1,2,3; low – moderate 1,2; high	Uncommon Uncommon: local incidence only	Increased trafficking export of organic matter As for sheet and rill erosion above	- Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion Scour erosion Streambank erosion	1,2; high 3; high 3; high	Uncommon Uncommon Uncommon	As for sheet and rill erosion above As for sheet and rill erosion above As for sheet and rill erosion above	Increased sediment load Increased sediment load Increased sediment load
Comments: -						

Tambo land system (Tb)

Area: 400 sq. km (2.0%)

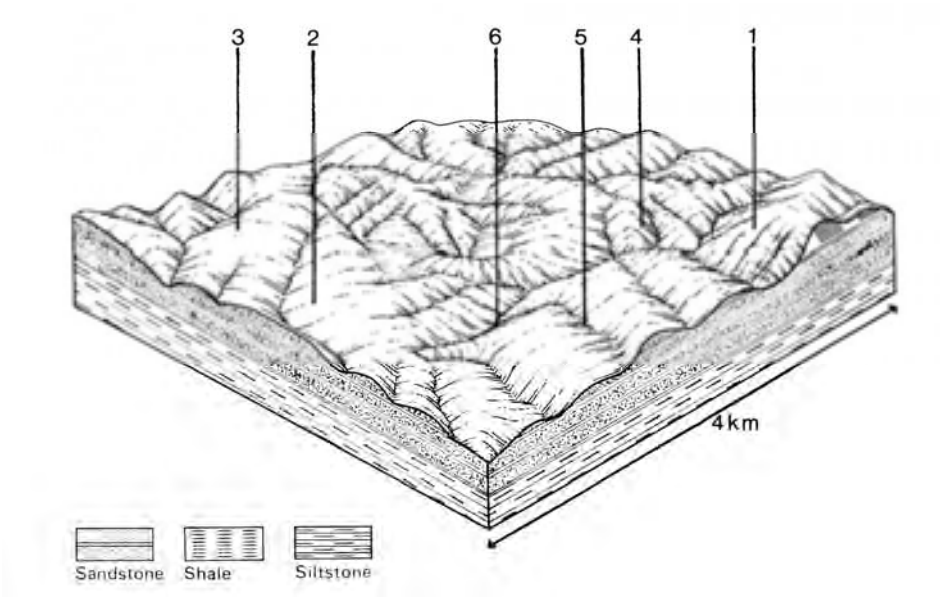
Low hills and undulating terrain occur on Ordovician sediments at low elevations close to the southern margin of the East Victorian Uplands and along some of the major river valleys. These areas are mapped as the Tambo land system. Some ridge crests are rounded but most slopes are short and moderately steep. Occurring in scattered localities, this land system is ecologically diverse. The area is topographically similar to the Avon land system on Carboniferous sediments.

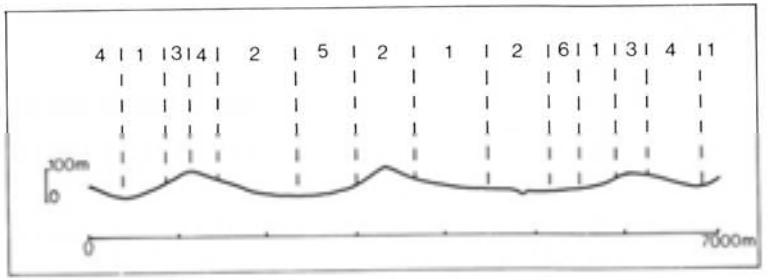
Shallow soils, with rock fragments common, particularly in the lower horizons, have formed on the moderate and gentle slopes. Soil depth appears to be limited by rock strata that is resistant to weathering. The soils typically show increasing clay content with depth, the increase appearing to be more gradual than abrupt. The reaction is moderately to strongly acidic, often tending to neutrality at depth.

Open forest II predominates, with open forest III on some protected slopes.

The low relief of the rounded hills is apparent when compared with the ridge (right background) of Talbotville land system.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 700 - 1200; lowest January or February (40 - 80), highest October (100 - 150) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): May - September Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	 Mostly Ordovician sandstones, mudstones and shales
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Rounded low hills and undulating terrain 40 - 540 40 - 160 Dendritic 0.5
PRESENT LAND USE	Mostly uncleared: hardwood forestry (low productivity except for second grade timber on sheltered slopes); apiculture; bush grazing of cattle (limited); small area in Fairy Dell Scenic Reserve Cleared areas: grazing of cattle on improved pastures





LAND COMPONENT Percentage of land system Diagnostic features	1 45 Steeper slopes and sharp or sub-rounded peaks	2 30 Gentle lower slopes	3 5 Broad rounded crests	4 10 Protected slopes	5 5 Minor drainage depressions	6 5 Terraces in major drainage corridors
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	20 - 30, (10 - 40) Straight	10 - 15, (5 - 20) Concave	5, (0 - 10) Convex	20 - 30, (10 - 40) Concave	<2, (0 - 5) Concave	<5, (0 - 10) Straight but uneven
SOIL Parent material	Sandstone, mudstone and shale				Colluvium and local alluvium	Alluvium
Description	Very dark greyish brown loamy sand to loam topsoil; gradual or abrupt change to yellowish brown or reddish brown, sometimes mottled, clay subsoil, usually with blocky structure. Commonly stony, sometimes shallow, probably depending on hardness of underlying rock and slope				Variable; sand to clayey texture; greyish brown, often mottled; may be stony	Limited observation — undifferentiated brown sand
Classification	Yellow Podzolic Soils; some Red Podzolic Soils and Brown Earths; rarely Lithosols Gn3.21, Gn3.54, Gn2.41, Gn2.44, Gn3.11 Dy3.21, Dy3.41				Humic Gleys, Siliceous Sands Gn3.91, Uc1.23	Alluvial Soils Uc1.23
Surface texture	Loamy sand to loam				Variable	-
Surface consistence	Variable; soft to hard when dry				Variable	-
Depth (m)	0.9 - 1.5; <0.9 where hard bedrock and/or steeper slopes				>2.0	>2.0
Nutrient status	Low to moderate				Low to moderate	Low to moderate
Available soil water capacity	Moderate				Very variable	Very variable
Perviousness to water	Mostly slow				Very variable	Very variable
Drainage	Good	Moderately good to good	Somewhat poor to good	Good	Mostly poor	Mostly good
Exposed stone (%)	Generally 0, but up to 20 where soil shallow				0	0
Sampled profile number	-				-	-
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Open forest II:		Shrubby open forest I and II:	Open forest II, III often shrubby:	Mostly open forest II:	Limited data — open forest II:
	E. globoidea usually predominant, occasionally *E. polyanthemos* or *E. consideniana* (in poorer drained sites); *E. cypellocarpa* or *E. sideroxylon* sometimes associated			E. cypellocarpa+ and/or *E. obliqua+; E. radiata* or *E. globoidea* often associated	*E. ovata+, E. bridgesiana* or *E. polyanthemos*, some times with *E. radiata* Rarely closed forest II: *Acmena smithii, Pittosporum undulatum,* climbers, ferns and epiphytes	*E. viminalis+*

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1,2,3; moderate 4; low	Common: on cleared land. Local occurrences in forests	Clearing, logging, burning, overgrazing, road and dam building and other earth-moving activities, rabbit burrowing, trafficking by stock and vehicles.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1,2,3,4; low 5,6; low – moderate 1,2,3; moderate 4; low	Uncommon Uncommon	Increased trafficking cultivation, overgrazing, export of organic matter As for sheet and rill erosion above	- Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1,2,3; low - moderate 5; moderate 4,6; low	Uncommon: local occurrence	As for sheet and rill erosion above	Increased sediment load
Comments: -						

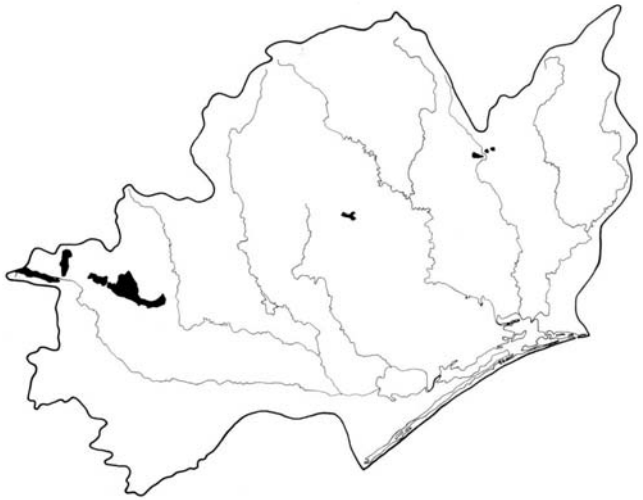
Tanjil land system (Tj)

Area: 210 sq. km (1.0%)

Tanjil land system occurs on hilly terrain with plutonic and gneissic rocks, mainly in the south-west of the East Victorian Uplands. Ridge-and-ravine topography prevails but there is some rounding of ridge crests. Slopes are steep and moderately long. Areas are similar in geology and topography to Timbarra land system but they are much more humid.

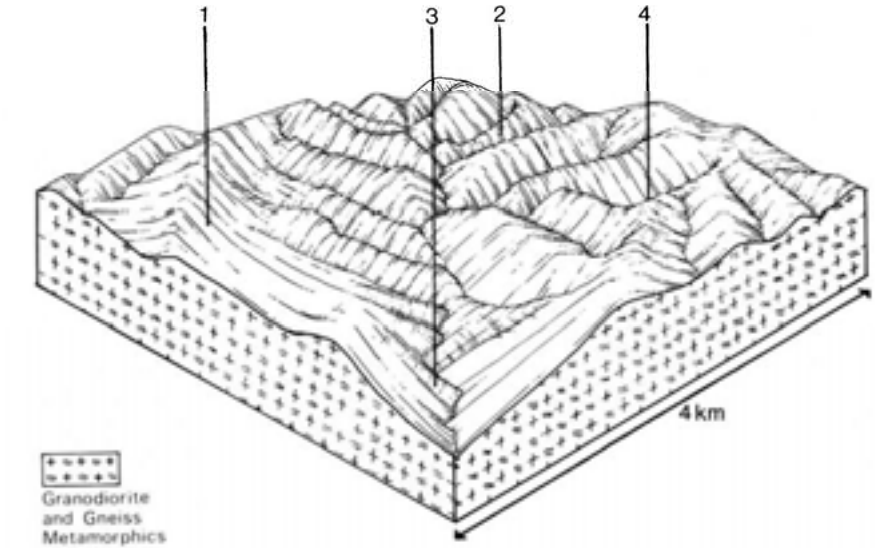
High rainfall acting on granodiorites, granites and gneisses has produced deep soils. Profiles are generally well aggregated, particularly in the upper horizons, and are moderately acidic.

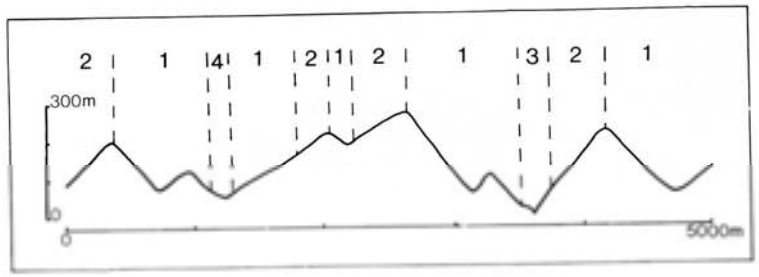
Layered open forest III is most common, with some open forest II on slopes at lower elevations.



Protected steep slopes with a humid Eucalyptus regnans *(mountain ash) forest.*

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 900 - 1600; lowest January or February (60 - 90), highest August or October (120 - 150) Annual 8 - 12; lowest July (3 - 7), highest February (16 - 20) Temperature <10°C (av.): April - October Rainfall < potential evapotranspiration: February; frequent winter snow
GEOLOGY Age, lithology	Palaeozoic granodiorites, granites and coarsely crystalline gneisses
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	Steep hills with a subdued ridge-and-ravine topography 260 - 1460 80 - 300 Dendritic 1.5
PRESENT LAND USE	Mostly uncleared: hardwood forestry (quality variable, some ash and general construction timber); apiculture; small area in Baw Baw National Park





LAND COMPONENT Percentage of land system Diagnostic features	1 70 Slopes	2 15 Protected slopes	3 10 Terraces in major drainage corridors	4 5 Minor drainage depressions
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	20 - 25, (10 - 60) Straight	20 - 25, (10 - 60) Straight	<5, (0 - 10) Straight but uneven	Variable, (5 - 30) Concave
SOIL Parent material	Granodiorite, granite and associated gneiss		Mixed alluvium	Locally derived alluvium and colluvium
Description	Mainly brown or red, some yellow, gradational, acidic soils; sandy clay loam to light clay subsoil, usually with fine blocky structure. On protected slopes topsoil is darker coloured and much deeper		Limited observations — probably mainly undifferentiated brown sand	Variable: brown sandy loam to sandy clay loam; high surficial organic matter and very stony in places
Classification	Red, Brown and Yellow Earths, some Yellow Podzolic Soils and Lithosols Gn2.11, Gn4.11, Gn4.34, Gn4.54, Gn3.74, Um5.52		Alluvial soils Uc1.44	Brown Earths Uc6.11
Surface texture	Loamy fine sand to sandy clay loam; sandy loam common		Sand to sandy clay loam	Sandy loam to sandy clay loam
Surface consistence	Friable to firm when moist		-	Friable when moist
Depth (m)	>1.5		>2.0	>2.0
Nutrient status	Low to moderate		Low to moderate	Low to moderate
Available soil water capacity	Moderate; high for more organic soils		Variable, depending on texture	Moderate
Perviousness to water	Rapid		Moderate	Rapid
Drainage	Good		Good	Moderately good
Exposed stone (%)	Generally 0		0	Variable; 0 - 40
Sampled profile number	-		-	-
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Highest elevations — layered open forest III: *E. dives, E. delegatensis, E. rubida* Lower elevations — open forest II, III, often shrubby: *E. sieberi*+, *E. cypellocarpa* and/or *E. obliqua*	Open forest III, IV, often layered: Highest elevations — *E. delegatensis* Lower elevations — *E. regnans* occasionally with *E. nitens; E. regnans* and/or *E. obliqua, E. cypellocarpa; E. sieberi* sometimes associated on upper slopes	Open forest III, IV, often layered: *E. viminalis* usually predominant; *Nothofagus cunninghamii* may be associated in higher rainfall areas	Open forest III, IV, often layered or ferny: Highest elevations — *E. delegatensis* Lower elevations — *E. regnans* with or without *E. cypellocarpa, E. obliqua, E. rubida; Dicksonia antarctica* often present

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in: a) increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
	b) increased regolith wetness	Landslip	12; low	Uncommon	Accelerated by major disturbance of native vegetation	Increased sediment load
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1,2; moderate 4; very low	Uncommon	Clearing, logging, burning, overgrazing, road and dam building and other earth-moving activities, rabbit burrowing, trafficking by stock and vehicles.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With	Structure decline	1,3; moderate 2,4; high	Uncommon	Increased trafficking export of organic matter	-
	Reduced infiltration	Sheet and rill erosion	1,2; moderate 4; very low	Uncommon	As for sheet and rill erosion above	Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1,2,4; moderate	Uncommon	As for sheet and rill erosion above	Increased sediment load
		Streambank erosion	3; high	Uncommon	As for sheet and rill erosion above	Increased sediment load
Comments: Local occurrences of rill and gully erosion occur on road batters, log landings and tracks. Good growing conditions result in rapid regeneration of vegetative cover except on exposed sites at high elevations.						

Thomson land system (Th)

Area: 175 sq. km (0.9%)

The lowest levels of the modern flood plains in the main rain-shadow area of the Eastern lowlands, on which clayey alluvium predominates is mapped as Thomson land system. Major river channels, small levees, numerous oxbows, billabongs, swamps and clay plains are included. Stream courses are highly sinuous and meander cutoffs are common. These lowest level flood plains are relatively narrow but they carry the bulk of the flood waters. Traralgon land system also occurs on the lowest levels of the modern flood plains but it is in the more humid parts of the Western lowlands, mostly along tributaries of the major rivers.

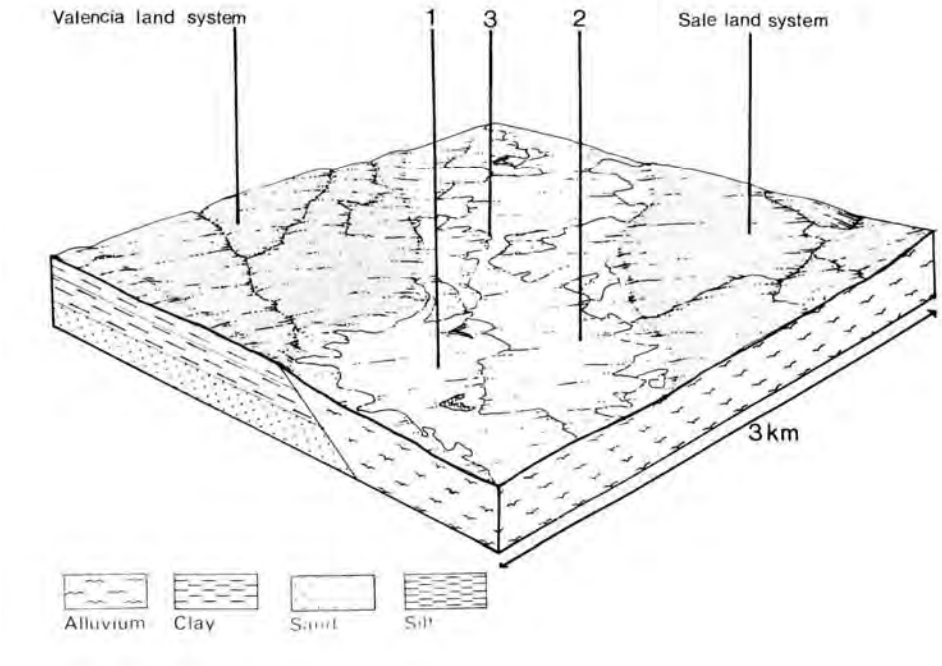
There has been little soil development on the youthful, mostly clayey and poorly drained alluvia, and most variation in these areas relates to texture and drainage. Some accumulation of organic matter has occurred, particularly in depressions and here organic loams may be found, but commonly fresh alluvium covers darker-coloured, former topsoil. On the well-drained levees textures tend to be lighter and the upper horizons tend to have weak or moderate subangular blocky structures.

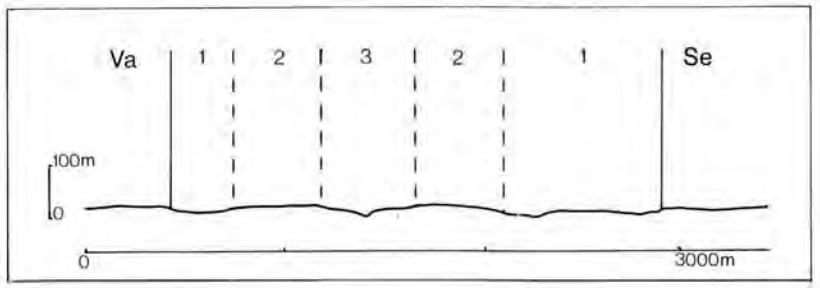
Erosion hazards are minimal but many areas are subject to frequent sediment deposition. Clearing of vegetation has facilitated flood flow and increased flooding problems downstream.

The native vegetation, probably mainly open forest II of *E. tereticornis* with *Melaleuca ericifolia* closed scrub on wetter sites, has been almost completely removed.

A swampy depression on the modern alluvial flood plain of the Thomson River.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 500 - 800; lowest July (30 - 50), highest October (50 - 80) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	 Holocene alluvium
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Plains with abundant fluviatile forms on the lowest alluvial terrace 20 - 80 0 - 5 Meander channel 1.8
PRESENT LAND USE	Mostly cleared: grazing of beef and dairy cattle on improved, often irrigated, pastures; cropping (limited); apiculture; recreation — caravaning, fishing and shooting





LAND COMPONENT Percentage Diagnostic	1 45 Plains with many relict channels, oxbows and low-lying areas	[2] 35 Plains relatively free of channels	3 20 Modern levees, including river channels
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	2, (0 - 5) Straight but some concave	1, (0 - 2) Straight	1, (0 - 2) Variable
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	Mostly fine-textured alluvium Soil varies with site drainage — better drained areas with dark brown clay loam to clay; sites with impeded or very poor drainage with dark greyish brown or dark grey clay loam to clay, often mottled throughout; evidence of alluvial stratification common at depth Wiesenboden, Humic Gleys, Alluvial Soils Dd2.11, Gn2.81, Uf6.11, Um6.21 Mostly clay loam, can be much sandier Friable to firm when moist, often hard when dry >2.0 Moderate Moderate to high Slow to moderate Mostly poor to somewhat poor, some very poor 0 -		Medium-textured alluvium Levee soils of dark greyish brown loamy sand to sandy clay loam topsoil merging into dark brown or dark yellowish textured subsoil, often stratified Alluvial Soils/Brown Earths, Prairie Soil Um6.21, Um6.23 Loamy sand to sandy clay loam Very friable to firm when moist >2.0 Moderate to high Moderate Moderate to rapid Good 0 23
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Open forest I, II, often shrubby: Mainly *E. tereticornis*+, *E. polyanthemos*+ (drier sites); *E. ovata*+ and *E. viminalis*+ (moister sites) Closed scrub *of Melaleuca ericifolia*+ in wet areas	Grassy open forest II: *E. tereticornis*+ with or without *E. polyanthemos*	0pen forest II, III, often shrubby or layered: *E. tereticornis*+

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in raised watertable	Waterlogging	1,2; moderate - high	Common in low-lying areas	Reduced plant water-use in the catchment	Increased run-on and ponding in low-lying areas
Increased exposure of surface soil	Increased soil detachment by flood waters	Scour erosion	1; low 2; low - moderate 3; moderate	Uncommon	Cultivating, earth-moving activities	Increased sediment load
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Scour erosion	1,2; moderate 3; low – moderate 1; low 2; low - moderate 3; moderate	Uncommon Uncommon	Increased trafficking, cultivation, overgrazing, export of organic matter As for scour erosion above	- Increased run-on and ponding in low-lying areas
Increased soil disruption	Increased soil break-up Increased loosening of sand	Streambank erosion Scour erosion	3; high 1; low 2; low - moderate 3; moderate	Common Uncommon	As for scour erosion above As for scour erosion above	Increased sediment load Increased sediment load
Comments: Streambank erosion is a naturally active process in this land system but has been aggravated by clearing, stream channel modification works, and trafficking by vehicles and stock.						

Thorpdale land system (Tp)

Area: 109 sq. km (0.6%)

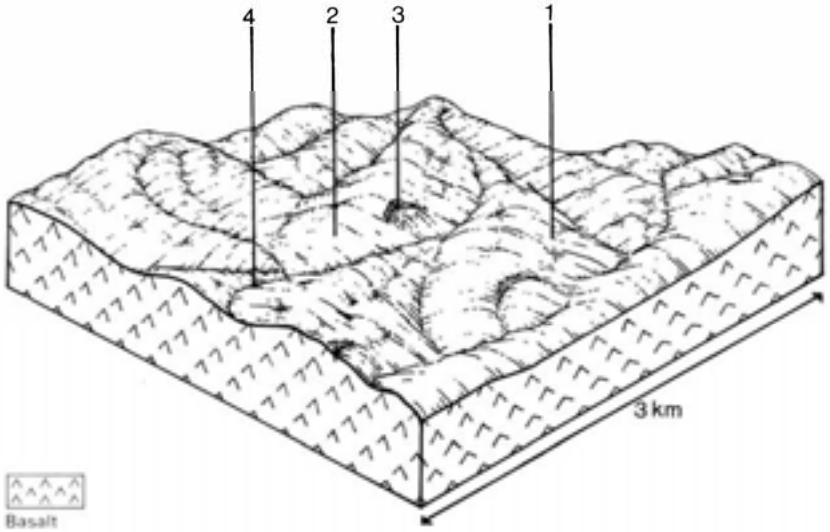
Areas of Tertiary basalt which have been subjected to extensive landslide activity, are mapped as the Thorpdale land system. The cause of the landslides is not clear but tectonic activity could have contributed. Most landslide debris has now been removed from the valleys by the streams but irregular debris deposits and landslide scars are characteristic of the slopes. Most occurrences are near Thorpdale where the volcanics have suffered considerable tectonic shock during uplift. Clearing of forests and irrigation from sub-basaltic aquifers has activated many slopes prone to landslides.

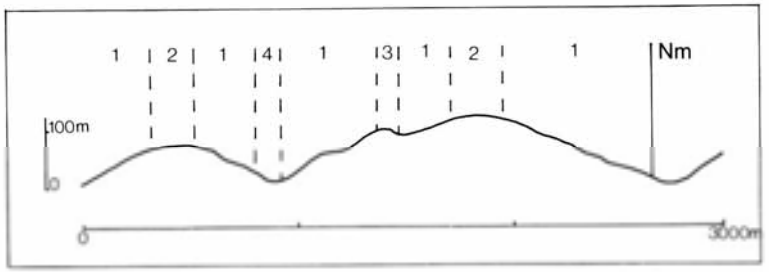
The soils have developed on remnants of old, deep profiles which formed in a period with a warm, humid climate. They are very strongly weathered, leached and tend to fix phosphate in unavailable forms. Due to the high iron content in basalt and the weathering of most minerals to clay, the soil is a reddish brown, strongly-aggregated, granular or fine blocky clay. This fine, stable structure produces a high degree of friability and the soils are considered suitable for intensive cropping. The fine structure also promotes high permeability which results in lower rates of sheet erosion than those of other soils on similar gradients.

The original vegetation, probably dominated by an open forest II or III of *E. cypellocarpa*, *E. obliqua*, *E. radiata* and *E. viminalis*, has been almost entirely cleared.

Numerous small landslips occur on the moderate slopes.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 800 - 1400; lowest January or February (40 - 70), highest August or October (90 - 120) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): May - September Rainfall < potential evapotranspiration: December – February
GEOLOGY Age, lithology	 Tertiary basalts (Older Volcanics); weathered
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Hills and slopes with extensive landslide activity 100 - 440 40 - 220 Dendritic 1.2
PRESENT LAND USE	Cleared: grazing of dairy and beef cattle and fat lambs on improved pastures; some cropping, particularly potatoes; apiculture





LAND COMPONENT	1	2	3	4
Percentage of land system	75	15	2	8
Diagnostic features	Steeper slopes with landslide scars and debris	Gentle stable crest slopes	Swamps impounded behind landslide debris	Drainage depressions, often permanently wet due to seepage
PHYSIOGRAPHY				
Slope %, typical and (range)	20 - 25, (5 - 50)	10, (0 - 15)	<1, (0 - 2)	<5, (0 - 10)
Slope shape	Straight or concave	Convex	Concave	Concave
SOIL				
Parent material	Weathered basalt with landslip deposits on steeper slopes			
Description	Dark reddish brown to black loam to clay loam topsoil grading into friable reddish brown clay loam to silty clay subsoil. Mainly deep in component 1, moderately deep in component 2		Black organic loam grading into mottled, sometimes stony grey clay at depth; inundated or with shallow water table	Locally derived alluvium Mottled dark greyish brown loam to clay loam topsoil over mottled lighter greyish brown similarly textured subsoil; shallow water table
Classification	Krasnozems Gn3.11, Gn4.11, Um6.33		Humic Gleys Um5.52, Gn3.92	Humic Gleys Um6.12, Gn -
Surface texture	Loam to clay loam		Loam	Loam to clay loam
Surface consistence	Slightly hard when dry, friable when moist		Slightly plastic when wet	Friable when moist
Depth (m)	>2.0	1.2 - 2.0	>2.0	>2.0
Nutrient status	Low to moderate	Low to moderate	Moderate	Moderate
Available soil water capacity	Low to moderate	Low to moderate	High	Moderate to high
Perviousness to water	Rapid	Rapid	Rapid	Rapid
Drainage	Good	Good	Very poor	Very poor to poor
Exposed stone (%)	0	0	0	0
Sampled profile number	30	-	-	-
NATIVE VEGETATION				
Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Open forest II, III: One or more of *E. cypellocarpa, E. obliqua, E. radiata, E. viminalis* usually predominant; *E. ovata* occasionally associated. (Vegetation is similar to Neerim land system, components 1, 2)		Probably open forest II, III: *E. ovata*, or sedgeland Original vegetation difficult to determine due to clearing	Probably open forest II, III: *E. ovata*+ or *E. viminalis*+

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in: a) increased deep percolation and leaching	Nutrient loss	1,2; moderate	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams Increased sediment load
— reduction in density of tree roots	b) increased regolith wetness	Landslip and soil creep	1; moderate 2; low	Common	Accelerated by major disturbance of native vegetation	Increased sediment load
	Decreased root-binding	Landslip and soil creep	1; moderate 2; low	Common	Accelerated by major disturbance of native vegetation	
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1; low - moderate	Common: particularly on cleared, steeper slopes	Overgrazing, road and dam building and other earth-moving activities, rabbit burrowing, trafficking by stock and vehicles.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1,2; moderate 3,4; high 1; low - moderate	Uncommon Common: particularly on cleared, steep slopes	Increased trafficking overgrazing, export of organic matter As for sheet and rill erosion above	- Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1; moderate 2; low	Uncommon: locally severe on steep slopes if water is channelled over cultivated or disturbed land.	As for sheet and rill erosion above	Increased sediment load
Comments: Some landslips in the area would have occurred prior to European settlement but recent landslips have resulted from clearing, logging and major earthworks on steep slopes						

Timbarra land system (Ta)

Area: 195 sq. km (1.0%)

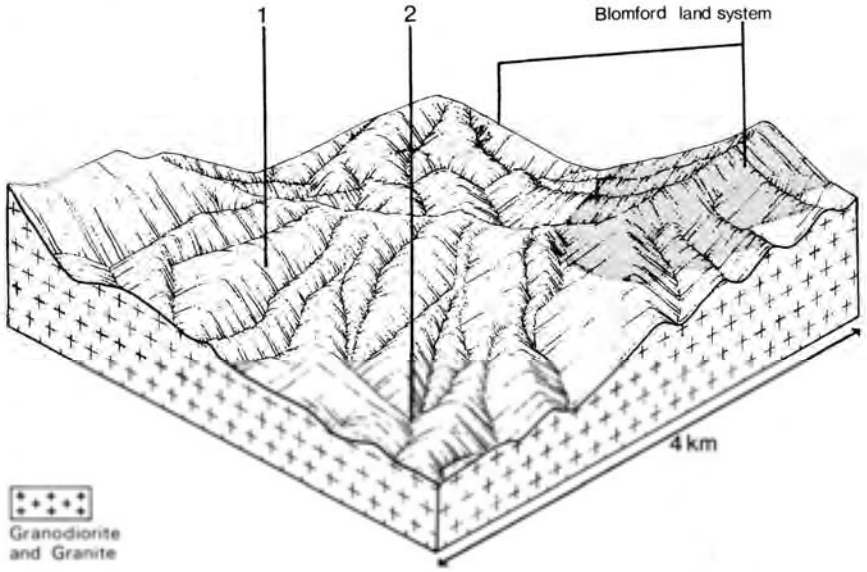
This land system is mapped on hills with plutonic and gneissic rocks, a ridge-and-ravine topography and moderately long steep slopes with outcropping rock and stone. Levees and alluvial flats similar to, but smaller than, those mapped in Walnut land system occur along a few major streams, notably the Timbarra River. The land system is found mainly in the Swifts Creek-Ensay area and near Timbarra, frequently on the higher peaks within areas of Dargo land system. It is similar to Blomford land system but has lower relief and shorter growing seasons. It is also similar in geology and topography to Tanjil land system but the climate is much drier.

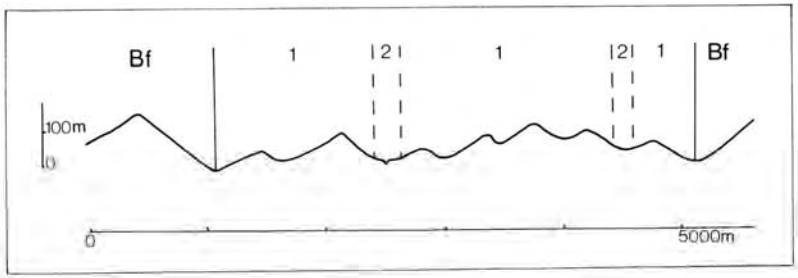
In this moderately-high rainfall environment, the granitic rocks tend to weather relatively rapidly. On steep upper slopes the soil is continually mixed by natural erosion and by disturbances such as tree throw so that the soils are little differentiated and leached, acidic, sandy, structureless, red earths have developed. The incomplete weathering of clay-forming minerals may also have contributed to the lack of profile differentiation. On more-gentle lower slopes, blocky clay subsoils are common. These subsoils tend to be neutral to slightly alkaline and are probably prone to gullying, particularly in drainage lines and valley floors. Topsoils are susceptible to sheet erosion.

Shrubby open forest I or II is predominant, and open forest III often occurs in drainage corridors.

Timbarra land system is similar to Blomford land system except that relief is lower and the slopes are less steep, generally with slightly deeper soils. As a result a greater proportion of Timbarra land system (foreground) has been cleared.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 700 - 1200; lowest January or February (40 - 80), highest October (100 - 150) Annual 8 - 12; lowest July (3 - 7), highest February (16 - 20) Temperature <10°C (av.): May - September Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	Palaeozoic granites, granodiorites, diorites and coarsely crystalline gneisses
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	Steep hills will ridge-and-ravine topography 60 - 720 80 - 260 Dendritic 1.5
PRESENT LAND USE	Approximately half the area uncleared: hardwood forestry (mostly minor timber products); bush grazing of cattle (limited); apiculture Cleared portion: grazing of beef cattle and sheep





LAND COMPONENT Percentage of land system Diagnostic features	1 95 Slopes with stony soils and dry forest	2 5 Isolated terraces and fans along major drainage corridors
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	20 - 30, (10 - 50) Straight	<2, (0 - 10) Straight but uneven
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	 Granite, granodiorite, diorite and gneissic rock Dark greyish brown sandy loam topsoil grading into reddish brown sandy loam to coarse sand (mostly steep upper slopes); dark greyish brown sandy loam to clay loam over yellowish brown or brown mottled clay subsoil (mostly mid- and lower slopes) Red Earths, Yellow Podzolic Soils, Solodic Soils Uc4.12, Uc5.21; Gn2.86, Dy3.41, Dy5.11 Sandy loam to clay loam Slightly hard when dry, firm when moist Mostly 0.8 - 1.2 Moderate Low to moderate Slow to moderate Good <5, mostly 0 -	 Alluvium Limited observations — variable soils; mainly brown or slightly reddish brown sandy loam to sandy clay loam over stratified alluvium Alluvial Soils, Solodic Soils Uml.44, Uc5.21, Ddl.23 Sandy loam to sandy clay loam Variable >2.0 Low to moderate Low to moderate Slow to moderate Good 0 -
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Mainly open forest I or II, occasionally III: Mixed forests — including *E. albens* (Tambo River catchment) *E. goniocalyx, E. globulus, E. globoidea* (one of which is usually predominant), *E. rubida* and *E. sideroxylon* (occasionally)	Limited data — probably open forest II, III : *E. viminalis+ with* or without *E. radiata+; E. melliodora* and *E. ovata* also sometimes predominant

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
Increased exposure of surface soil	Increased overland flow and soil detachment Increased wind velocity over soil and increased detachment of sand	Sheet and rill erosion Wind erosion	1; high 1; low - moderate	Common Uncommon; local occurrences on exposed slopes at high elevation	Clearing, overgrazing, road and dam building and other earth-moving activities, rabbit burrowing, trafficking by stock and vehicles.	Increased flash flows and sediment load. -
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1,2; low 1; high	Uncommon Common	Increased trafficking, overgrazing, export of organic matter As for wind, sheet and rill erosion above	Increased flash flows Increased flash flows
Increased soil disruption	Increased soil break-up Increased loss of topsoil cohesion	Gully erosion Streambank erosion Wind erosion	1; high 2; high 1; low - moderate	Common Uncommon As for wind erosion above	As for wind sheet and rill erosion above As for wind, sheet and rill erosion above Trafficking, overgrazing, rabbit burrowing, earthmoving activities	Increased sediment load. Increased sediment load Increased sediment load
Comments: Occurrences of wind erosion have been observed in the Ensay/Swifts Creek area. Gully erosion can start on any sloping surface and will work back from creeks across flat areas: the process is aided by the low cohesion of the topsoil and a dispersive subsoil.						

Toorongo land system (To)

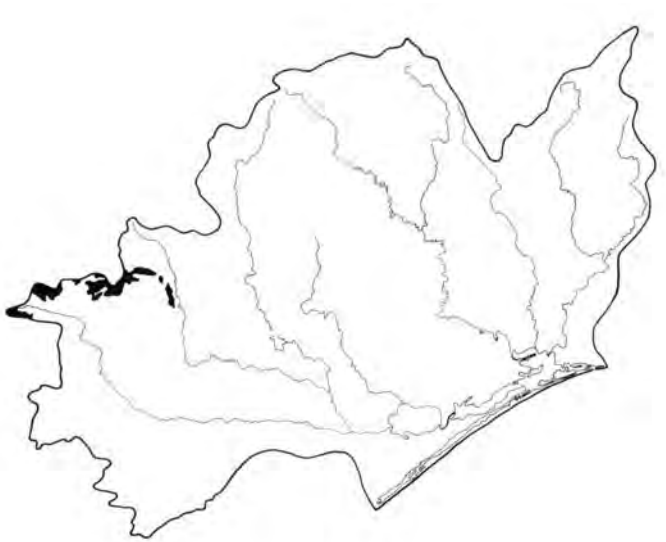
Area: 137 sq. km (0.7%)

This land system occurs below the subalpine tract in the western part of the East Victorian Uplands, on high-level plateaux formed on granodiorites and other plutonic rocks.
The topography is hilly to gently undulating and the overall slope of the plateaux are low, possibly reflecting a dissected prior land surface. The dissection pattern is based on jointing in the parent rock and colluvial accumulations and boggy, alluvial floors characteristically occur along the etched-out joint lines. The climate is very humid and this is reflected in the vegetation.

The humid climate, gentle slopes and parent rock that is easily weathered combine to produce deep, brown or red, well-structured, acidic soils. The dense vegetation cover has tended to produce deep topsoils rich in organic matter.

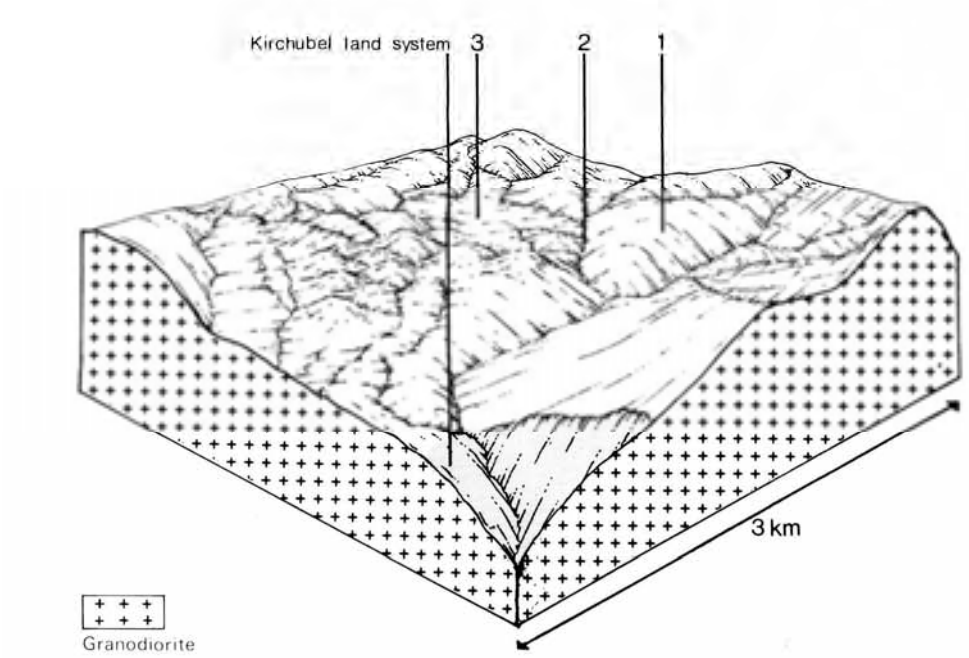
The subsoil colours are usually bright shades of red, brown or yellowish brown due to the good internal drainage. Young soils, such as those along drainage lines, often contain prominent muscovite mica.

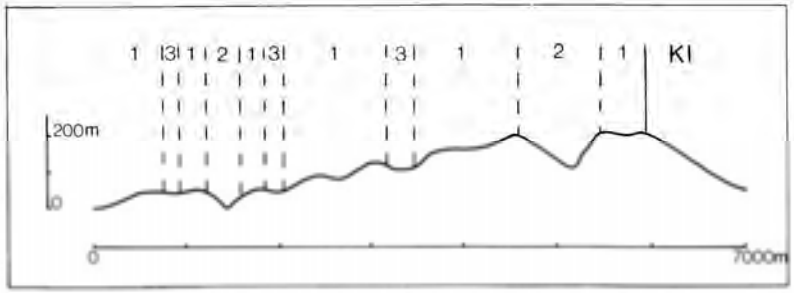
The vegetation is mainly layered open forest III or IV. Closed forest III *of Nothofagus cunninghamii* occurs within some drainage corridors and open heath grows in swampy areas.



Rounded hills and steep slopes along incised drainage lines. The control of the drainage pattern by jointing is readily apparent.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 1200 - 1800; lowest January or February (70 - 100), highest August or September (130 - 180) Annual 8 - 12; lowest July (3 - 7), highest February (16 - 20) Temperature <10°C (av.): April - October Rainfall < potential evapotranspiration: February; frequent winter snow
GEOLOGY Age, lithology	 Devonian granodiorites and granites (Toorongo and Baw Baw Grandiorites and Tynong Granites)
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Undulating to high-level hilly plateaux with approximately concordant crests and joint-based dissection 480 - 1120 120 - 420 Rectangular 1.6
PRESENT LAND USE	Mostly uncleared: hardwood forestry (ash timber); apiculture





LAND COMPONENT Percentage of land system Diagnostic features	1 65 Slopes, ridges and low hills based on fine jointing patterns, and colluvial footslopes	2 20 Steep slopes of incised valleys	3 15 Treeless flats, often with peat bogs, mainly along streams
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	Variable; <25, (5- 60) Convex, some straight	Variable; >25, (20- 70) Concave	<1, (0- 2) Straight
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	Granodiorite and granite Black to dark brown sandy clay loam to sandy loam grading into yellowish brown to reddish brown clay loam to light clay Brown and Red Earths/Krasnozems Gn4.11, Gn4.34, Gn2.21, Um6.12, Uc1.21, Urn 1.44 Sandy clay loam to sandy loam Soft when dry, very friable when moist >2.0 Moderate Moderate Rapid Good <5 -		Locally derived alluvium; plant remains Mainly black organic sandy loams grading into grey sandy clay loams, in places with shallow peaty layers. Some micaceous undifferentiated greyish brown or yellowish brown mineral soils of variable texture Mainly Humic Gleys, probably also some Alluvial Soils Um5.52, O Variable; sandy clay loam to sand Very friable when moist >2.0 Moderate Moderate Rapid Very poor 0 -
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Layered open forest III, IV: *E. delegatensis*+, with or without *E. nitens*, at higher elevations grading to *E. nitens*+ or *E. regnans*+, with or without E. *cypellocarpa*, at lower elevations. *Nothofagus cunninghamii* in understorey mainly in Mount Baw Baw and Mount Toorongo areas	Open forest III: *E. regnans* with or without *N. cunninghamii* Closed forest II, often ferny: *N. cunninghamii*	Open heath: *Baeckea gunniana*+, *Epacris paludosa*+, *Richea continentis*+ Bogs with *Carex* spp.+, *Empodisma minus*, *Sphagnum* sp.+

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater, increased base-flow of streams
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1; moderate - high 2; high	Uncommon	Clearing, logging, burning, road and other earth-moving activities, trafficking by stock.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1; moderate 2,3; high 1; moderate - high 2; high	Uncommon, but locally severe on log-landing sites Uncommon	Increased trafficking by vehicles, export of organic matter As for sheet and rill erosion above	- Increased spring and decreased summer stream flow
Increased soil disruption	Increased soil break-up	Gully erosion	1,2; moderate - high 3; moderate	Uncommon	As for sheet and rill erosion above	Increased sediment load
Comments: Compaction in component 3 can easily destroy the sensitive moss bogs, resulting in channelling, drainage of the bogs and subsequent erosion						

Trafalgar land system (Tr)

Area: 65 sq. km (0.4%)

Alluvial and colluvial outwash material from the South Victorian Uplands has accumulated in a broad apron in the area between Yarragon and Moe and the area is mapped as the Trafalgar land system. The clayey colluvium was derived mainly from soft, Cretaceous sediments and basic volcanics following uplift of the South Victorian Uplands. Surface drainage is often poor but ochreous colours in deeper layers indicate better drainage at depth. Surface wash still occurs but active colluviation now appears to be minimal. The boundary with the Moe land system is indistinct at the more distal parts.

The soils have formed mainly on fine-textured colluvium and alluvium under conditions of seasonal wetness, especially in the low-lying areas receiving run-off and seepage water from adjacent hills. The soils of the higher, more-steeply-sloping areas may dry out completely during summer.

Mottling is strong in most subsoils and may extend to the surface in places. Moderate nutrient levels are inherited from the source sediments. Erosion hazards are slight but the soils are susceptible to structure decline caused by trafficking and trampling, particularly when wet.

The original vegetation, probably dominated by open forest II or III of E. *ovata*, has been almost entirely cleared.

The almost flat distal parts of a colluvial apron below the lower slopes of the Strzelecki Ranges from which the material was derived. The more sloping, proximal parts of the apron are just visible.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 700 - 1200; lowest January or February (40 - 70), highest August or October (90 - 120) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	Pleistocene — Holocene silty and clayey colluvium and alluvium derived from Cretaceous sediments and Tertiary volcanics
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Low-angle outwash fans and aprons 60 - 800 0 - 5 Dendritic 0.8
PRESENT LAND USE	Cleared: grazing of beef and dairy cattle on improved pasture; some apiculture

LAND COMPONENT	1	2	3
Percentage of land system	50	40	10
Diagnostic features	Sloping proximal parts of fans and aprons	Almost flat distal parts of fans and aprons	Shallow drainage depressions
PHYSIOGRAPHY	2, (0 - 5)	<1, (0 - 2)	<2, (0 - 2)
Slope %, typical and (range)	Concave	Straight to slightly concave	Concave
Slope shape			
SOIL			
Parent material	Silty and clayey colluvium and alluvium		
Description	Limited observations — probably mainly very dark greyish brown sandy clay loam to light clay topsoil merging into greyish brown strongly mottled subsoil with texture ranging from silty loam to heavy clay; stratified colluvium or alluvium below. Waterlogging during winter and spring common in components 1 and 2		
Classification	Wiesenboden; possibly Humic Gleys in component 3 Gn2.81, Gn4.51, Um2.31		
Surface texture	Sandy clay loam to light clay		
Surface consistence	Friable to firm when moist		
Depth (m)	>2.0		
Nutrient status	Moderate		
Available soil water capacity	Moderate		
Perviousness to water	Slow		
Drainage	Somewhat poor	Poor to somewhat poor	Very poor
Exposed stone (%)	0	0	0
Sampled profile number	43	-	-
NATIVE VEGETATION			
Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Open forest II: *E. ovata* + Understorey often includes *Melaleuca ericifolia* or *M. squarrosa* Clearing has made it difficult to determine other predominant or associated tree species		

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in raised watertables	Waterlogging	1; moderate 2,3; high	Common: in low-lying areas	Reduced plant water-use in the catchment	Increased run-on and ponding in low-lying areas
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1; low 2; very low	Uncommon	Overgrazing, cultivating, road and dam building and other earth-moving activities, trafficking by stock and vehicles.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	12,3; low – moderate 1; low 2; very low	Uncommon Uncommon	Increased trafficking, cultivation, overgrazing, export of organic matter As for sheet and rill erosion above	- Increased ponding in low-lying areas
Increased soil disruption	Increased soil break-up	Gully erosion	1,3; low - moderate 2; very low	Uncommon	As for sheet and rill erosion above	Increased sediment load.
Comments: -						

Traralgon land system (Tg)

Area: 96 sq. km (0.5%)

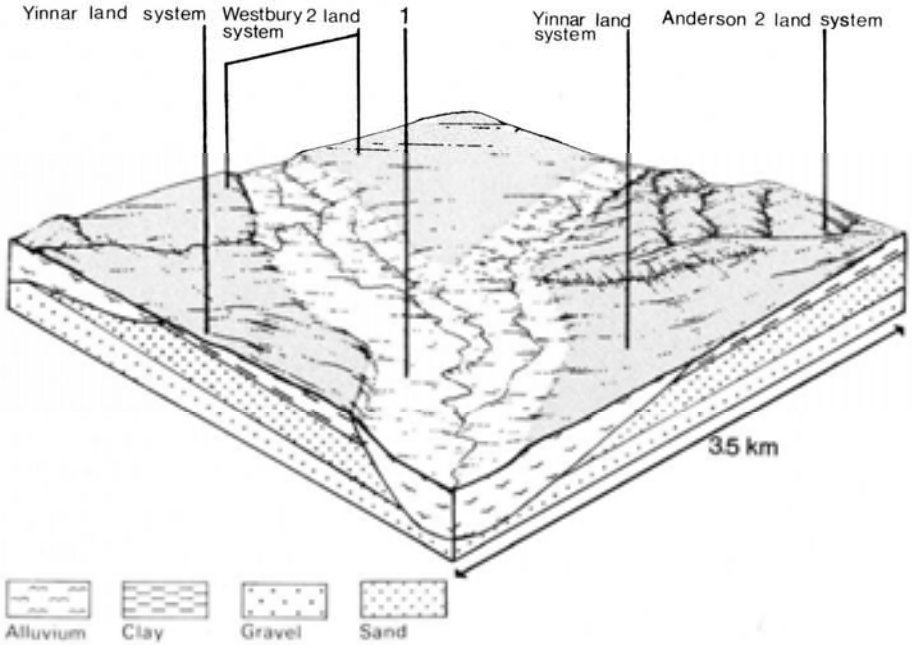
Drainage depressions along tributaries of the La Trobe River, in which fine-textured alluvium predominates, have been mapped as the Traralgon land system. Variability in stream hydrology and in the nature and history of the catchments has affected the characteristics of these areas. Most have narrow, alluvial plains, often poorly drained, and more or less sinuous, central stream channels. In places there is a pattern of slightly depressed, abandoned stream channels. Some artificial channels have been dug to promote drainage. Post-settlement increments of alluvium are common. Thomson land system also occurs on the lowest, clayey terraces but Traralgon differs from it in occurring along smaller streams in the more humid parts of the Western lowlands. Flood regime and native vegetation also differ.

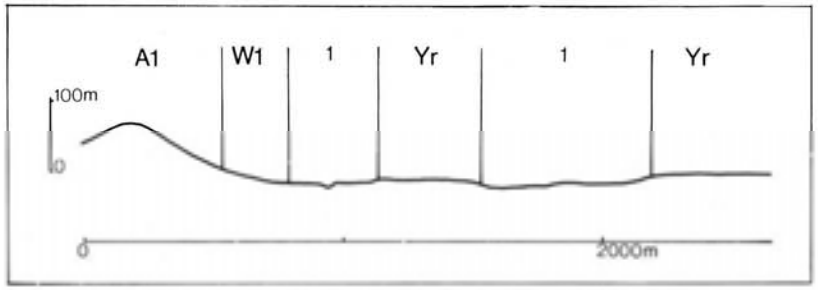
Impeded soil drainage and relatively youthful parent materials have resulted in little soil development beyond the accumulation of organic matter in the topsoil, the formation of mottles and the development of weak to moderate blocky structure below the topsoil. Minor variations in soil features are often traceable to differences in soils of the source catchments. Erosion hazards are minor but human activities in the catchments may lead to large deposits of sediments on the drainage depressions.

The original vegetation, probably open forest II or III, may often have been shrubby. It is now largely removed.

A broad, alluvial terrace adjacent to the incised system

CLIMATE Rainfall mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 700 - 1200; lowest January (40 - 70), highest October (70 - 100) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	 Holocene fluviatile deposits, mostly clayey
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Narrow poorly drained alluvial plains with small meandering streams 20 - 500 0 - 5 Channel with closely-spaced meanders 5.0
PRESENT LAND USE	Mostly cleared: grazing of beef and dairy cattle on improved or native pastures; some apiculture





LAND COMPONENT	1
Percentage of land system	100
Diagnostic features	Drainage depressions and minor terraces
PHYSIOGRAPHY	<2, (0 - 10)
Slope %, typical and (range)	Straight
Slope shape	
SOIL	
Parent material	Mostly clayey alluvium
Description	Mainly very dark greyish brown silty loam to clay loam topsoil, in places quite organic, commonly with fine yellowish brown mottles, grading into greyish brown or grey strongly mottled clay loam to clay subsoil with blocky structure; profiles usually mildly to moderately acidic throughout; stratification common. Small areas of better drained whole-coloured soils.
Classification	Wiesenboden; some Humic Gleys; Brown Earths in occasional well drained sites Gn4.51, Gn4.52, Gn4.41, Gn3.41, Gn2.81, Uml.44, Uf6.12, Dd2.21
Surface texture	Silty loam to clay loam
Surface consistence	Friable to firm when moist
Depth (m)	>2.0
Nutrient status	Moderate to high
Available soil water capacity	Moderate
Perviousness to water	Slow
Drainage	Mostly poor to somewhat poor; in places moderately good to good
Exposed stone (%)	0
Sampled profile number	-
NATIVE VEGETATION	
Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Open forest II, III, often shrubby: Mainly *E. ovata+;* better drained sites with *E. obliqua+* and *E. radiata+* or *E. viminalis+*

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in raised watertable	Waterlogging	1; low - moderate	Common: in low-lying areas	Reduced plant water-use in the catchment	Increased run-on and ponding in low-lying areas
Increased exposure of surface soil	Increased soil detachment by flood waters	Scour erosion	1; very low	Uncommon	Overgrazing, cultivating and earth-moving activities.	Increased sediment load and turbidity
Increased physical pressure on soil	Increased compaction	Structure decline	1; moderate	Uncommon	Increased trafficking, cultivation, overgrazing, export of organic matter	-
Increased soil disruption	Increased soil break-up	Streambank erosion	1; low	Uncommon	As for scour erosion above	Increased sediment load and turbidity of streams.
Comments: -						

Turton land system (Tn)

Area: 922 sq. km (4.5%)

Turton land system occurs on the Carboniferous sediments that outcrop in the central-west of the East Victorian Uplands. The terrain is mountainous with a prominant ridge-and-ravine topography, long, steep slopes and active soil creep. Relief is high and rock outcrop abundant. There is evidence of some structural control of slope shape by the outcrop of the harder quartzose members of the sediments.

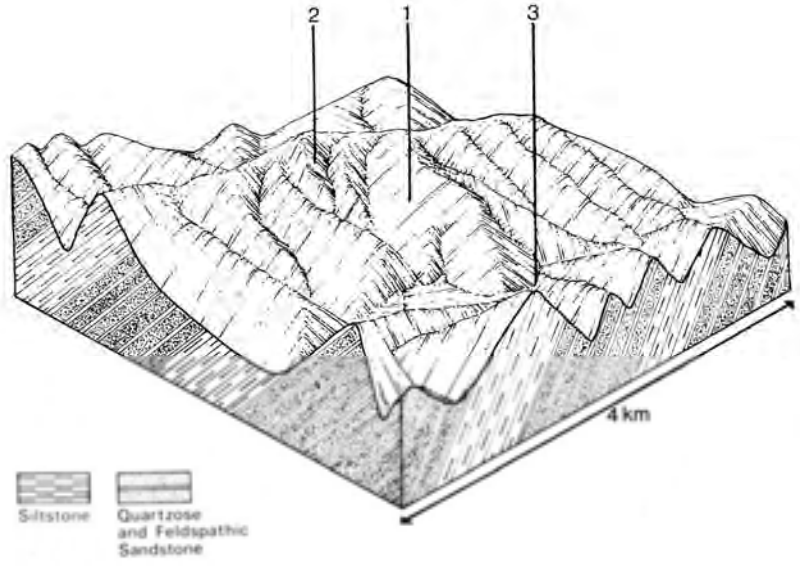
Red-bed shales also outcrop and can contribute to slope failure. The valleys of the major rivers, notably the Avon, Macalister, Mitchell and Moroka Rivers have levees and alluvial terraces similar to, though smaller than, those mapped as Walnut land system. Turton is similar in geology and topography to Macalister land system but it occurs at lower elevations and is much drier.

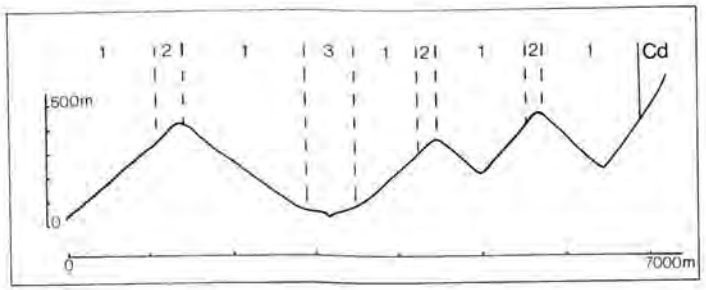
The more resistant sandstones and the more weatherable red-bed shales form two contrasting soil parent materials. However, the sandstones predominate and these, together with natural erosion on steep slopes, have produced shallow, stony soils. Rainfall is moderate and the soils are well-leached and acidic. Low clay content and erosion suppress profile development. Topsoils tend to have crumb structure but subsoils are usually earthy and apedal.

Moisture availability is generally low but it tends to be greater on protected slopes at higher elevations. This is reflected in the vegetation which is mostly dry, shrubby open forest II grading into more vigorous, humid forests with species characteristic of moister conditions at higher elevations.

Steep, forested slopes with rock outcrop along the Licola Road

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 800 - 1400; lowest January or February (40 - 80), highest October (100 - 150) Annual 8 - 12; lowest July (3 - 7), highest February (16 - 20) Temperature <10°C (av.): April - October Rainfall < potential evapotranspiration: December - February; occasional winter snow
GEOLOGY Age, lithology	Carboniferous quartzose sandstones and red-bed shales (Snowy Plains Formation)
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	Steep mountains with ridge-and-ravine topography 100 - 1340 180 - 660 Dendritic 0.9
PRESENT LAND USE	Mostly uncleared: hardwood forestry (minor timber products); bush grazing of cattle (limited); apiculture; small area in Glenaladale National Park Minor proportion cleared: grazing of beef cattle and sheep





LAND COMPONENT Percentage of land system Diagnostic features	1 80 Slopes with minor structural ledges and dry forests	2 15 Slopes with more vigorous and/or more humid forests	3 5 Discontinuous narrow terraces on major drainage depressions
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	35 - 45, (10 - 100) Straight	35 - 45, (10 - 100) Straight	Variable; (0 - 30) Straight to concave but uneven
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	Sandstone and shale; minor colluvium Generally very shallow often stony. Dark greyish brown sandy loam to loam topsoil merging into greyish brown or reddish brown sandy loam or sandy clay loam subsoil; some yellowish brown clay subsoil. Probably more organic matter in soils of component 2 Lithosols, some Red Earths and Yellow Podzolic Soils in pockets of deeper, stable soil Uc1.44, Uc4.11, Uc4.13, Urn 1.43, Urn 1.44, Um4.21, Um5.52, also Dy2.21, Dy3.21 Sandy loam to loam Slightly hard when dry, friable when moist <0.6, but deeper pockets Low Low Moderate Good Variable; 0 - 40 -		Stony alluvium No observations — probably light to medium textured, often stony soils - - - - >2.0 Low Variable Moderate to rapid Variable -
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Shrubby open forest II: Higher elevations — no site data but probably *E. dives+*, *E. rubida+* Lower elevations — generally mixed stands, species including *E. consideniana, E. dives, E. goniocalyx, E. macrorhyncha, E. mannifera, E. polyanthemos E. sideroxylon, E. sieberi*	Open forest II, often shrubby: Limited information — probably *E. rubida+* and possibly *E. delegatensis+* in the wetter areas grading into *E. cypellocarpa+* and *E. obliqua+; E. globoidea* and *E. macrorhyncha* sometimes in drier sites Occasionally closed forest II *of Acmena smithii*, climbers, ferns and epiphytes in minor drainage lines	Mainly open forest II, III often shrubby: *E. viminalis* and/or *E. radiata* either of which may be predominant; occasionally *E. melliodora+* Rarely closed forest II: *Acmena smithii*, vines, ferns and epiphytes

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in:					
	a) increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
— reduction in density of tree roots	b) increased regolith wetness	Landslip and soil creep	1; moderate 2; moderate – high	Uncommon: limited occurrence of old landslips near Licola	Accelerated by major disturbance of native vegetation	Increased sediment load
	Decreased root-binding	Landslip and soil creep	1; moderate 2; moderate - high	Uncommon: limited occurrence of old landslips near Licola	Accelerated by major disturbance of native vegetation	Increased sediment load
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1,2; moderate - high	Common	Clearing, logging, burning, overgrazing, road building and other earth-moving activities, trafficking by stock.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction	Structure decline	1; low 2; low - moderate 3; moderate	Not determined	Increased trafficking, overgrazing, export of organic matter	-
	With					
	Reduced infiltration	Sheet and rill erosion	1,2; moderate - high	Common	As for sheet and rill erosion above	Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1,2; moderate – high	Uncommon: local occurrence	As for sheet and rill erosion above	Increased sediment load
		Streambank erosion	3; high	Uncommon	As for sheet and rill erosion above	Increased sediment load
Comments: Prolonged rainfall events after clearing of native vegetation on steep slopes will increase the risk of landslips/soil creep occurring						

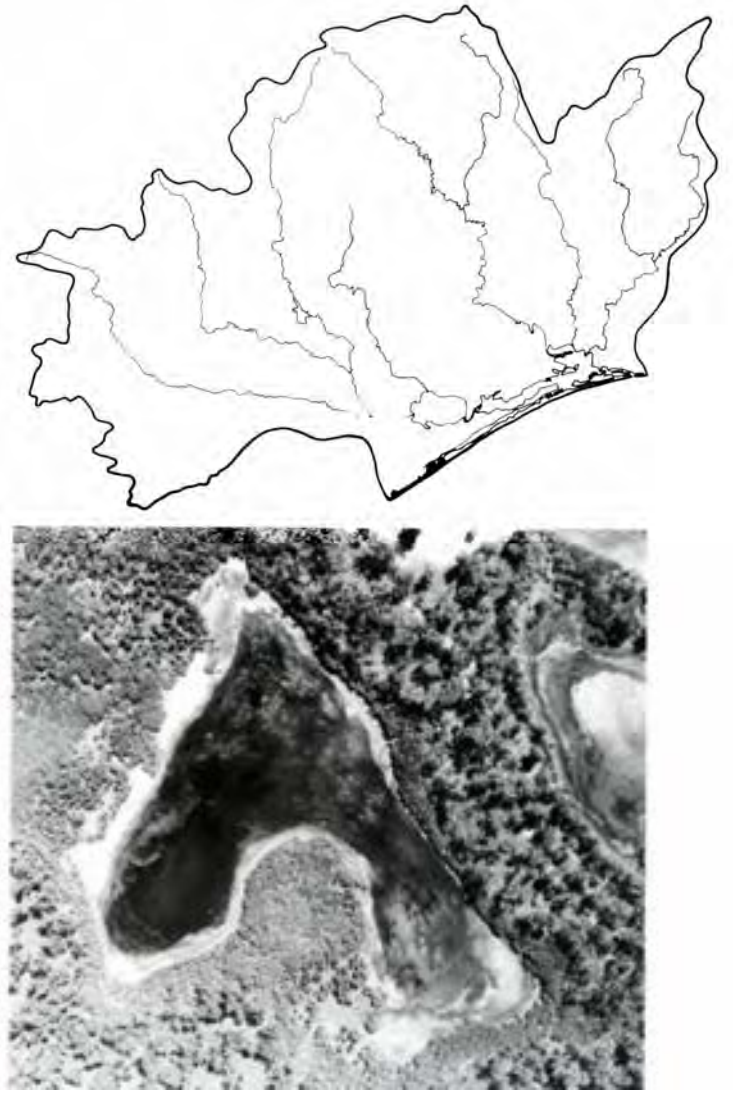
Tyers land system (Ts)

Area: 5 sq. km (<0.1%)

Tyers land system occurs on the Lake King side of the inner barrier where subsidence of the Pleistocene part of the barrier left only the tops of the old dune system protruding above lake level. Lacustrine and paludal in-filling has produced swampy flats between the old dune crests and these flats and remnant dunes are mapped in Tyers land system. The larger swamps are in Morass land system. The land forms are similar to those of Wollaston land system but their genesis is different. Also, the climate is more humid in Tyers land system.

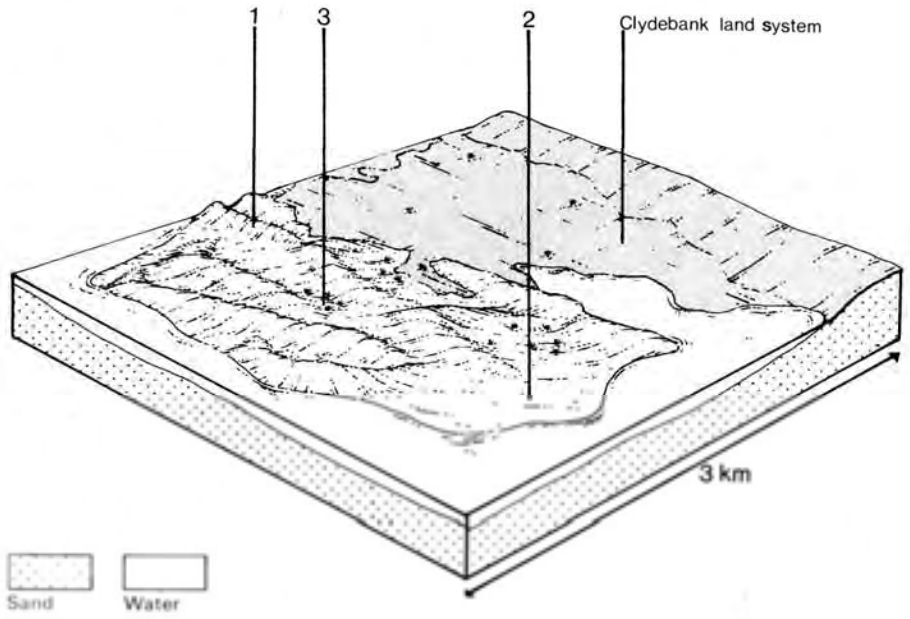
The sandy soils are acidic, infertile and droughty, with dark topsoils, bleached subsurfaces and iron and/or humus-enriched pans at depth. The dunes are susceptible to wind erosion upon disturbance.

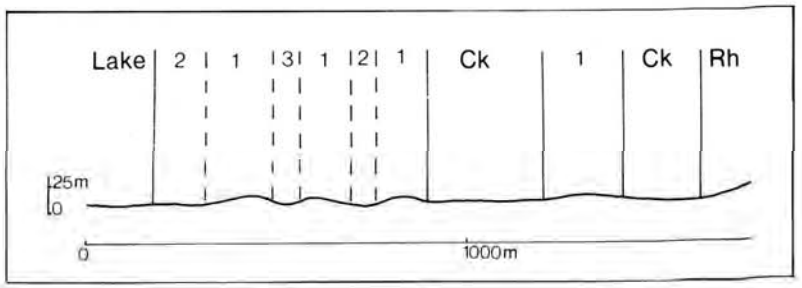
The ferny open woodland I of the dunes and the open woodland I of the flats are dominated mainly by *E. botryoides* and *E. viminalis* var. *racemosa* with *Banksia* spp. Salinas are bare of vegetation in the deepest parts and successively shallower areas towards the shore carry herbfield, rushland and a fringe of closed shrubland.



This large-scale aerial photograph of an area in the north-east of Raymond Island shows the swampy flats (shrubby vegetation, lower left) and t he tops of old dunes (trees, upper right); representative of Tyers land system.

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 600 - 900; lowest July or August (40 - 70), highest October (60 - 90) Annual 12 - 14; lowest July (9 - 10), highest February (19 - 20) Temperature <10°C (av.): No months Rainfall < potential evapotranspiration: December – March
GEOLOGY Age, lithology	Pleistocene barrier deposits of sands; Holocene lacustrine and paludal fills of fine sands and probably some peat
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	Partly buried dune systems with intervening swampy in-filled flats 0 - 20 0 - 20 Nil 0
PRESENT LAND USE	Mostly uncleared: areas in the Gippsland Lakes Coastal Park; some apiculture; holiday housing





LAND COMPONENT Percentage of land system Diagnostic features	1 25 Dunes — the relict dune crests left above lake level after subsidence of the barrier	2 25 Flats and plains — deposits in submerged interdune areas	3 50 Drainage depressions, intermittently or permanently inundated
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	10 - 15, (3 - 30) Convex	<1, (0 - 2) Straight	<1, (0 - 2) Concave
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	Aeolian sand No observations — probably acidic sand over coffee rock Podzols Sand Loose or soft >2.0 Very low Very low Very rapid Somewhat excessive 0 -	Lacustrine and paludal sand No observations — probably acidic sand - Sand Loose or soft >2.0 Very low Very low Very rapid Somewhat excessive 0 -	Aeolian sand No observations — probably black acidic sand over grey sand; may be saline in places Humic Gleys Sand Soft >2.0 Very low Very low Very rapid Very poor to somewhat poor 0 -
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Limited data — probably ferny open woodland I: *E. botryoides*+ and/or E. *viminalis* var. *racemosa*+ with *Banksia serrata* or *B. integrifolia* (near lake shores) and *Pteridium esculentum*	Limited data — probably open woodland I: *E. botryoides*+ with *B. integrifolia*	Limited data — probably zonation of vegetation with, from margins inwards: Closed scrub *of Melaleuca ericifolia* Rushland *of Juncus maritimus* Herbfield of *Salicornia* spp. Centres often with free water

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation and leaching	Nutrient loss	1; high	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
Increased exposure of surface soil	Increased wind velocity over soil and increased detachment of sand	Wind erosion	1; high 2; low	Uncommon: but locally severe	Clearing, burning, road and dam building and other earth-moving activities, trafficking by stock and vehicles.	Encroachment by sand
Increased physical pressure on soil	Increased compaction	Structure decline	1; very low 2,3; low	Uncommon	Increased trafficking, export of organic matter	-
Increased soil disruption	Increased loosening of sand	Wind erosion	1; high 2; low	Uncommon: but locally severe	As for wind erosion above	Encroachment by sand
Comments: Regeneration of vegetative cover on the dunes is usually slow because of low-fertility soils and exposure to wind						

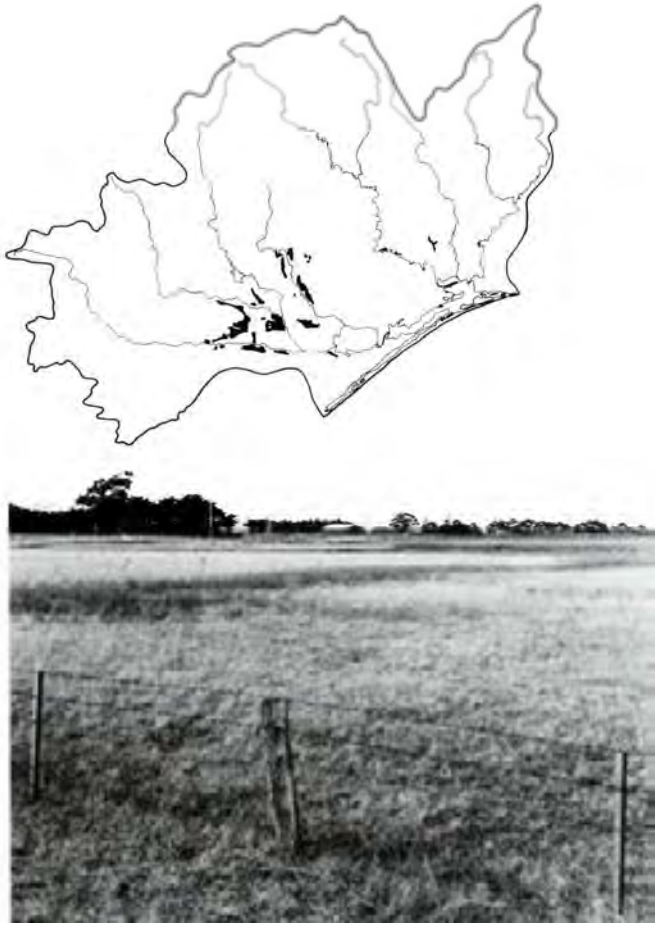
Valencia land system (Va)

Area: 158 sq. km (0.8%)

Sea level began to fall after deposition of the earliest Pleistocene terrace materials. A temporary cessation of this fall led to the formation of a less-extensive, lower Pleistocene terrace, remnants of which can be found along the flanks of most of the major river valleys. Valencia and Yinnar land systems are mapped on this terrace. Valencia land system occurs in the main rain-shadow area of the Eastern lowlands on almost flat plains similar to those of Redgum 2 land system but with traces of fluviatile land forms still evident and with more variable and generally younger soils. Yinnar land system occurs further to the west in a more humid climate on terraces derived from Cretaceous sediments.

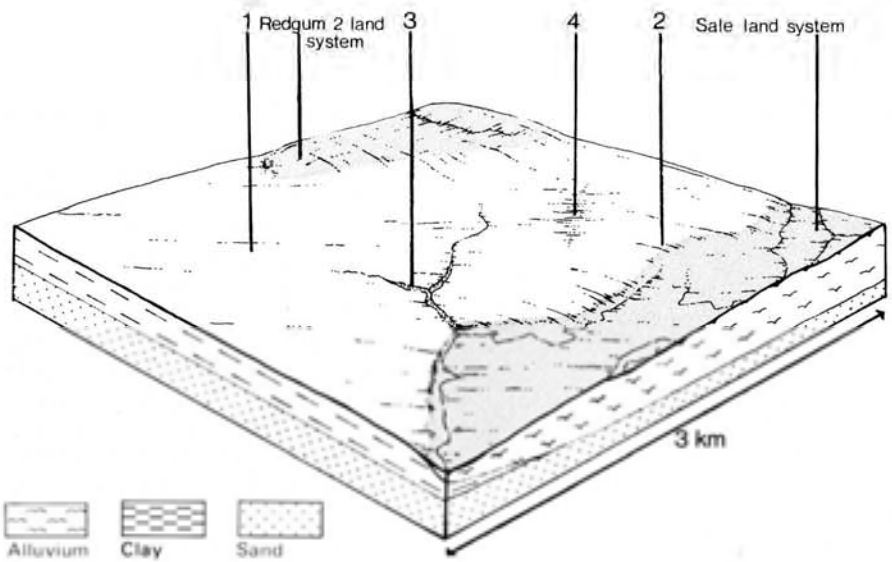
Due to the stability of the very gently undulating to flat terrain, most soils have developed a duplex profile; further profile development has been limited by the clayey parent materials and rather poor drainage. The degree of mottling is variable but it usually occurs in the clay subsoils and frequently in the upper horizons as well. The topsoils are strongly to mildly acidic while the subsoils are mostly neutral to alkaline, probably caused by the presence of sodium. Erosion is generally minor but the sodic soils are susceptible to gully erosion along the margins of the terrace. The rain-shadow effect combined with poor internal drainage creates a low to moderate salinity hazard.

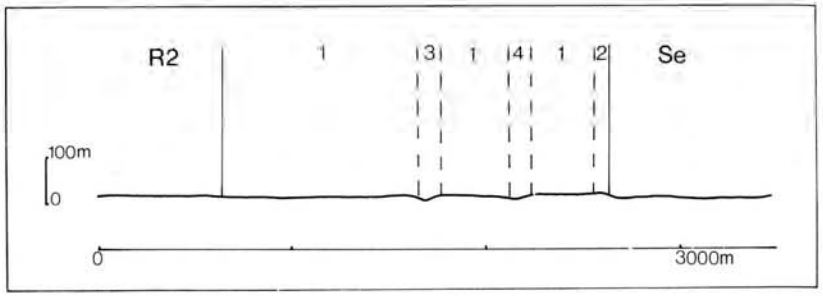
The native vegetation, almost entirely cleared, appears to have been mainly a grassy open forest II dominated by E. *tereticornis*, with closed rushland in wetter back swamps.



An almost flat plain with a poorly drained depression of a relict back-swamp

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 500 - 800; lowest July (30 - 50), highest October (50 - 80) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	 Lower Pleistocene alluvium; gravels, sands, minor silts and clays
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Almost flat alluvial plains of the second-highest terrace level 0 - 80 0 - 10 Dendritic 0.8
PRESENT LAND USE	Cleared: grazing of beef and dairy cattle on improved pastures; cropping (limited); apiculture; irrigation of some pastures and crops





LAND COMPONENT Percentage of land system Diagnostic features	1 85 Broad almost flat plains	2 5 Sloping terrace margins	3 5 Drainage depressions of minor streams	4 5 Relict back-swamps, poorly drained and possibly now functioning as drainage areas
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	1 - 2, (0 - 5) Straight	Variable, (0 - 10) Convex	<2 Concave	<1 Straight
SOIL Parent material	Mostly clay and silt but also some sand and gravel			
Description	Very dark and sometimes mottled sandy loam to clay loam topsoil changing abruptly to yellowish brown clay subsoil with many grey and brown mottles	Limited observations — probably similar to component I but top-soil free of mottles and subsoil brown or reddish brown with few or no mottles	Limited observations — probably dark greyish brown loamy sand typical; possibly some black heavy soils	No observations — probably black heavy soil, mottled at depth; yellowish brown mottled duplex soils have been observed in similar situations in other land systems
Classification	Solodic Soils Dy3.42, Dy3.43, Dy3.33, Dy3.23 Db2.23, Dy3.32, Dy2.33	Red Podzolic Soils Dr2.21	Alluvial Soils Ucl.21, Ucl.23	Wiesenboden, Humic Gleys -
Surface texture	Sandy loam to clay loam	Sandy loam to clay loam	Variable	Silty clay loam or heavier textures
Surface consistence	Friable to firm when moist	Friable to firm when moist	Soft to hard when dry	Firm when moist
Depth (m)	>2.0	>2.0	>2.0	>2.0
Nutrient status	Low to moderate	Low to moderate	Low to moderate	Moderate
Available soil water capacity	Low to moderate	Low to moderate	Low to moderate	Moderate
Perviousness to water	Slow	Slow	Slow to rapid	Very slow
Drainage	Poor to somewhat poor	Moderately good to good	Somewhat poor to good	Very poor to poor
Exposed stone (%)	0	0	0	0
Sampled profile number	59, 66	-	-	-
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Grassy open forest II: *E. tereticornis* Closed rushland *of Juncus* spp. in wetter areas Clearing has made it difficult to determine if any other predominant or associated tree species			

Disturbance	Affected process and trend	Primary resultant deterioration			Causal activities	Primary off-site process
		Form	Susceptibility of components	Incidence within components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in: a) increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
	b) raised watertable	Salting	2,3; moderate	Uncommon: isolated occurrences	Reduced plant water-use in the catchment	Raised watertable
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	2; low - moderate 3; low	Uncommon	Clearing, cultivation, overgrazing, road and dam building and other earth-moving activities, rabbit burrowing, trafficking by stock and vehicles.	Increased sedimentation and ponding in low-lying areas
Increased physical pressure on soil	Increased compaction	Structure decline	1,2; low 3,4; moderate	Uncommon	Increased trafficking, overgrazing, export of organic matter	-
	With Reduced infiltration	Sheet and rill erosion	2; low - moderate 3; low	Uncommon	As for sheet and rill erosion above	Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	2,3; low	Uncommon	As for sheet and rill erosion above	Increased sediment load.
Comments: Disturbances on adjoining land systems cause localised sheet, rill and gully erosion problems in the Valencia land system						

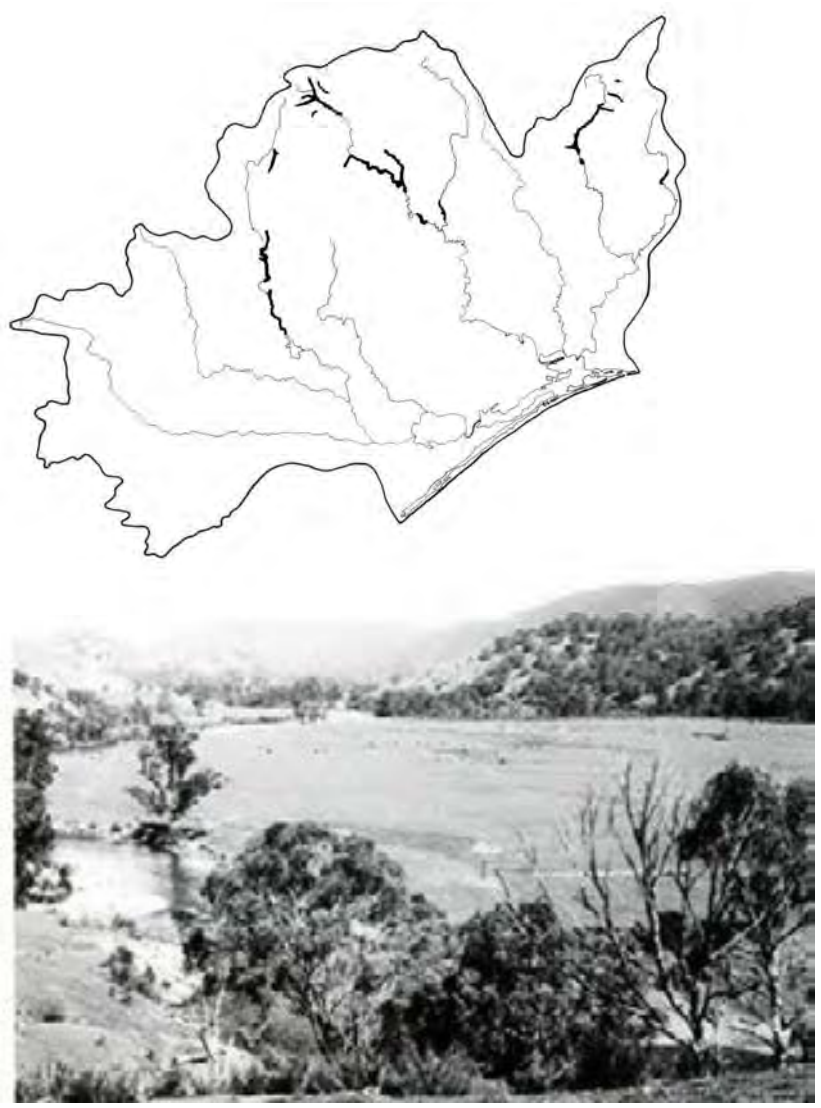
Walnut land system (Wt)

Area: 82 sq. km (0.4%)

Walnut land system is mapped on the larger alluvial floors at low elevations in the East Victorian Uplands. Fluvial dynamics have been complex and a number of terraces and encroaching colluvial deposits are characteristic. Most occurrences are in the eastern half of the Uplands and they are commonly associated with areas of Dargo land system. Here they contain stored alluvium held back by resistant rock bars which form local stream base levels. Many of the major streams have levees and alluvial flats, too small to map at the scales used, but these are essentially part of the Walnut land system.

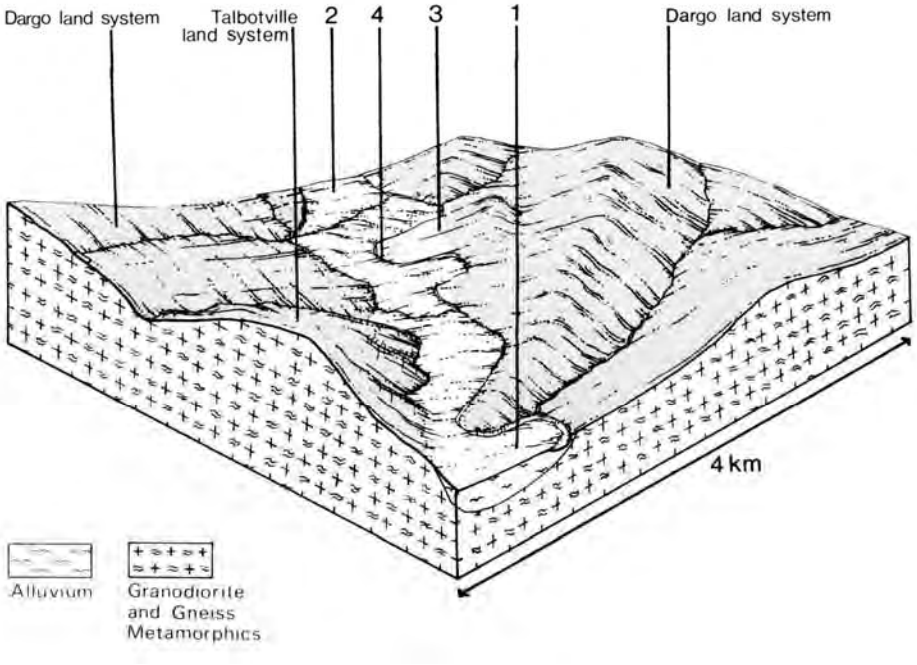
Soils occurring on the younger terraces still receive sediments during floods and little soil development has taken place beyond darkening of topsoils by organic matter accumulation and some surface structural development. Subsoils still show stratification of the alluvial sediments. Due to good internal drainage, subsoils are brown and not mottled. Glistening mica flakes can often be observed and are indicative of good reserves of potash. Minor swampy areas that have soils of low permeability are associated with these younger terraces. Limited observations indicate that the older terraces have variable soils, possibly reflecting differences in age, texture and mineralogy of parent materials. Textures may become more clayey with depth as a result of soil-forming processes. Duplex and gradational soils have been observed as well as soils with little textural differentiation. On most of the older terraces, subsoils tend to be brightly coloured, ranging from yellowish brown to reddish brown and may or may not show structural development.

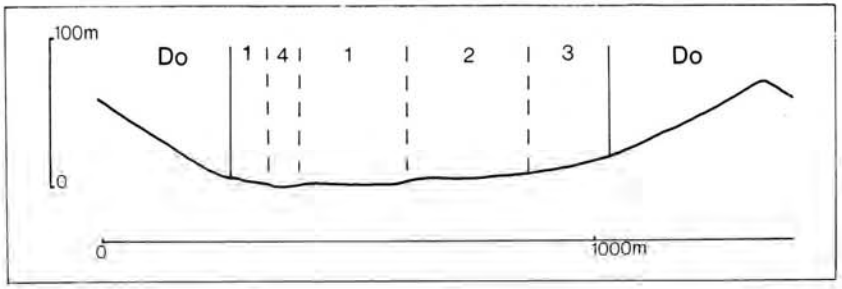
The original vegetation, now largely cleared, appears to have been mainly open forest II and III, with closed sedgeland in swampy places.



An alluvial terrace with relict stream channels, large enough to be mapped in Walnut land system, is surrounded by the partly cleared slopes of Wonnangatta land system. The forested slopes are in Talbotville land system

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 600 - 900; lowest July (40 - 70), highest October (60 - 90) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): May - September Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	 Holocene fluviatile deposits of sands, silts, some clays and gravels
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Terraced alluvial floors at low elevations in the highlands 100 - 900 0 - 10 Sinuous channel 1.7
PRESENT LAND USE	Mostly cleared: grazing of beef cattle on improved and native pastures; occasional cropping





LAND COMPONENT Percentage of land system Diagnostic features	1 50 Younger lower terraces, with fluviatile forms preserved, subject to flooding	2 30 Older higher terraces, now erosional, not flood prone	3 10 Minor fan deposits adjacent to higher land	4 10 Main channel, often slightly braided
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	1 - 2, (0 - 5) Straight but uneven	1 - 2, (0 - 5) Straight but uneven	15 - 25, (10 - 30) Slightly concave	<1, (0 - 2) Concave
SOIL Parent material	Alluvial sand, silt and some clay and gravel often stratified at depth		Colluvium of variable texture	-
Description	Very dark greyish brown loamy sand to silty clay loam topsoil over structureless brown subsoil	Very dark greyish brown loamy sand to sandy clay loam topsoil over brown or reddish brown subsoil with variable texture and structure	Limited observations — probably mainly dark greyish brown loamy topsoil grading into or resting on yellowish brown clay subsoil, with some gravel	No soils; often gravelly bed loads
Classification	Alluvial Soils, minor Humic Gleys Uc5.21, Um5.52, Um6.22, Uc1.23, Uc1.43, Uml.44	Non-calcic Brown Soils, Earthy Sands, Solodic Soils, Red-brown Earths Uc5.21, Um4.25, Um4.31, Gn3.26, Dr2.23	Alluvial Soils Uc1.4-, Um1.4-	-
Surface texture	Variable; sand to clayey sand	Loamy sand to sandy clay loam	Sandy and loamy textures	-
Surface consistence	Loose to friable when moist	Slightly hard to very hard when dry	Slightly hard to hard when dry	-
Depth (m)	>2.0	>2.0	>2.0	-
Nutrient status	Low for sands, otherwise moderate	Low to moderate	Low to moderate	-
Available soil water capacity	Low for sands, otherwise moderate	Low to moderate	Low to moderate	-
Perviousness to water	Moderate to rapid	Variable; slow to rapid	Slow	-
Drainage	Good	Good	Moderately good to good	-
Exposed stone (%)	0	0	Probably <10	-
Sampled profile number	18, 22	21	-	-
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+Predominant species)	Open forest II, III: *E. melliodora*+ and/or E. *viminalis*+ or occasionally *E. elata+;* understorey often includes *Melaleuca ericifolia*, *Leptospermum* spp., *Callistemon* spp. Occasional swamps with closed sedgeland, usually of *Carex appressa*	Mainly open forest II, III: *E. melliodora* and/or E. *viminalis* predominant; *E. radiata. E. ovata* (in wetter areas) or E. *stellulata* (at higher elevations) sometimes associated		Fringing vegetation similar to component 1

Disturbance	Affected process and trend	Primary resultant deterioration			Causal activities	Primary off-site process
		Form	Susceptibility of components	Incidence within components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams'
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1,2; low 3; moderate	Uncommon	Clearing, cultivation, overgrazing, road and dam building and other earth-moving activities, trafficking by stock and vehicles.	Increased sediment load and stream flow
Increased physical pressure on soil	Increased compaction	Structure decline	1,2; low - moderate 3; low	Uncommon	Increased trafficking, cultivation, overgrazing, export of organic matter	-
Increased soil disruption	Increased soil break-up	Gully erosion Scour erosion Streambank erosion	3; moderate 1; high 1; high	Uncommon Common: locally severe Common: partly a natural process	As for sheet and rill erosion above As for sheet and rill erosion above As for sheet and rill erosion above	Increased sediment load and streamflow Increased sediment load and streamflow Increased sediment load and streamflow
Comments: Regeneration of vegetative cover is usually rapid because of high soil fertility and high moisture availability. However, engineering works may be required to help restore vegetation on eroded streambanks						

Wellington land system (Wn)

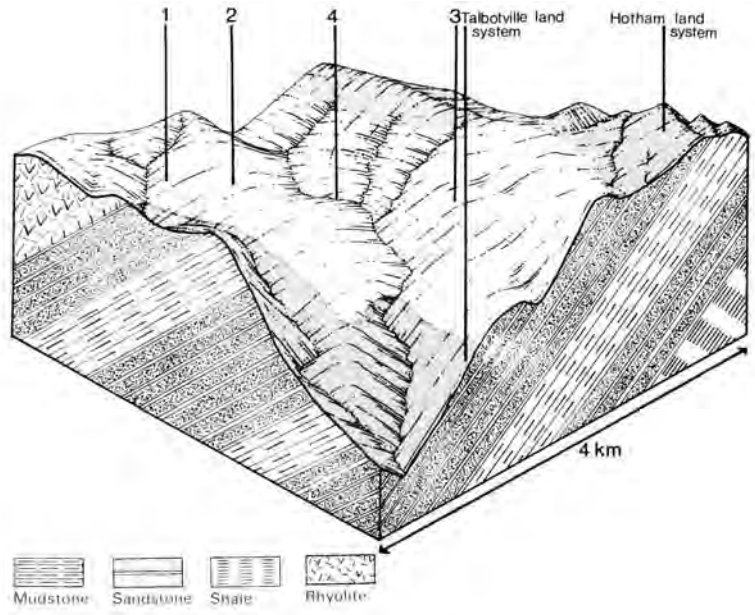
Area: 418 sq. km (2.0%)

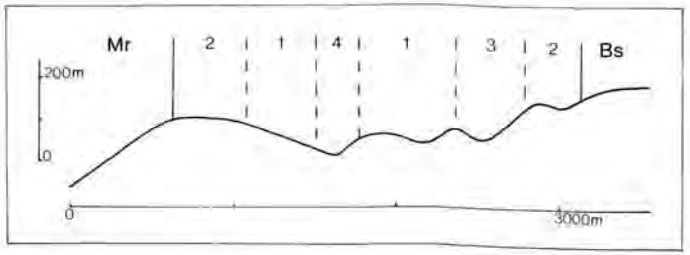
Wellington land system occurs below the subalpine tract in the East Victorian Uplands, on partially-dissected, prior-landscape remnants that probably predate the Older Volcanics. These remnants have not yet been affected by erosion associated with entrenchment of the modern drainage network. The topography is hilly to undulating and plateau tops are almost accordant. Lithology varies but acid volcanics, metamorphic rocks and slightly-weathered, sedimentary rocks are well represented. Jamieson land system is also mapped on hilly to undulating, prior land surfaces that probably predate the Older Volcanics and which are below the subalpine tract. Plateaux in Wellington land system differ from those in Jamieson, having greater relief and being more humid and densely forested, particularly in the west. The soils have developed on moderately steep slopes and under high rainfall on a variety of parent rocks. There is a predominance of gradational, leached, acidic soils of intermediate texture, moderately to strongly structured throughout. Where slopes are steeper, or the rocks are more resistant to weathering, the soils tend to be shallow and uniform in texture.

Most of the area is covered by open forest II or III, often shrubby or layered, with less vigorous stands on shallow, rocky soils.

View across to the gentle to moderate slopes of the plateau surface

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 900 - 1600; lowest January or February (50 - 90), highest August or September (120 - 180) Annual 8 - 12; lowest July (3 - 7), highest February (16 - 20) Temperature <10°C (av.): April - October Rainfall < potential evapotranspiration: February; frequent winter snow
GEOLOGY Age, litholo**gy**	Variable; mainly Ordovician undifferentiated sandstones, mudstones and shales, often metamorphosed; Devonian rhyolites and rhyodacites
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	Partially dissected hilly to undulating prior landscape residuals 560 - 1460 100 - 500 Dendritic 0.9
PRESENT LAND USE	Uncleared: hardwood forestry (mostly ash timber with some timber for general construction); bush grazing of cattle; apiculture





LAND COMPONENT	1	2	3	4
Percentage of land system	40	40	15	5
Diagnostic features	Moderate slopes with deeper soils; sedimentary or igneous rocks	Gentle slopes with deeper soils; sedimentary or igneous rocks	Slopes of any gradient with shallow rocky soils; mainly Ordovician sediments	Drainage depressions, often with minor swamps
PHYSIOGRAPHY				
Slope %, typical and (range)	20 - 30, (15 - 50)	5 - 10, (2 - 15)	20 - 30, (15 - 50)	Variable, (10 - 40)
Slope shape	Straight to concave	Mainly concave	Straight to convex	Straight, some concave
SOIL				
Parent material	Variable; mostly rhyolite, rhyodacite, and siltstone; minor granodiorite		Sandstone, mudstone and shale	Colluvium and alluvium
Description	Mainly dark brown sandy clay loam grading into yellowish brown to reddish brown sandy clay loam to light clay with fine structure, commonly stony; topsoil often deep		Mainly shallow brown stony sandy loam to sandy clay loam	Limited observations — probably dark, undifferentiated with much organic matter and variable texture
Classification	Red and Brown Earths; Krasnozems		Lithosols, Brown Earths	Humic Gleys
	Gn4.11, Gn4.31, Gn3.11, Gn2.11, Gn4.81, Um4.21, Um6.11, Um6.12, Um6.23, Um7.11		Um-, Um6.23, Uc1.44	Uc1.24
Surface texture	Sandy clay loam, sometimes loam or clay loam		Sandy loam to sandy clay loam	-
Surface consistence	Soft when dry, friable when moist		Friable when moist	-
Depth (m)	Generally 1.0 - 2.0		<0.8	-
Nutrient status	Low to moderate		Low	Probably low
Available soil water capacity	Moderate		Low	Probably moderate
Perviousness to water	Rapid		Slow to moderate	Probably rapid
Drainage	Good		Good	Very poor to poor on alluvium; better on colluvium
Exposed stone (%)	Often 0, but 5 - 30 not uncommon		Probably >10	Probably 0
Sampled profile number	32	-	-	-
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Mostly open forest II, III, often shrubby or layered: Mixed or pure stands with composition dependent on elevation and aspect; Higher elevations — *E. delegatensis, E. dives, E. pauciflora, E. radiata, E. rubida* Lower elevations — *E. cypellocarpa, E. dives, E. obliqua, E. regnans,*		Open forest I or II: species including — and occasionally *E. nitens, E. viminalis*	Limited observations — probably open forest I *of Leptospermum grandifolium*

Disturbance	Affected process and trend	Primary resultant deterioration			Causal activities	Primary off-site process
		Form	Susceptibility of components	Incidence within components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality — reduction in density of tree roots	Reduced transpiration, resulting in: a) increased deep percolation	Not determined	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
	b) increased regolith wetness	Soil creep	1; moderate	Uncommon: observed occasionally on steep slopes as a natural process	Usually after the removal of trees from steeper land	Increased sediment load
	Decreased root-binding	Soil creep	1; moderate	Uncommon: observed occasionally on steep slopes as a natural process	Accelerated by major disturbance to the native vegetation	Increased sediment load
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1,3; moderate 2; low - moderate	Uncommon: locally severe	Clearing, logging, burning, overgrazing, road building and other earth-moving activities, trafficking by stock.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction	Structure decline	1,2; moderate 3; low 4; moderate – high	Uncommon	Increased trafficking, export of organic matter	-
	With Reduced infiltration	Sheet and rill erosion	1,3; moderate 2; low - moderate	Uncommon: locally severe	As for sheet and rill erosion above	Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1,2,3,4; moderate	Uncommon	As for sheet and rill erosion above	Increased sediment load.
Comments: -						

Westbury 1 land system (W1)

Area: 166 sq. km (0.8%)

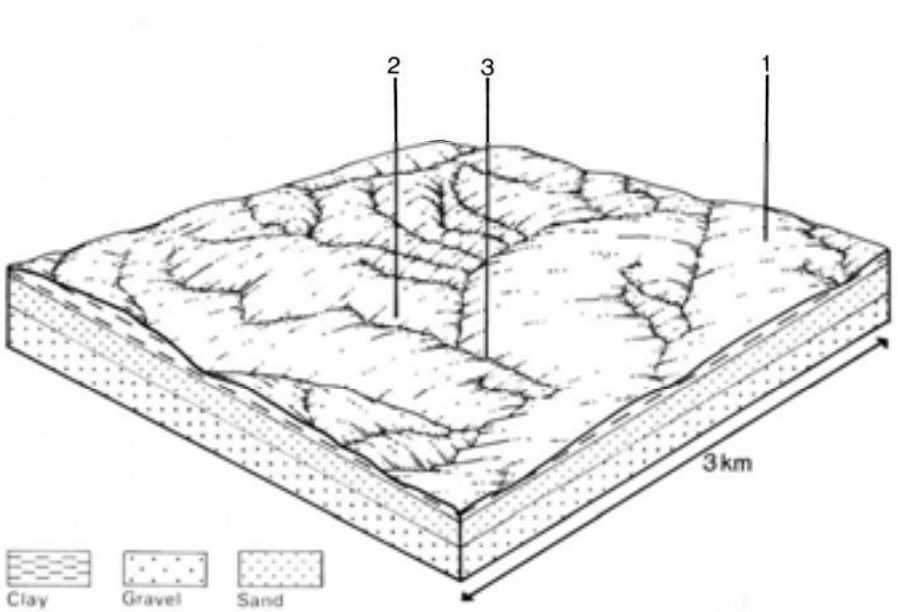
Westbury 1 land system occurs on the earlier Pleistocene terrace and on the more distal parts of the Tertiary flood plain deposits. These deposits have been dissected to form low hills and sloping to undulating plains and most of the original land surface has been removed. Westbury 1 differs from Westbury 2 land system in having a drier climate with associated changes in vegetation and from Redgum 1 land system in having greater relief.

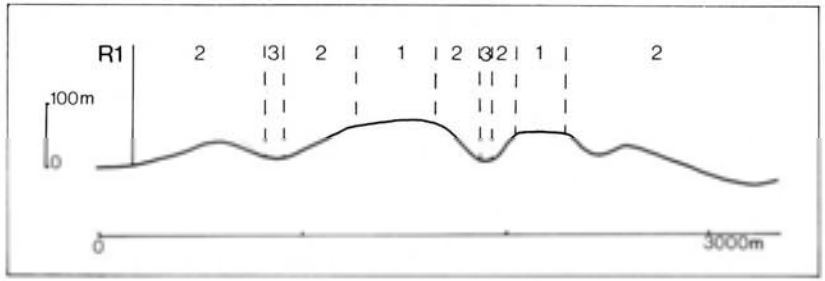
The materials of Tertiary and Early Pleistocene deposits were pre-weathered and further weathering has taken place. The soils are deep, leached and almost invariably have yellowish brown duplex profiles. There is some variation in texture and consistence of the topsoil, in the degree of subsurface mottling and in the reaction of the lower subsoil which may range from strongly acid to neutral. The subsoils with neutral reaction are probably highly dispersible and prone to gully erosion.

The remaining native vegetation is mainly an open forest II, often shrubby. Similar vegetation was probably predominant prior to clearing.

The cleared gentle slopes contrast with the timbered steeper slopes of Tambo land system

CLIMATE	
Rainfall, mean (mm)	Annual 600 - 900; lowest July or August (30 - 50), highest October (50 - 80)
Temperature, mean (°C)	Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21)
Seasonal growth limitations	Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY	
Age, lithology	Distal parts of Tertiary floodplain deposits and some Lower Pleistocene terrace deposits; gravels, sands, silts and clays
PHYSIOGRAPHY	
Landscape	Sloping to undulating plains and low hills
Elevation range (m)	0 - 200
Relative relief (m)	10 - 120
Drainage pattern	Dendritic
Drainage density (km/km^2)	1.0
PRESENT LAND USE	Mostly cleared: grazing of beef cattle and sheep on improved pastures; softwood plantations (limited) Minor proportion uncleared: bush grazing of cattle (limited); apiculture





LAND COMPONENT Percentage of land system Diagnostic features	1 10 Almost flat plateaux remnants	2 80 Gentle to moderate slopes, rarely steep	3 10 Drainage depressions, in places permanently wet
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	2, (0 - 5) Straight	4 - 8, (0 - 15) Variable	2, (0 - 5) Concave
SOIL Parent material Description Classification Surface Texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	Mainly clay, silt and sand with some intermixed quartz gravel Very dark greyish brown, sometimes black, sand to sandy clay loam topsoil grading into greyish brown or yellowish brown sandy clay loam subsurface soil, sometimes mottled. Abrupt change to yellowish brown, dark yellowish brown or reddish brown strongly mottled clay subsoil. Subsoil generally moderately to strongly acidic, sometimes neutral at depth Mostly Yellow Podzolic Soils; some Solodic Soils, Soloths; rarely Brown or Red Podzolic Soils Dy3.21, Dy3.41, Dy3.42, Dy3.31, Dy2.21; rarely Db2.11, Db2.21, Db4.21, Dr5.21 Sand to sandy clay loam; mostly sandy loam Friable when moist >2.0 Low Moderate Very slow to slow Mostly somewhat poor Usually 0 55, 67	49, 51	Locally derived alluvium Limited observations — probably variable; dark grey deep sand and strongly mottled grey clay; soil reaction acidic Alluvial Soils, Humic Gleys Uc1.21, Gn3.91 Sand to sandy clay loam Friable when moist >2.0 Low Variable Very variable Mostly very poor to poor 0 -
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Open forest II, often shrubby: Mainly mixed forests, though occasionally pure stands, species including — *E. globoidea*, *E. sieberi* (most common predominants), *E. tereticornis*, *E. bosistoana*, *E. cypellocarpa*, *E. baxteri* (often predominant), *E. melliodora* and *E. sideroxylon*		Open forest II, III often shrubby: *E. bridgesiana*+ and/or *E. globulus*+ often occurring in association with *E. ovata*, *E. radiata* or *E. melliodora*

Disturbance	Affected process and trend	Primary resultant deterioration			Casual activities	Primary off-site process
		Form	Susceptibility of components	Incidence with components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1; low 2; moderate	Not determined	Cultivating, overgrazing, road and dam building and other earth-moving activities, trafficking by stock and vehicles.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1,2; low 3; low – high 1; low 2; moderate	Not determined Not determined	Increased trafficking, cultivation, overgrazing, export of organic matter As for sheet and rill erosion above	- Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1,3; low 2; moderate	Not determined	As for sheet and rill erosion above	Increased sediment load and turbidity in streams
Comments: No observations of deterioration						

Westbury 2 land system (W2)

Area: 361 sq. km (1.8%)

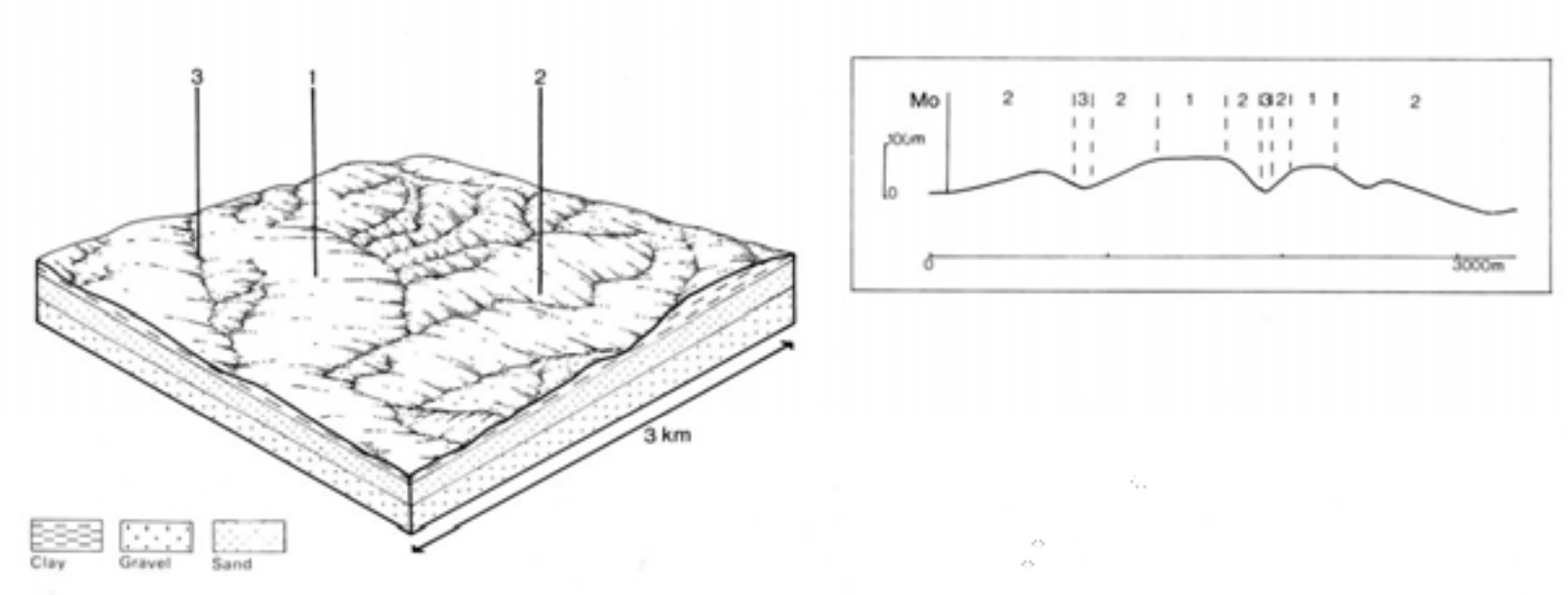
Westbury 2 is similar to Westbury 1, consisting of gently undulating plains and low hills on the earlier Pleistocene terrace and the more distal parts of the Tertiary flood plains deposits. Dissection is well established with most of the original land surface having been removed. However, quite large remnants of the original surface occur near Westbury. Westbury 2 differs from Westbury 1 in that it occurs in the humid Western lowlands and hence has a more humid climate with associated vegetation differences.

Soils are very similar to those in Westbury 1 and are deep, leached, very acidic and of low fertility. Yellowish brown duplex soils predominate but there is some variation in topsoil texture and consistency, degree of subsurface mottling and the reaction of the lower subsoil, which ranges from strongly acidic to neutral. The subsurface soil tends to become fluid when wet. The subsoils with neutral reaction are probably highly dispersive and susceptible to gully erosion.

The vegetation was probably mainly an open forest II, often shrubby prior to clearing. Only small areas of native vegetation now remain.

Gentle slopes, typical of Westbury 2 land system, south of Traralgon

CLIMATE	
Rainfall, mean (mm)	Annual 700 - 1200; lowest January (40 - 70), highest October (70 - 100)
Temperature, mean (°C)	Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21)
Seasonal growth limitations	Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY	
Age, lithology	Distal parts of Tertiary floodplain deposits and Lower Pleistocene terrace deposits; gravels, sands, silts and clays
PHYSIOGRAPHY	
Landscape	Sloping to gently undulating plains and low hills
Elevation range (m)	20 - 200
Relative relief (m)	10 - 120
Drainage pattern	Dendritic
Drainage density (km/km^2)	1.0
PRESENT LAND USE	Mostly cleared: grazing of beef and dairy cattle and, to a lesser extent sheep on improved pastures; softwood plantations (limited) Minor proportion uncleared: bush grazing of cattle (limited); apiculture



LAND COMPONENT	1	2	3
Percentage of land system	15	75	10
Diagnostic features	Almost flat plateaux remnants	Gentle to moderate slopes, rarely steep	Drainage depressions, in places permanently wet
PHYSIOGRAPHY			
Slope %, typical and (range)	2, (0 - 5)	4 - 8, (0 - 15)	2, (0 - 5)
Slope shape	Straight	Variable	Concave
SOIL			
Parent material	Mainly clay, silt and sand, with some intermixed quartz gravel		Locally derived alluvium
Description	Very dark greyish brown sandy loam to sandy clay loam topsoil grading into greyish brown or yellowish brown sandy clay loam subsurface soil, sometimes mottled and fluid when wet. Yellowish brown or dark yellowish brown strongly mottled clay subsoil below. Subsoil usually moderately to strongly acidic, sometimes neutral at depth		Limited observations — probably variable; strongly mottled pale brown to grey medium to heavy textured soils observed
Classification	Mostly Yellow Podzolic Soils and Soloths; some Solodic Soils; rarely Brown Podzolic Soils Dy3.41, Dy3.21, Dy3.42, Dy3.22; rarely Db2.41, Db2.42, Gn4.81		Humic Gleys -
Surface texture	Mostly sandy loam to sandy clay loam		Sand to sandy clay loam
Surface consistence	Friable when moist		Friable when moist
Depth (m)	>2.0		>2.0
Nutrient status	Low		Low
Available soil water capacity	Moderate		Variable
Perviousness to water	Very slow to slow		Probably variable
Drainage	Mostly somewhat poor		Very poor to poor
Exposed stone (%)	Usually 0		0
Sampled profile number	60	50	-
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Open forest II: Mainly mixed forests with variable composition, species including — *E. dives, E. obliqua, E. radiata, E. bridgesiana* (one or more of which predominant) *E. cephalocarpa* and, in some more poorly drained areas, *E. ovata*		Open forest II, III, often shrubby: Limited data — probably *E. viminalis*+ and/or *E. ovata+; E. obliqua, E. radiata* and *E. bridgesiana* commonly associated

Disturbance	Affected process and trend	Primary resultant deterioration			Causal activities	Primary off-site process
		Form	Susceptibility of components	Incidence within components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1; low 2; moderate	Not determined	Clearing, overgrazing, road and dam building and other earth-moving activities, trafficking by stock and vehicles.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1,2; low 1; low 2; moderate	Not determined Not determined	Increased trafficking, cultivation, overgrazing, export of organic matter As for sheet and rill erosion above	- Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1,2; low 3; moderate	Not determined	As for sheet and rill erosion above	Increased sediment load
Comments: No observations of deterioration						

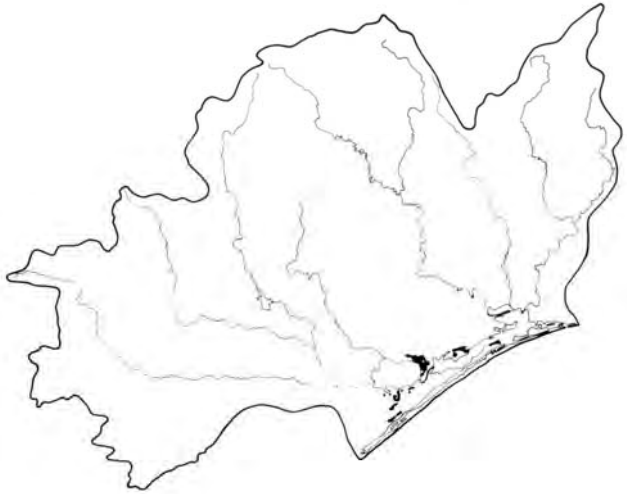
Wollaston land system (Wo)

Area: 28 sq. km (0.1%)

Wollaston land system is found in the area surrounding the Gippsland Lakes in association with Clydebank and Morass land systems. The main components are sand dunes and intervening, often swampy, flats similar to, though smaller than, swamps mapped in Morass land system. The geomorphic history is obscure. The dunes are possibly the result of reshaping of the prior and inner barrier systems during the last major sea level fall. The intervening flats may have a more recent lacustrine or paludal origin. Wollaston and Tyers land systems are similar in that they are composed of dunes with intervening flats but they differ in geomorphic history and Wollaston has a slightly drier climate.

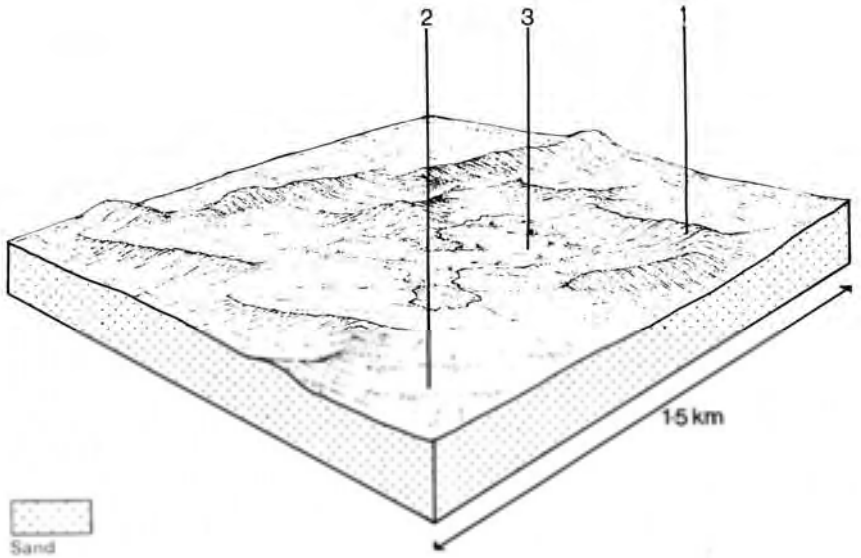
Where the sands are deep, the soils are acidic, infertile and droughty, with dark topsoils and bleached subsurfaces. Iron and/or humus-enriched pans occur at depth. Elsewhere, clays and silts underlie a relatively thin cover of sand, producing duplex soils with mottled, sodic clay subsoils.

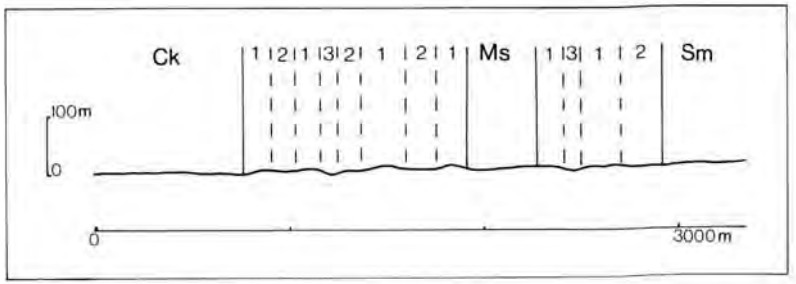
The vegetation on the dunes is a ferny open woodland I dominated mainly by *E. viminalis* var. *racemosa* and *Banksia* spp. The less sandy swales carry a woodland I of *E. tereticornis*. The deeper depressions, which are often inundated, have a zonation of vegetation towards the centre.



Low dunes and relict lacustrine flats with Melaleuca ericifolia *(swamp paper-bark) growing in wet depressions*

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 500 - 800; lowest January (30 - 50), highest October (40 - 70) Annual 12 - 14; lowest July (9 - 10), highest February (19 - 20) Temperature <10°C (av.): July Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	Pleistocene barrier deposits of sands; Holocene lacustrine fill of sands and clays and minor paludal fills
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Sand dunes and intervening flats and stranded beach lines 0 - 20 0 - 20 Deranged 0.1
PRESENT LAND USE	Mostly uncleared: areas in The Lakes National Park, Lake Coleman, Dowd Morass and Blond Bay State Game Reserves; apiculture; grazing of sheep and cattle (limited)





LAND COMPONENT Percentage of land system Diagnostic features	1 45 Dunes	2 45 Relict lacustrine flats and stranded beach lines	3 10 Depressed, wet, saline, inter-dune areas
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	5- 10, (2- 15) Convex	<1, (0- 2) Straight	<1, (0- 2) Concave
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	 Wind-sorted sand of marine origin Single observation but predictably dark sand over grey sand with coffee rock or bright yellowish brown sand below Podzols Uc4.32 or Uc4.22 Sand Loose or soft >2.0 Very low Very low Very rapid Somewhat excessive 0 -	 Lacustrine sand and clay Single observation — black sand over grey sand with mottled alkaline clay below. Possibly other soils Solodic Soils Dy5.23 Loamy fine sand Soft >2.0 Low Low Slow Poor to somewhat poor 0 -	 Wind-sorted sand of marine origin No observations — probably black acid sand over grey sand, possibly with coffee rock at depth where water table is deeper Humic Gleys, possibly some Podzols - Sand Soft >2.0 Very low Low Very rapid Very poor to poor 0 -
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Ferny open woodland I: *E. viminalis* var. *racemosa*+ with *Banksia serrata*+ or *B. integrifolia* (near lake shore) and *Pteridium esculentum*	Woodland I: *E. tereticornis*+	Zonation of vegetation with, from margins inwards: Closed scrub *of Melaleuca ericifolia*+ Rushland *of Juncus maritimus*+ Herbfield of *Salicornia* spp.+ Centres often with free water

Disturbance	Affected process and trend	Primary resultant deterioration			Causal activities	Primary off-site process
		Form	Susceptibility of components	Incidence within components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in increased deep percolation and leaching	Nutrient loss	1; high	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams
Increased exposure of surface soil	Increase wind velocity over soil and increased detachment of sand	Wind erosion	1; high	Uncommon; local occurrence	Clearing, burning, road building and other earth-moving activities, trafficking by stock and vehicles.	Encroachment by sand
Increased physical pressure on soil	Increased compaction	Structure decline	1; very low 2; low 3; low - moderate	Uncommon	Increased trafficking, cultivation, overgrazing, export of organic matter	-
Increased soil disruption	Increased loosening of sand	Wind erosion	1; high	As for wind erosion above	As for wind erosion above	Encroachment by sand
Comments: Regeneration of vegetative cover on the dunes is usually slow because of soils with low fertility and exposure to wind						

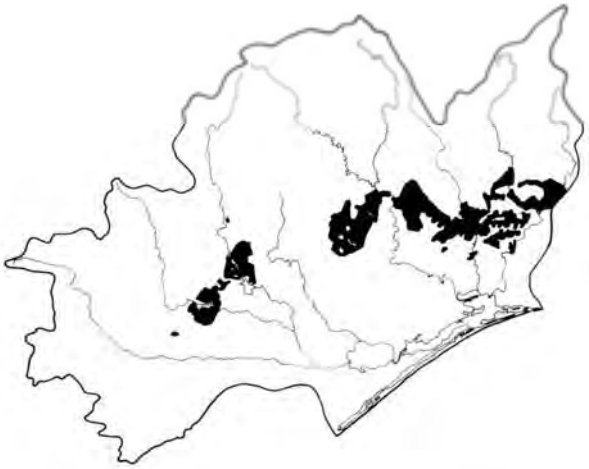
Wonnangatta land system (Wa)

Area: 1008 sq. km (5.0%)

This extensive land system occurs on the hilly terrain with Ordovician, Devonian and Silurian sediments in the central and eastern parts of the East Victorian Uplands. The prominent ridge-and-ravine topography is characterised by moderately long, steep slopes, rock outcrop and active soil creep. Levees and alluvial flats similar to, though smaller than, those mapped in Walnut land system, occur occasionally along a few major streams, notably the Nicholson and Wonnangatta rivers. In most respects, Wonnangatta is a lower-relief version of Talbotville land system. It is similar in geology and topography to La Trobe land system but the climate is much drier.

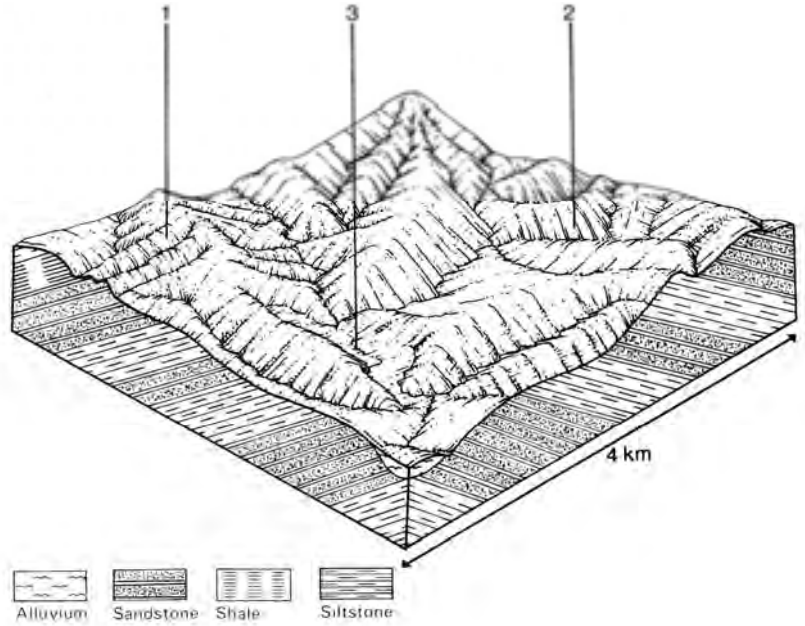
Steep slopes, slow-weathering sedimentary rocks and a climate which is inadequate to support vigorous and dense vegetation give rise to relatively rapid rates of natural erosion and slow soil formation. Thus shallow, stony, leached and acidic soils are characteristic. The structure of the topsoils tends to be weakly developed and subsoils are often apedal. Removal of the vegetation is likely to lead to severe sheet erosion.

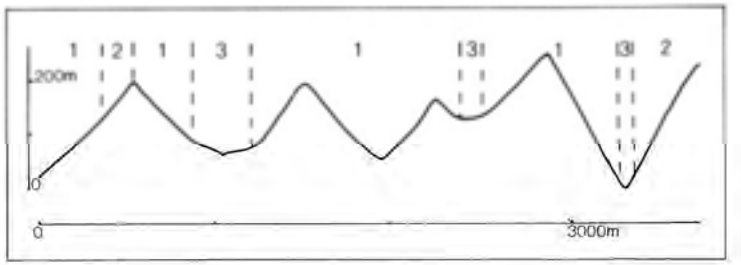
Shrubby open forest II predominates, with open forest III on protected sites and in some drainage corridors.



Hills with ridge-and-ravine topography and moderately long steep slopes north of Lake Glenmaggie

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	 Annual 700 - 1200; lowest January or February (40 - 80), highest October (100 - 150) Annual 8 - 12; lowest July (3 - 7), highest February (16 - 20) Temperature <10°C (av.): April - October Rainfall < potential evapotranspiration: December - February; occasional winter snow
GEOLOGY **Age, lithology**	 Ordovician, Silurian and Devonian sandstones, siltstones and shales
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	 Steep hills with ridge-and-ravine topography 80 - 520 60 - 300 Dendritic 1.6
PRESENT LAND USE	Mostly uncleared: hardwood forestry (minor timber products); apiculture; bush grazing of cattle (limited); small areas in Fairy Dell Scenic Reserve Minor proportion cleared: grazing of beef cattle and sheep





LAND COMPONENT Percentage of land system Diagnostic features	1 70 Exposed slopes, drier forest	2 25 Protected slopes, moister forest	3 5 Isolated narrow terraces in drainage corridors
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	25 - 30, (15 - 60) Straight	25 - 30, (15 - 60) Straight	Variable, (0 - 30) Straight but uneven
SOIL Parent material Description Classification Surface texture Surface consistence Depth (m) Nutrient status Available soil water capacity Perviousness to water Drainage Exposed stone (%) Sampled profile number	Mudstone, siltstone, sandstone and shale Dark clay loam to sandy loam grading into similarly or heavier textured brown or reddish brown subsoil. Shallow to very shallow, stony and acidic, but tending to be deeper in component 2 Lithosols; some Brown Earths and Red Podzolic Soils; Wiesenboden in small seepage areas Um4.13, Um5.51, Uc4.32, Uc1.44, Gn2.41, Gn4.34, Dr3.21, Dr3.61 Clay loam to sandy loam Slightly hard when dry, friable when moist Commonly <0.7, deeper pockets Low Low to moderate Moderate Good 5 - 80 -		Alluvium Little differentiated greyish brown loamy sand to clay loam Alluvial Soils Uc1.43, Uc1.44, Um5.52 Loamy sand to clay loam Varies with texture >2.0 Low Low to moderate Moderate to rapid Varies from somewhat poor to good 0 -
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Mainly shrubby open forest II, occasionally grassy open woodland: Mixed forests including — *E. sieberi, E. macrorhyncha, E. goniocalyx, E. dives, E. globoidea* (one *of* these usually predominant), *E. polyanthemos, E. radiata, E. cypellocarpa, E. sideroxylon*	Shrubby open forest III: *E. muellerana*+ or *E. obliqua*+ or, on upper slopes, *E. sieberi*+*; E. cypellocarpa, E. globulus, E. sideroxylon* commonly associated Occasionally closed forest II *of Acmena smithii*, climbers, ferns and epiphytes in drainage gullies	Mainly shrubby open forest II, III: *E. bridgesiana*+ and/or *E. viminalis*+, sometimes with *E. radiata* Rarely closed forest II: *Acmena smithii*, climbers, ferns and epiphytes

Disturbance	Affected process and trend	Primary resultant deterioration			Causal activities	Primary off-site process
		Form	Susceptibility of components	Incidence within components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality — reduction in density of tree roots	Reduced transpiration, resulting in: a) increased deep percolation	Nutrient loss	Not determined	Not determined	Removal of trees	Increased movement of water to groundwater; increased base-flow of streams Increased sediment load
	b) increased regolith wetness	Soil creep	1; moderate 2; moderate – high	Common: on steep slopes	Accelerated by major disturbance of native vegetation	Increased sediment load
	Decreased root-binding	Soil creep	1; moderate 2; moderate - high	Common: on steep slopes	Accelerated by major disturbance of native vegetation	
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	1; moderate - high 2; moderate	Common	Clearing, logging, burning, overgrazing, road and dam building and other earth-moving activities, trafficking by stock.	Increased flash flows and sediment load.
Increased physical pressure on soil	Increased compaction With	Structure decline	1; low 2; moderate	Uncommon	Increased trafficking, cultivation, overgrazing, export of organic matter	-
	Reduced infiltration	Sheet and rill erosion	1; moderate - high 2; moderate	Common	As for sheet and rill erosion above	Increased flash flows
Increased soil disruption	Increased soil break-up	Gully erosion	1,2; moderate	Common: locally severe	As for sheet and rill erosion above	Increased sediment load and turbidity of streams.
		Tunnel erosion	1; moderate on colluvial slopes	Common	As for sheet and rill erosion above	Increased sediment load and turbidity of streams.
		Streambank erosion	3; high	Uncommon	As for sheet and rill erosion above	Increased sediment load and turbidity of streams.
Comments: Severe tunnel erosion occurs near Lake Glenmaggie						

Yinnar land system (Yr)

Area: 113 sq. km (0.6%)

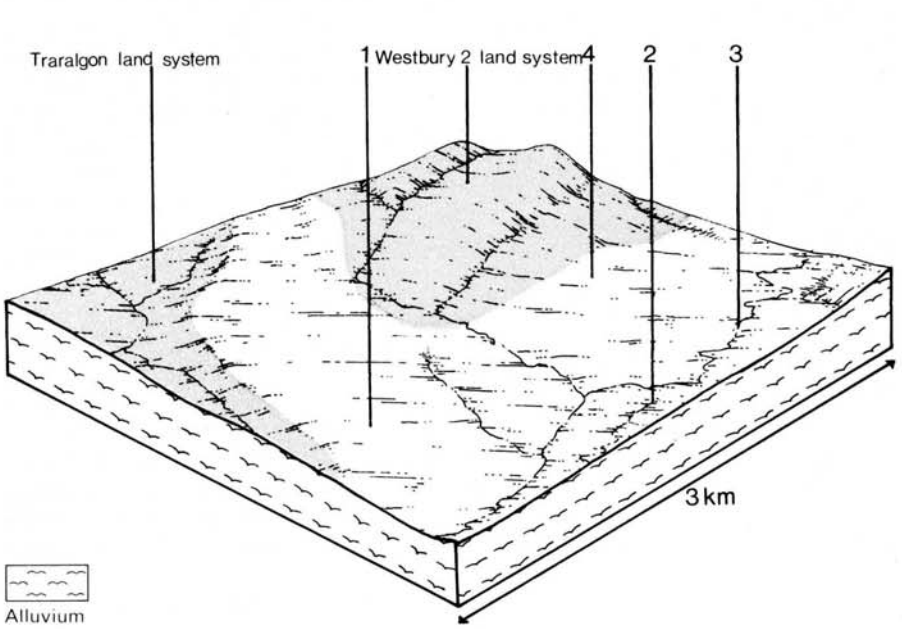
This land system is confined to almost flat, alluvial terraces in the more humid parts of the Western lowlands. These terraces appear to be of similar age to those of Valencia land system but the materials are derived from Cretaceous sediments. There is some evidence of relict fluviatile land forms.

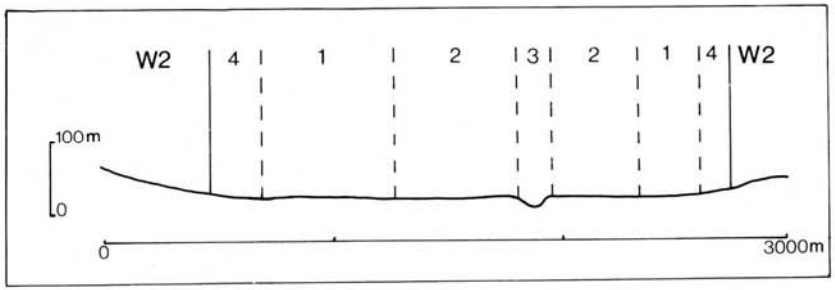
The deposits are mainly silts and clays with minor admixtures of sand. The soils are diverse due mainly to variations in drainage which ranges from very poor to somewhat poor. This variation can be related to differences in local relief, to the permeability of layers within or below the soils and also to differences in seepage and run-off from adjacent higher land. Duplex soils tend to occupy the better-drained sites and gradational soils the more poorly-drained parts. In all soils the depth of periodic saturation by water appears to be reflected in the depth and degree of mottling. Erosion hazards are minor but because of periodic high water tables, soil structure can be readily impaired by trampling and trafficking. Some subsurface horizons are fluid when wet.

The original vegetation, now almost entirely cleared, appears to have been mainly open forest II or III dominated by *E. bridgesiana*, *E. ovata*, *E. radiata* and *E. viminalis.*

A broad alluvial plain backed by the Strzelecki Ranges (almost invisible) which have provided much of the alluvium

CLIMATE Rainfall, mean (mm) Temperature, mean (°C) Seasonal growth limitations	Annual 700 - 1200; lowest January (40 - 70), highest October (70 - 100) Annual 12 - 14; lowest July (8 - 10), highest February (19 - 21) Temperature <10°C (av.): June - August Rainfall < potential evapotranspiration: November – March
GEOLOGY Age, lithology	Lower Pleistocene alluvium of sands, silts and clays
PHYSIOGRAPHY Landscape Elevation range (m) Relative relief (m) Drainage pattern Drainage density (km/km^2)	Almost flat alluvial plains 20 - 100 0 - 5 Dendritic 0.9
PRESENT LAND USE	Mostly cleared: grazing of beef and dairy cattle and fat lambs on improved pastures; some apiculture





LAND COMPONENT Percentage of land system Diagnostic features	1 50 Broad plains	2 40 Slightly depressed parts of plains with poorer drainage than in component 1	3 5 Minor drainag[e] depressions and adjacent steep slopes	4 5 Narrow upstream terraces, no longer flood prone
PHYSIOGRAPHY Slope %, typical and (range) Slope shape	1, (0 - 2) Straight	1, (0 - 2) Slightly concave	Variable, (0 - 30) Concave	1, (0 - 2) Straight
SOIL Parent material Description	Mainly fine-textured alluvial material, mostly derived from surrounding Cretaceous mudstone, shale and sandstone loam Dark greyish brown sandy loam to light clay topsoil with gradual or abrupt change to grey, light yellowish brown or pale brown clay subsoil. Profiles often moderately to slightly acid in the top, becoming neutral at depth. All soils with sign of poor drainage such as grey colours and mottling, with the extent of mottling being indicative of severity			
	Duplex and gradational soils with upper topsoil often whole coloured	Mainly gradational soils with entire profile commonly mottled; high water tables are common throughout the year		Duplex soils with upper topsoil generally whole coloured
Classification	Yellow Podzolic Soils, Wiesenboden, Solodic Soils Dy3. - , Gn3. - , Gn4.5-	Wiesenboden; some Humic Gleys, Gleyed Podzoli[c] Soils, Solodic Soils Gn3.72, Gn3.92, Gn3.93, Gn3.95, Gn4.51, Gn4.52, Uf6.61, Dy3.22		Yellow Podzolic Soils; some, Gleyed Podzolic Soils, Solodic Soils Mostly Dy3.11, also Dy3.41, Dy3.42
Surface texture	Variable sandy loam to light clay	Variable; sandy loam to light clay		Sandy loam to loam; may be clay loam
Surface consistence	Slightly hard to hard when dry	Slightly hard to hard when dry		Generally slightly hard when dry
Depth (m)	>2.0	>2.0		>2.0
Nutrient status	Moderate	Moderate		Moderate
Available soil water capacity	Moderate	Moderate		Moderate
Perviousness to water	Slow	Slow		Slow
Drainage	Poor to somewhat poor	Very poor to poor		Poor to somewhat poor
Exposed stone (%)	0	0		0
Sampled profile number	-	-		-
NATIVE VEGETATION Structure of vegetation and characteristic species of dominant stratum (+ Predominant species)	Open forest II, III, sometimes shrubby or sedgey: Pure or mixed stands of *E. ovata*, *E. viminalis*, *E. radiata* and occasionally *E. bridgesiana;* in addition, *E. obliqua* grows in component 4			

Disturbance	Affected process and trend	Primary resultant deterioration			Causal activities	Primary off-site process
		Form	Susceptibility of components	Incidence within components		
Alteration of vegetation: — reduction in leaf area, rooting depth and/or perenniality	Reduced transpiration, resulting in a raised watertable	Waterlogging	1,4; low 2; moderate	Common; in low-lying areas	Reduced plant water-use in the catchment	Increased movement of water to groundwater and raised watertables
Increased exposure of surface soil	Increased overland flow and soil detachment	Sheet and rill erosion	3; low - moderate	Uncommon	Clearing, burning, overgrazing, road and dam building and other earth-moving activities, trafficking by stock and vehicles.	Increased ponding and sedimentation in low-lying areas
Increased physical pressure on soil	Increased compaction With Reduced infiltration	Structure decline Sheet and rill erosion	1,4; low – moderate 2,3; moderate 3; low - moderate	Uncommon Uncommon	Increased trafficking, cultivation, overgrazing, export of organic matter As for sheet and rill erosion above	- Increased ponding of water in low-lying areas
Increased soil disruption	Increased soil break-up	Gully erosion	3 ; low - moderate	Uncommon	As for sheet and rill erosion above	Increased sediment load and turbidity of streams.
Comments: -						

Appendices

Appendix I

SOIL PROFILE DESCRIPTIONS AND LABORATORY ANALYSES

Notes: Soil profile descriptions are listed as per the text in Chapter 4 of Volume 1
Northcote classification is based on field texture, not laboratory analyses
Grid reference is for 1:100,000 topographic maps, not the 1:250,000 map included with the report
All soil samples were analysed during the period 1979-82, so the laboratory number shown for each profile is specific to those dates only
The 73 soil profiles described in detail in this appendix have been grouped according to the degree of pedological organisation present in the profile according to the landscape position in which they occur. Within each group the soil classifications according to the factual key of Northcote (1979) and Stace et al. (1968) have been listed.

SOILS WITH LITTLE OR NO PEDOLOGIC ORGANIZATION - UNIFORM AND ORGANIC SOILS

Sands of the ocean beach and foredune

1.	Uc1.11	(from Nicholson, 1978)

Sands of the coastal rear dunes and of beaches and some dunes associated with the Lakes

No soils analysed

Organic soils of bogs, swamps and hillside seepage zones

2.	0	Acid Peat
3.	0	Acid Peat
4.	Uc5.21	Alpine Humus Soil - Acid Peat intergrade

Soils in well-drained alpine and subalpine areas

5.	Uc5.21	Alpine Humus Soil
6.	Um6.21	Alpine Humus Soil
7.	Um7.11	Alpine Humus Soil

Soils of mountains and steep hillslopes

8.	Uc3.31	Earthy Sand
9.	Uc4.22	Earthy Sand/Incipient Podzol
10.	Uc5.22	Earthy Sand
11.	Urn 1.42	Lithosol
12.	Um1.42	Lithosol
13.	Uf5.31	Terra Rossa
14.	Uf6.11	Brown Earth
15.	Uf6.12	Brown Earth
16.	Uf6.12	Brown Earth

Soils of Holocene sediments and poorly drained areas of Pleistocene terraces

17.	Uc1.23	Alluvial Soil
18.	Uc1.43	Alluvial Soil
19.	Uc1.44	Alluvial Soil
20.	Uc4.32	Wiesenboden
21. U	m4.31	Non-calcic Brown Soil
22.	Um5.52	Alluvial Soil
23.	Um6.21	Prairie Soil
24.	Um6.21	Alluvial Soil
25.	Um6.21	Wiesenboden
26.	Uf6.11	Wiesenboden
27.	Uf6.11	Prairie Soil
28.	Uf6.41	Humic Gley

SOILS WITH A MODERATE DEGREE OF PEDOLOGIC ORGANIZATION – THE GRADATIONAL SOILS

Soils of mountains and hills

29.	Gn2.11	Lithosol - Red Earth intergrade
30.	Gn3.11	Krasnozem
31.	Gn3.11	Krasnozem
32.	Gn3.11	Krasnozem
33.	Gn3.15	Terra Rossa
34.	Gn3.21	Brown Earth
35.	Gn4.11	Krasnozem
36.	Gn4.11	Krasnozem
37.	Gn4.41	Chocolate Soil
38. G	n4.51	Brown Earth

Older soils of Holocene sediments

39.	Gn2.81	Wiesenboden
40.	Gn3.43	Wiesenboden
41.	Gn3.93	Wiesenboden
42.	Gn4.13	Red-brown Earth
43.	Gn4.51	Wiesenboden
44.	Gn4.51	Humic Gley

SOILS WITH A HIGH DEGREE OF PEDOLOGIC ORGANIZATION - DUPLEX AND OLD UNIFORM SAND SOILS

Soils on gentle to moderately steep hillslopes receiving higher rainfall - leached acid duplex soils

45.	Dr2.22	Red Podzolic Soil
46.	Db2.21	Brown Podzolic Soil
47.	Dy3.11	Soloth
48.	Dy3.21	Yellow Podzolic Soil
49.	Dy3.21	Soloth
50.	Dy3.21	Soloth
51.	Dy3.21	Soloth
52.	Dy3.31	Yellow Podzolic Soil
53.	Dy3.41	Yellow Podzolic soil
54.	Dr4.22	Red Podzolic Soil
55.	Dr5.21	Red Podzolic Soil

Soils on gentle to moderately steep hillslopes receiving lower rainfall - neutral to alkaline duplex soils

56.	Dy2.33	Solodic soil

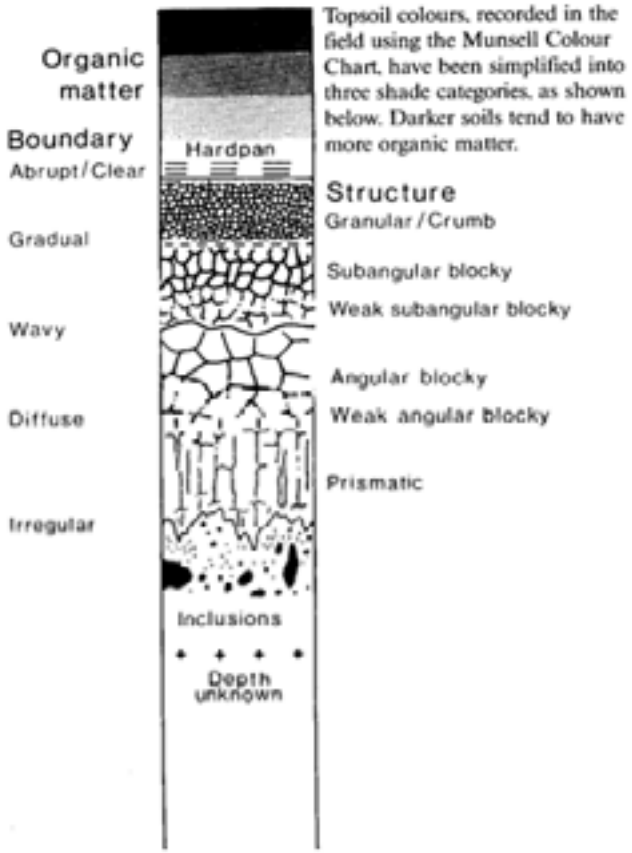
Soils of plains and gently sloping colluvial aprons

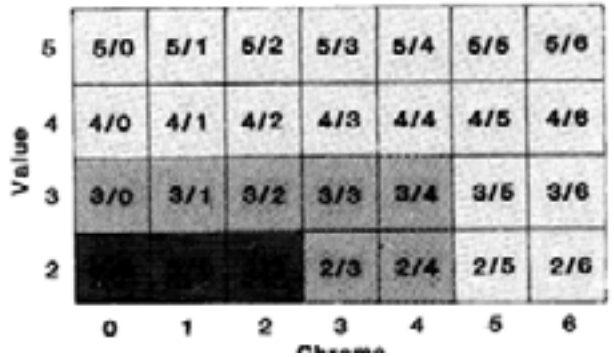
57.	Dr3.21	Red-brown Earth
58.	Dr3.22	Red-brown Earth - Solodic Soil intergrade
59.	Db2.23	Solodic Soil
60.	Db2.41	Soloth - Yellow Podzolic Soil intergrade
61.	Dy3.21	Soloth
62.	Dy3.21	Soloth
63.	Dy3.21	Yellow Podzolic Soil
64.	Dy3.22	Soloth
65.	Dy3.23	Soloth
66.	Dy3.23	Solodic Soil
67.	Dy3.42	Soloth
68.	Dy5.22	Soloth
69.	Dd2.23	Solodic Soil

Uniform sand soils of old dunes, sand sheets and outwash fans

70.	Uc2.36	Podzol
71.	Uc4.22	Podzol
72.	Uc4.22	Podzol
73.	Uc4.31	Podzol

A KEY FOR THE TERMINOLOGY USED IN SOIL PROFILE DIAGRAMS





A KEY FOR THE SYMBOLS USED TO DESCRIBE SOIL TEXTURES

S = sand
OS = organic sand,
FS = fine sand,
COS = coarse sand,
LFS = loamy fine sand, LS = loamy sand,
LCOS = loamy coarse sand, CS = clayey sand
L = loam
OL = organic loam,
OSL = organic sandy loam,
FSL = fine sandy loam,
SL = sandy loam, CL = clay loam,
FSCL= fine sandy clay loam,
COSCL = coarse sandy clay loam,
OCL = organic clay loam
C = clay
SC = sandy clay,
LC = light clay,
LMC = light medium clay, MC = medium clay,
HC = heavy clay
Si = silty,
Gr = gravelly,
Gt = gritty.
St = stoney

PROFILE NUMBER: 1

Laboratory number: 757

Site number: 754

Classification: Northcote (1979) - Uc1.11
Stace *et al.* (1972) - Calcareous Sand

Location: Sale 8321, grid ref. 363716
1.5 km NE of Golden Beach

Land system, component: Booran 1, 3

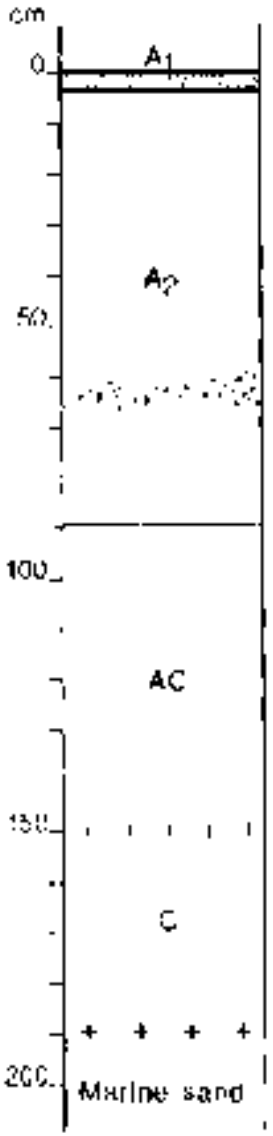
Topography: Crest of coastal foredune, 2% slope, NW aspect

Elevation: 9 m

Drainage: Very good

Parent material: Holocene marine sand

Vegetation: Closed scrub; predominantly *Leptospermum laevigatum*



PROFILE DESCRIPTION:

A_1	0 - 3 cm	Very dark brown (10YR 2/2) loamy sand, apedal; earthy fabric; soft when dry; abundant roots; pH 6.2; abrupt smooth boundary
A_2	3 - 90 cm	Dark greyish brown (10YR 4/2) to brown (10YR 4/3) sand; apedal; soft when dry, loose when dry below 24 cm; abundant roots; 2 - 5% small shell grit throughout, 10% bivalve shell fragments at 65 cm; pH 8.0 - 9.0; clear smooth boundary
AC	90 - 150 cm	Light yellowish brown (10YR 6/4) sand; apedal; loose when dry; common roots; pH 9.1; diffuse boundary
C	150 - 180+ cm	Yellow (10YR 7/6) sand; apedal; loose when dry; few roots; pH 9.1

LABORATORY ANALYSES 757

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
Al	0 - 3	S	0	82	6	1	4					6.2	250	0.018		
A2	3 - 7	S	0	89	6	<1	1					8.5	150	0.008		
A2	10 - 20	S	0	92	5	1	1					8.0	70	0.005		
A2	24 - 30	S	0	91	6	<1	1					8.1	62	0.004		
A2	30 - 47	S	0	91	6	1	1					8.5	61	0.004		
A2	60 - 90	S	0									9.0	81	0.005		
AC	90 - 150	S	0									9.1	63	0.003		
C	150 - 180	S										9.1	69	0.004		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 3	4.4	0.25	23	0.3	13	90	0.012	0.038	6.1	3.3	0.2	1.0	15.7	39	21	1	6	33
A2	3 - 7	1.0	0.061	21	0.2	8	40	0.008	0.035	4.4	1.1	0.09	0.4	4.9	73	8	2	7	0
A2	10 - 20	0.66	0.045	19	0.3	6	30	0.006	0.032	3.2	0.9	0.06	0.5	3.0	69	19	1	11	0
A2	24 - 30	0.25	0.023	14	0.2	6	10	0.006	0.027	1.3	0.3	0.01	0.2	2.6	50	12	<1	8	30
A2	30 - 47				0.1			0.006	0.030	1.4	0.2	0.01	0.2	1.2	77	11	1	11	0
A2	60 - 90													0.2	71	7	2	20	0
AC	90 - 150																		
C	150 - 180																		

PROFILE NUMBER: 2

Laboratory number: 0956

Site number: 767

Classification: Northcote (1979) - 0
Stace *et al.* (1972) - Acid Peat

Location: Moe 8121, grid ref. 282735 Trafalgar East

Land system, component: Moe, 2

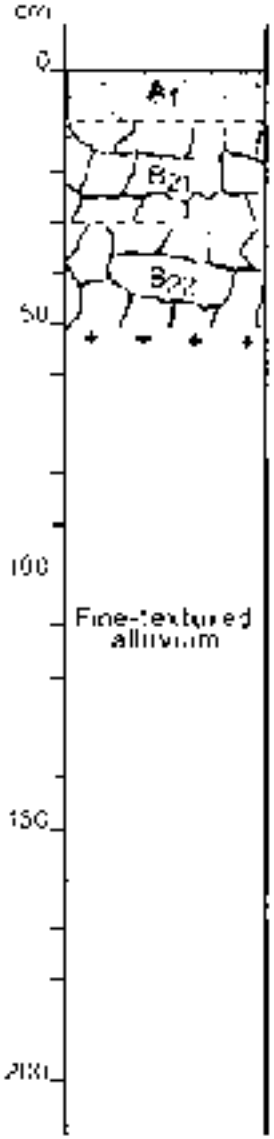
Topography: Plain, 0% slope

Elevation: 60 m

Drainage: Moderate due to artificial drainage; poor under natu

Parent material: Organic accumulations and Holocene fine-textured a

Vegetation: Cleared; pasture with predominantly introduced spec



PROFILE DESCRIPTION:

A_1	0 - 10 cm	Very dark brown (10YR 2/2) peaty clay; strong granular structure; friable when moist; gradual boundary
B_{21}	10 - 30 cm	Very dark black (10YR 2/1) heavy clay; strong angular blocky structure; plastic and sticky when wet; gradual boundary
B_{22}	30 - 50+ cm	Very dark grey (10YR 3/1) heavy clay; strong coarse angular blocky structure; plastic and sticky when wet

LABORATORY ANALYSES 956

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
Al	0 - 10	MC	0	6	18	18	48					5.0	310	0.006		
B21	10 - 30	HC	0	1	5	7	75					5.0	130	0.002		
B22	30 - 50	HC	0	<1	3	2	87					5.1	110	0.002		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 10					22	333			4.6	3.9	1.3	0.7	66	7	6	2	1	84
B21	10 - 30									2.3	3.3	0.5	0.8	67	3	5	1	1	90
B22	30 - 50									5.2	6.9	0.4	0.9	50	10	14	1	2	73

PROFILE NUMBER: 3

Laboratory Number: 0986

Site number: 1034

Classification: Northcote (1979) - 0
Stace *et al. (1972)* - Acid Peat

Location: Matlock 8122, grid ref. 384126
0.4 km E of Mount Saint Phillack

Land system, component: Baw Baw, 3

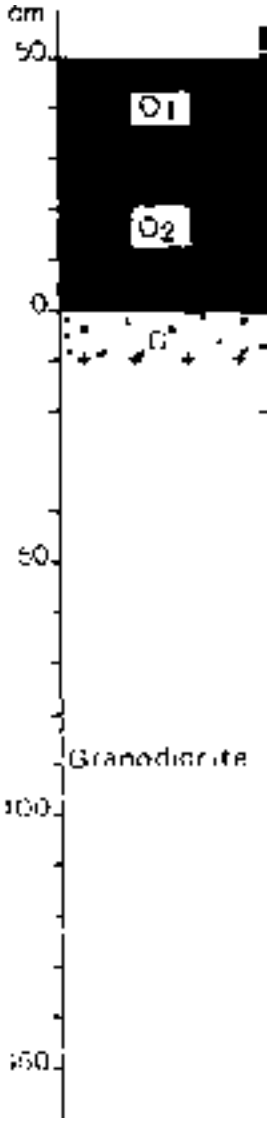
Topography: Low hummocky terrace in drainage line, 0% slope

Elevation: 1420 m

Drainage: Very poor

Parent material: Organic accumulations and Devonian granodiorite

Vegetation: Bog community with *Richea continentis*, *Calorophus* sp. and *Sphagnum* sp.



PROFILE DESCRIPTION:

0_1	50 - 30 cm	Very dark brown (7.5YR 2/2) organic horizon; fibrous; non-sticky when wet; clear boundary
0_2	30 - 0 cm	Black (10YR 2/1) organic silty loam; apedal; slightly sticky when wet; clear boundary
C	0 - 10 cm	Very dark grey (10YR 3/1) loamy sand; smooth-ped fabric; slightly sticky when wet; 10% weathered granite fragments (20 mm) small mica particles common

LABORATORY ANALYSES 986

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
01	50 - 40		0													
02	10 - 0		9									5.4	57	0.002		
C	0 - 10	LS	17	54	24	11	9					5.8	9	0.001		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
01	50 - 40	46.2	2.0	30		68	460	0.036	0.10										
02	10 - 0	11.8	0.70	22		19	40	0.028	0.12	0.3	0.07	0.1	0.08	65.2	<1	<1	<1	<1	99
C	0 - 10									0.2	0.06	0.06	0.03	15.1	1	<1	<1	<1	98

PROFILE NUMBER: 4

Laboratory Number: 0987

Site number: 1035

Classification: Northcote (1979) - Uc5.21
Stace *et al.* (1972) - Alpine Humus Soil - Acid Peat Intergrade

Location: Matlock 8122, grid ref. 384126
0.4 km E of Mount Saint Phillack

Land system, component: Baw Baw, 3

Topography: 5% slope facing S on colluvial apron

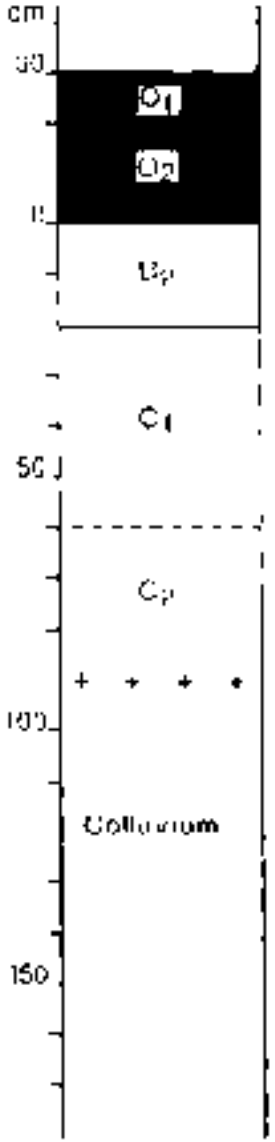
Elevation: 1420 m

Drainage: Poor

Parent material: Colluvium from Devonian granodiorite

Vegetation: Open heathland with *Richea continentis, Epacris paludosa, Poa* sp. and *Danthonia sp.*

Remarks: 20% surface rock. Almost entire profile saturated at time of sampling (April)



PROFILE DESCRIPTION:

0_1 30 - 20 cm — Black (10YR 2/1) fibrous fine sandy loam; apedal; earthy fabric; slightly plastic when wet; common mica; pH 4.5; gradual boundary

0_2 20 - 0 cm — Very dark brown (10YR 2/2) organic fine sandy loam becoming coarse sandy loam at depth; apedal; earthy fabric; slightly plastic when wet; common mica; pH 5.0; clear boundary

B_2 0 - 20 cm Dark yellowish brown (10YR 3/4) loamy coarse sand; apedal; earthy fabric; slightly plastic when wet; abundant feldspar and mica; pH 5.5; abrupt boundary

C_1 20 - 60 cm — Pale brown (10YR 6/3) loamy coarse sand; apedal; earthy fabric; slightly plastic when wet; abundant feldspar and mica; pH 5.8; gradual boundary

C_2 60 - 90 cm — Light brownish grey (10YR 6/2) loamy coarse sand; apedal; earthy fabric; non-sticky when wet; abundant feldspar and mica; pH 5.8

LABORATORY ANALYSES 987

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
01	30 - 20	SL	4	33	15	6	18					4.6	250	0.024		
02	20 - 0	LS	26	56	28	5	7					4.9	29	0.002		
B2	0 - 20	LS	18	64	23	5	7					5.0	21	0.002		
Cl	20 - 30	SL	5	55	20	8	15					5.0	19	0.002		
C2	60 - 90	SL	7	57	21	8	10					5.1	21	0.001		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
01	30 - 20	15.2	0.70	28		31	340	0.032	0.14	0.2	0.3	0.9	0.8	46.4	<1	1	2	2	95
02	20 - 0	3.0	0.15	26		11	50	0.019	0.16	0.06	0.06	0.1	0.02	24.2	<1	<1	<1	<1	99
B2	0 - 20					16	40	0.033	0.26	0.07	0.07	0.1	0.01	28.1	<1	<1	<1	<1	99
Cl	20 - 30									0.06	0.03	0.06	<0.01	20.5	<1	<1	<1	<1	99
C2	60 - 90									0.04	<0.01	0.08	<0.01	21.0	<1	<1	<1	<1	99

PROFILE NUMBER: 5

Laboratory number: 0985

Site number: 1033

Classification: Northcote (1979) - Uc5.21
Stace *et al.* (1972) - Alpine Humus Soil

Location: Matlock 8122, grid ref. 404124
1.2 km E of Mount Saint Gwinear

Land system, component: Baw Baw, 1

Topography: Hillslope facing NE, 16% gradient

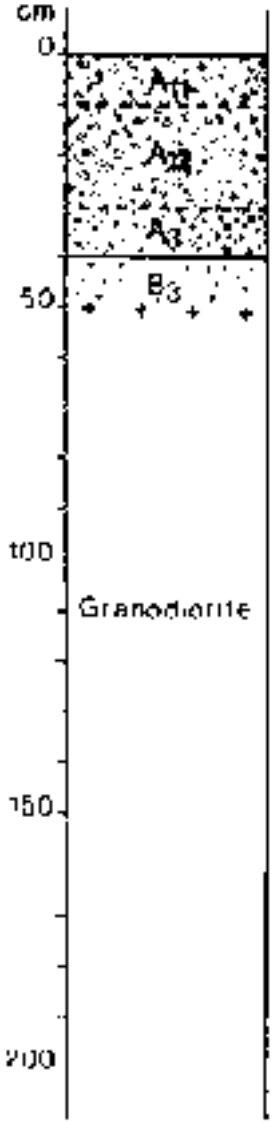
Elevation: 1400 m

Drainage: Moderate

Parent material: Devonian granodiorite

Vegetation: Open heathland with *Pultenaea muelleri*, *Helichrysum hook*
Poa australis and *Deyeuxia monticola* predominant

Remarks: 2% surface rock



PROFILE DESCRIPTION:

A_{l1} 0 - 10 cm	Black (10YR 2/1) organic sandy loam; strong medium crumb structure (3 mm); rough-ped fabric; friable when moist; 5% granodiorite fragments (15 mm); pH 6.0; gradual boundary
A_{l2} 10 - 30 cm	Very dark brown (10YR 2/2) organic sandy loam; strong crumb structure (2 mm); rough-ped fabric; friable when moist; 5% granodiorite fragments (15 mm); pH 5.8; gradual boundary
A_3 30 - 40 cm	Very dark brown (10YR 2/2) sandy clay loam; strong medium crumb structure (2 mm); rough-ped fabric; friable when moist; 5% granodiorite fragments (15 mm); pH 5.8; clear boundary
B_3 40 - 50 cm	Dark yellowish brown (10YR 3/6) gritty sandy clay loam; apedal; earthy fabric; friable when moist; 5% granodiorite fragments (35 mm); pH 5.8

LABORATORY ANALYSES 985

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
All	0 - 10	L	5	41	16	16	23					5.2	73	0.005		
Al2	20 - 30	L	5	40	20	16	18					5.0	34	0.002		
A3	30 - 40	L	8	39	23	16	16					5.1	32	0.002		
B3	40 - 50	S	28	57	35	4	3					5.2	27	0.002		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
All	0 - 10	6.6	0.39	22		26	180	0.040	0.07	0.2	0.2	0.6	0.07	53.3	<1	<1	1	<1	99
Al2	10 - 30	5.2	0.30	23		14	60	0.039	0.06	0.06	0.06	0.3	<0.01	50.4	<1	<1	1	<1	99
A3	30 - 40					12	70	0.036	0.07	0.09	0.09	0.3	<0.01	44.1	<1	<1	1	<1	99
B3	40 - 50							0.031	0.34	0.06	0.06	0.2	<0.01	25.4	<1	<1	1	<1	99

PROFILE NUMBER: 6

Laboratory Number: 0981

Site number: 555

Classification: Northcote (1979) - Um6.21
Stace *et al.* (1972) - Alpine Humus Soil

Location: Dargo 8323, grid ref. 162908
Gow Plain 4 km SE of Dargo High Plains

Land system, component: Nunniong, 2

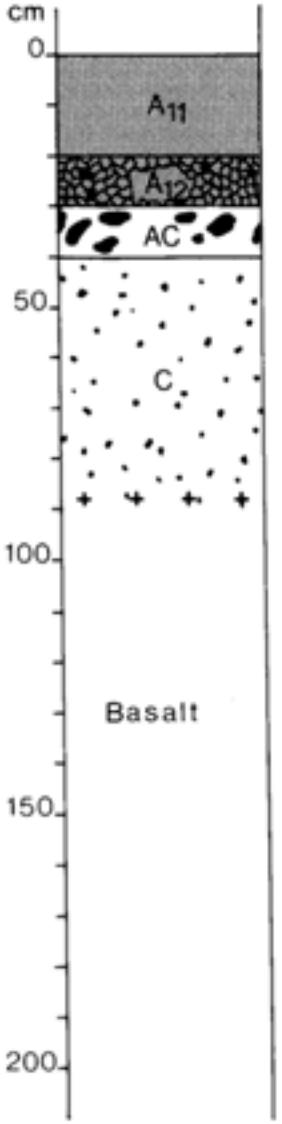
Topography: 4% slope facing S on plateau, hummocky microrelief near water- course

Elevation: 1500 m

Drainage: Moderate

Parent material: Tertiary basalt

Vegetation: Grassland of predominantly Poa sp.



PROFILE DESCRIPTION:

A_{11}	0 - 20 cm	Dark reddish brown (5YR 2/2) organic loam; strong crumb structure; rough-ped fabric; friable when moist; pH 5.0; clear boundary
A_{12}	20 - 30 cm	Dark reddish brown (5YR 2/2) organic loam; strong fine (5 mm) subangular blocky structure; rough-ped fabric; hard when dry; 1% basalt fragments up to 10 mm; pH 5.0; clear boundary
AC	30 - 40 cm	Dark reddish brown (5YR 3/2) stony loam; apedal; earthy fabric; soft when dry; 30% basalt fragments up to 60 mm, some soft black inclusions (reacting with H_20_2) up to 5 mm; pH 5.5; clear boundary
C	40 - 88+ cm	Reddish brown (5YR 4/4) stony clay loam; abundant distinct dark reddish brown (<5 mm) mottles; apedal; friable when moist; 20% basalt fragments up to 10 mm; pH 5.5 - 6.0

LABORATORY ANALYSES 981

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
All	0 - 10	SiL	2	5	28	37	24					5.2	56	0.004	20 - 30	allophane mainly; some kaolinite
Al2	20 - 30	SiL	12	12	38	31	17					5.4	28	0.002		
AC	30 - 40	SiL	39	17	32	34	17					5.6	23	0.002		
C	40 - 60	-	30	-	-	-	-	65	39	26	14	-	-	-		
C	60 - 88	SiL	34	16	27	30	24					5.9	16	0.002		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
All	0 - 10	9.7	0.92	14	4.9	81	280	0.13	0.15	0.9	0.6	0.9	0.03	82.3	1	1	1	<1	97
Al2	20 - 30	6.2	0.61	13	4.4	95	100	0.11	0.12	0.6	0.3	0.5	0.01	78.8	1	<1	1	<1	98
AC	30 - 40	3.6	0.39	12	5.2			0.11	0.17	0.6	0.3	0.4	0.02	62.5	1	1	1	<1	97
C	40-60																		
C	60 - 88				6.6			0.15	0.11	4.1	2.3	0.3	0.05	43.0	10	5	1	<1	84

PROFILE NUMBER: 7

Laboratory Number: 0982

Site number: 556

Classification: Northcote (1979) - Um7.11
Stace *et al.* (1972) - Alpine Humus Soil

Location: Dargo 8323, grid ref. 075034
Road cutting near Mount Saint Bernard, 13 km SE of Harrietville

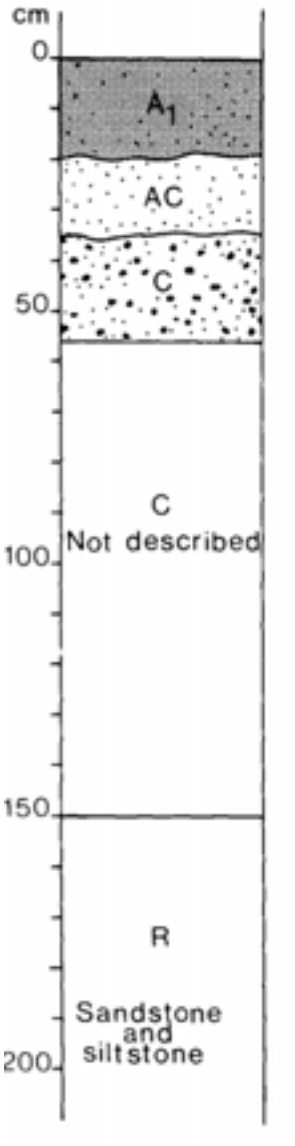
Land system, component: Birregun, 3

Topography: Upper mountain slope, NNE aspect, 45% gradient

Elevation: 1400 m

Drainage: Good
Parent material: Sandstone and siltstone

Vegetation: Open forest II: *Eucalyptus delegatensis* with a relatively sparse shrub layer and with Poa sp. predominant in the herb layer



PROFILE DESCRIPTION:

A_1	0 - 20 cm	Black (10YR 2/1) gravelly organic loam; strong crumb structure; rough-ped fabric; slightly hard when dry; 10% bedrock fragments (8 mm); pH 3.7; clear wavy boundary
AC	20 - 35 cm	Dark brown (7.5YR 3/2) gravelly loam; weak crumb structure; rough-ped fabric; soft when dry; 10% bedrock fragments (8 mm); pH 4.7; clear wavy boundary
C	35 - 56 cm	Brown (7.5YR 4/4) gravelly sandy loam; apedal; earthy fabric; soft when dry; 60% bedrock fragments (20 mm); pH 5.5
C	56 - 150 cm	Not described
R	150+ cm	Bedrock

LABORATORY ANALYSES 982

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	CL	28	17	21	18	27	69	51	18	9.4	4.3	52	0.004					
AC	20 - 30	SiL	38	15	23	29	23					4.8	30	0.003					
C	35 - 56	L	73	16	28	24	18					5.1	27	0.003					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 10	13.6	0.83	21	3.1	23	160	0.042	0.21	0.04	<0.01	0.6	0.01	105.0	<1	<1	1	<1	99
AC	20 - 30	6.1	0.46	17	4.4	15	80	0.046	0.22	0.06	<0.01	0.3	0.01	69.0	<1	<1	<1	<1	99
C	35 - 56				4.6			0.063	0.30	<0.01	<0.01	0.2	<0.01	36.0	<1	<1	1	<1	99

PROFILE NUMBER: 8

Laboratory Number: 0970

Site number: 488

Classification: Northcote (1979) - Uc3.31
Stace *et al.* (1972) - Earthy Sand

Location: Bairnsdale 8422, grid ref. 791127 10 km NW of Lakes Entrance

Land system, component: Stockdale, 1

Topography: Mid - slope of hill, N aspect, 8% gradient

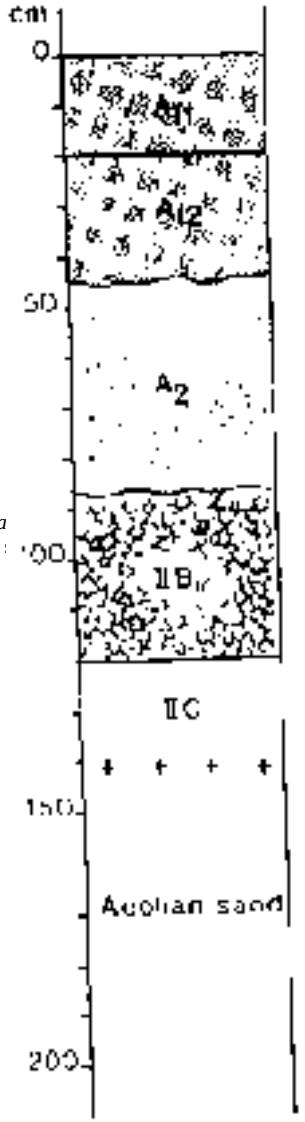
Elevation: 60 m

Drainage: Good

Parent material: Tertiary coarse-textured aeolian sand

Vegetation: Woodland III: *Eucalyptus globoidea, E. bridgesiana* and *E. cypellocarpa*
Pteridium esculentum and *Imperata cylindrica* predominant understorey

Remarks: Leached iron compounds appear to have precipitated in the sandy clay loam layer below the A horizon.



PROFILE DESCRIPTION:

A_{11}	0 - 20 cm	Black (10YR 2/1) loamy sand; apedal; earthy fabric; soft when dry; common roots; pH 6.0; clear smooth boundary
A_{12}	20 - 45 cm	Very dark grey (10YR 3/1) loamy sand; apedal; earthy fabric; very firm when moist; common roots; pH 4.0; clear wavy boundary
A_2	45 - 87 cm	Pale brown (10YR 6/3) clayey sand, sporadically bleached to light grey (10YR 7/2); apedal; very firm when moist; few roots to 60 cm; 2% charcoal up to 3 mm; pH 6.0 - 7.0; clear wavy boundary
IB_{ir}	87 - 120 cm	Brownish yellow (10YR 6/8) sandy clay loam; weak very fine (2 mm) angular blocky structure; smooth-ped fabric; very firm when moist; common prominent grey (>15 mm) mottles; pH 6.0; clear smooth boundary
IIC	120 - 140 cm	Brownish yellow (10YR 6/8) clayey sand; apedal; earthy fabric; firm when moist; pH 5.8

LABORATORY ANALYSES 970

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 10	SL	4	51	24	7	15					5.9	48	0.004					
Al2	30 - 45	S	4	63	24	6	4					5.2	22	0.002					
A2	60 - 87	S	6	65	26	3	8					6.2	17	0.002					
IIBir	90 - 115	SCL	14	52	19	7	21					5.8	170	0.015					
IIC	120 - 140	SL	16	55	23	8	12					5.4	180	0.018					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
All	0 - 10	1.8	0.092	25	0.2	6	70	0.006	0.056	2.3	1.3	0.2	0.1	11.3	20	12	2	1	65
Al2	30 - 45	0.73	0.029	33	0.1			0.002	0.032	0.2	0.4	0.06	0.1	6.5	3	6	1	2	88
A2	60 - 87	0.13	0.006	28	0.1	1	20	0.002	0.011	<0.01	0.15	0.03	0.05	1.06	<1	14	3	5	78
IIBir	90 - 115	0.11	0.015	10	1.3	1	30	0.002	0.075	0.1	3.2	0.09	1.2	10.1	1	32	1	12	54
IIC	120 - 140	0.06	0.011	7	1.9	2	20	0.005	0.061	0.09	2.0	0.06	1.0	6.3	1	32	1	16	50

PROFILE NUMBER: 9

Laboratory number: 0952

Site number: 399

Classification: Northcote (1979) - Uc4.22
Stace *et al.* (1972) - Earthy sand/ Incipient Podzol

Location: Bairnsdale 8422, grid ref. 607191
by Omeo Highway about 3.5 km SW of Nicholson Road bridge, Sarsfield

Land system, component: Stockdale, 1

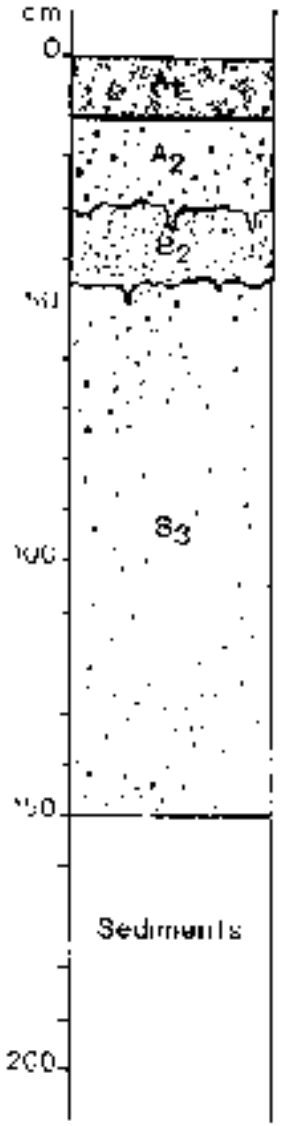
Topography: Slope of low hill, 4% gradient

Elevation: 100 m

Drainage: Good

Parent material: Tertiary coarse-textured sediments

Vegetation: Shrubby woodland I: *Eucalyptus globoidea, E. polyanthemos* and E. *cypellocarpa, Platylobium formosum, Kunzea ericoides, Epacris impressa, Cassinia aculeata, Themeda australis*, Poa sp. and *Pteridium esculentum* predominant understorey species



PROFILE DESCRIPTION:

A_1	0 - 12 cm	Very dark grey (10YR 3/1) coarse sand; apedal; sandy fabric; soft when dry; few roots; 10% quartz gravel up to 10 mm; pH 4.5; clear smooth boundary
A_2	12 - 30 cm	Dark greyish brown (10YR 4/2) coarse sand; apedal; sandy fabric; soft when dry; few roots; 30% quartz gravel up to 20 mm; pH 5.5; diffuse irregular boundary
B_2	30 - 45 cm	Dark yellowish brown (10YR 4/4) coarse sand; apedal; common prominent brown mottles
		(3 mm); sandy fabric; hard when dry; few roots; 50% fine quartz gravel (5 mm), occasional ferruginous concretions; pH 6.5; diffuse irregular boundary
B_3	45 - 150+ cm	Yellowish brown (10YR 5/4) gravelly sand; apedal; sandy fabric; hard when dry; few roots; 80% quartz gravel (10 mm), occasional ferruginous concretions; pH 6.5

LABORATORY ANALYSES 952

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	LS	19	60	25	10	5					4.8	10	0.001					
A2	20 - 30	LS	25	55	28	12	3					5.4	10	0.001					
B2	30 - 45	LS	18	65	18	11	4					5.3	11	0.001					
B3	60 - 90	LS	39	84	5	10	1					5.5	15	0.001					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available		HCl extract		Exchangeable cations									
						P ppm	K ppm	P %	K %	Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 10	0.91	0.028	42	0.4	2	5	0.003	0.026	0.3	0.2	0.08	0.02	4.9	6	4	2	<1	88
A2	20 - 30	0.30	0.015	26	0.2	2	<1	0.002	0.010	0.9	0.2	0.05	0.03	3.6	25	6	1	1	67
B2	30 - 45				1.0	2	<1	0.004	0.035	0.7	0.2	0.04	0.03	3.0	23	7	1	1	68
B3	60 - 90				0.8	3	10	0.005	0.031	0.3	0.2	0.07	0.06	2.8	11	7	2	2	78

PROFILE NUMBER: 10

Laboratory number: 0989

Site number: 659

Classification: Northcote (1979) - Uc5.22
Stace *et al.* (1972) - Earthy Sand

Location: Bairnsdale 8422, grid ref. 801255 7 km E of Bruthen

Land system, component: Anderson 1, 1

Topography: Mid-slope of hill, 19% gradient

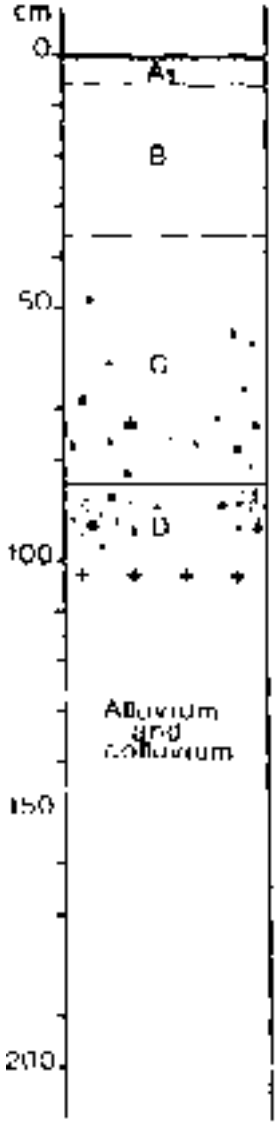
Elevation: 100 m

Drainage: Good

Parent material: Tertiary alluvium and colluvium

Vegetation: Regenerating after logging. Open forest II:
Eucalyptus globoidea and *E. cypellocarpa*

Remarks: Rills to 40 cm depth occur along tracks



PROFILE DESCRIPTION:

A_1	0 - 6 cm	Dark greyish brown (10YR 4/2) loamy coarse sand; apedal; earthy fabric; very friable when moist; abundant roots; pH 5.5; clear boundary
B	6 - 36 cm	Yellowish brown (10YR 5/6) coarse sand; apedal; earthy fabric; very friable when moist; abundant roots to 15 cm then common; pH 5.5; diffuse boundary
C	36 - 85 cm	Yellowish brown (10YR 5/4) sand; apedal earthy fabric; friable when moist; 2% of ferruginous nodules (30 mm); pH 6.0; clear boundary
D	85 - 103+	Yellowish brown (10YR 5/8) sandy clay; apedal; earthy fabric; firm when moist; 5% of ferruginous soft nodules (10 mm); pH 5.5

LABORATORY ANALYSES 952

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 6	LS	6	43	38	7	9					5.9	36	0.002					
B	10 - 20	LS	4	34	46	7	9					5.6	28	0.002					
B	30 - 36	LS	3	34	46	7	9					6.0	27	0.001					
D	85 - 90	SL	8	35	36	9	16					6.3	28	0.001					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 6	3.6	0.13	36	0.4	14	140	0.008	0.03	2.4	0.7	0.3	0.09	14.5	17	5	2	1	75
B	10 - 20	0.83	0.033	33	0.5	6	60	0.004	0.02	0.3	0.04	0.2	0.07	8.6	3	5	2	1	89
B	30 - 36				0.6	4	70	0.003	0.01	0.6	0.05	0.2	0.06	6.4	9	8	3	1	79
D	85 - 90							0.004	0.03	1.6	1.3	0.3	0.2	8.1	20	16	4	2	58

PROFILE NUMBER: 11

Laboratory number: 0980

Site number: 36

Classification: Northcote (1979) - Um1.42 Stace *et al* (1972) – Lithosol

Location: Dargo 8323, grid ref. 119672 17 km NW of Dargo

Land system, component: Talbotville, 1

Topography: Upper slope of mountain ridge, N aspect, 28% gradient

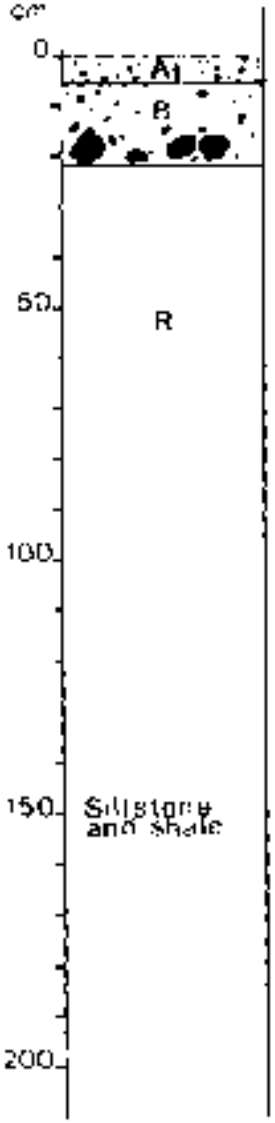
Elevation: 1100 m.

Drainage: Good

Parent material: Mainly siltstone and shale

Vegetation: Shrubby forest I: *Eucalyptus dives* and predominantly *Oxylobium ellipticum* and *Leucopogon suaveolens* in the shrub layer. Very sparse herb layer.

Remarks: 40% surface stone about 10 mm



PROFILE DESCRIPTION:

A_1	0 - 5 cm	Dark brown to brown (7.5YR 4/4) gravelly clay loam; apedal; earthy fabric; slightly hard when thy; 30% small bedrock fragments up to 20 mm; pH 4.0; clear boundary
B	5 - 22 cm	Strong brown (7.5YR 5/6) gravelly clay loam; apedal; earthy fabric; friable when moist; 30% small bedrock fragments up to 20 mm; fragments up to 80 mm common below 10 cm; pH 4.0
R	22+ cm	Bedrock

LABORATORY ANALYSES 980

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 5	SiL	39	18	18	31	19					4.8	38	0.003					
B	5 - 10	SiL	28	15	23	34	23	50	32	18	8.0	5.0	35	0.002					
B	10 - 20	SiCL	22	13	22	35	28					5.0	34	0.002					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 5	3.8	0.19	26	2.6	5	240	0.018	0.21	0.05	0.09	0.7	0.07	31.4	<1	<1	2	<1	98
B	5 - 10	1.8	0.11	21	2.9	2	260	0.016	0.26	<0.05	0.05	0.7	0.09	21.6	<1	<1	3	<1	97
B	10 - 20	1.8	0.098	24	3.3	3	260	0.015	0.30	<0.05	0.08	0.7	0.05	22.1	<1	<1	3	<1	97

PROFILE NUMBER: 12

Laboratory number: 0984

Site number: 576

Classification: Northcote (1979) - Um1.42 Stace *et al.* (1972) – Lithosol

Location: Maffra 8222, grid ref. 722483 500 m S of Bennison Lookout

Land system, component: Carrabungla, 1

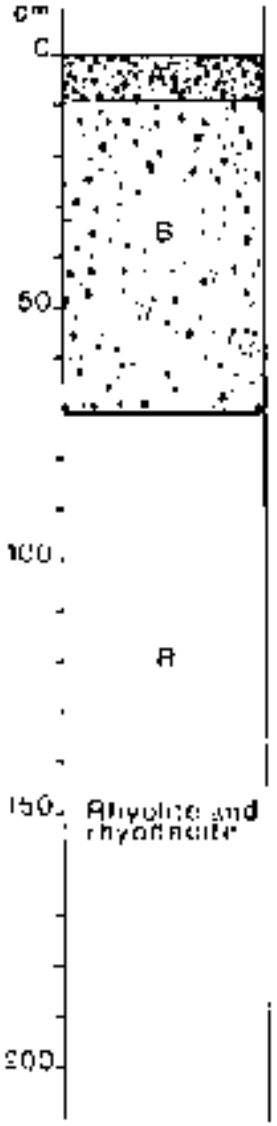
Topography: Mid-slope of mountain, WSW aspect, 45% gradient

Elevation: 960 m

Drainage: Good

Parent material: Devonian rhyolite and rhyodacite

Vegetation: Shrubby open forest II: *Eucalyptus sieberi*, *E. dives* and *E. rubida* and with *Acacia obliquinervia*, *Cassinia longifolia*, *Platylobium formosum* and *Oxylobium ellipticum* in the understorey. Sparse herb layer, abundant leaf litter.



PROFILE DESCRIPTION:

A_1	0 - 9 cm	Very dark greyish brown (10YR 3/2) stony loam; weak crumb structure; rough-ped fabric; soft when dry; 40% bedrock fragments (10 mm); pH 3.5; clear boundary
B	9 - 71 cm	Yellowish brown (10YR 5/6) stony clay loam; apedal; slightly hard when dry; 40% bedrock fragments (18 mm); pH 4.5
R	71+ cm	Bedrock

LABORATORY ANALYSES 984

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 9	SiL	39	22	18	25	15				4.2	72	0.003						
B	20 - 30	SiL	33	13	25	38	21				4.9	42	0.002						
B	30 - 60	SiL	28	16	21	31	24				5.0	31	0.002						

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 9	5.7	0.21	35	1.0	10	160	0.009	0.14	0.06	0.06	0.6	0.1	56.7	<1	<1	1	<1	99
B	20 - 30	1.7	0.078	28	1.2	4	200	0.007	0.10	0.07	0.1	0.7	0.09	25.4	<1	<1	3	<1	97
B	30 - 60				1.4			0.008	0.14	0.07	0.3	0.6	0.1	18.9	<1	2	3	1	94

PROFILE NUMBER: 13

Laboratory number: 0951

Site number: 398

Classification: Northcote (1979) - Uf5.31
Stace *et al.* (1972) - Terra Rossa

Location: Bairnsdale 8422, grid ref. 558158 Road cutting 3 km N of Bairnsdale

Land system, component: Salt Creek, 4

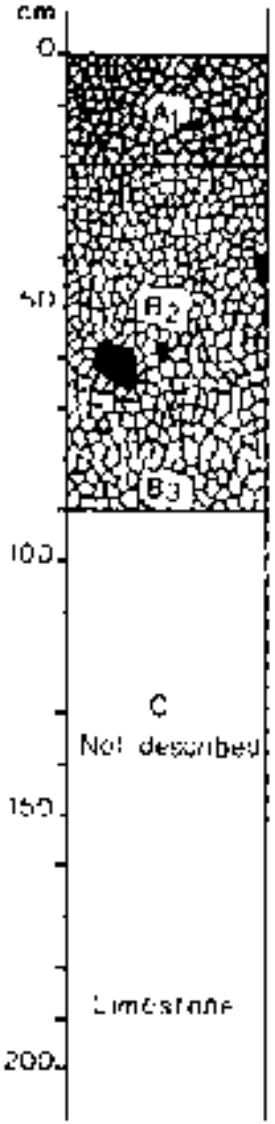
Topography: Mid-slope of low hill, 14% gradient

Elevation: 20 m

Drainage: Moderate

Parent material: Limestone

Vegetation: Cleared; *Pteridium esculentum* and mostly introduced grasses and herbs



PROFILE DESCRIPTION:

A1	0 - 22 cm	Dark reddish brown (2.5YR 2/4) light clay; strong fine (5 mm) angular blocky structure; rough-ped fabric; friable when moist; abundant roots, 2% quartz up to 20 mm, 10% limestone fragments up to 10 mm, some (lag) sandstone and sharp gravel; pH 7.0; clear boundary
B_2	22 - 80 cm	Red (2.5YR 4/6) heavy clay; strong fine (5 mm) angular blocky structure; smooth-ped fabric; firm when moist; common roots, 1% quartz gravel up to 100 mm; pH 7.5; gradual boundary
B_3	80 - 90 cm	Red (2.5YR 4/6) medium clay; strong fine (5 mm) angular blocky structure; friable when moist; common roots; pH 8.0
C	90+ cm	Not described, pH 8.5

LABORATORY ANALYSES 951

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	C	2	7	37	14	38	86	33	53	17	6.3	130	0.008					
B2	30 - 60	C	4	2	8	3	86					6.8	65	0.005					
B3	80 - 90	C	6	7	10	9	72					7.5	210	0.006					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 10	4.79	0.37	17	4.1	10	380	0.048	0.29	15.9	2.3	1.3	0.2	31.8	50	7	4	1	38
B2	30 - 60				5.8			0.030	0.53	27.3	1.8	0.5	0.5	44.6	61	4	1	1	33
B3	80 - 90				11.7			0.047	0.47	29.7	1.3	0.5	0.4	37.8	79	3	1	1	16

PROFILE NUMBER: 14

Laboratory number: 1005

Site number: 723

Classification: Northcote (1979) - Uf6.11
Stace *et* al.(1972) - Brown Earth

Location: Moe 8121, grid ref. 546487
Road cutting 12 km SE of Churchill

Land system, component: Gunyah, 1

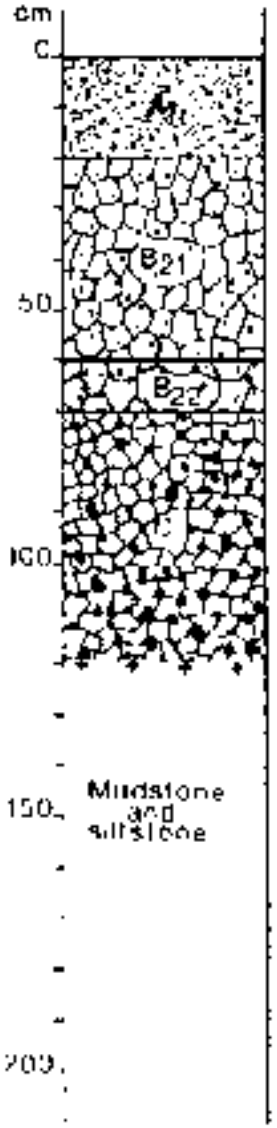
Topography: 40% hillslope facing NE

Elevation: 640 m

Drainage: Good

Parent material: Cretaceous mudstone and siltstone

Vegetation: Shrubby woodland II: *Acacia dealbata, Prostanthera lasianthos, Pittosporum bicolor* and *Cassinia aculeata*



PROFILE DESCRIPTION:

A_1	0 - 20 cm	Very dark greyish brown (10YR 3/2) light clay; moderate crumb structure; rough-ped fabric; hard when dry; abundant roots; 5% bedrock fragments up to 5 mm; pH 5.5; smooth boundary
B_{21}	20 - 60 cm	Very dark greyish brown (10YR 3/2) medium clay; moderate fine (6 mm) subangular blocky structure; rough-ped fabric; firm when moist; many roots; 5% bedrock fragments up to 5 mm; pH 5.0; smooth boundary
B_{22}	60 - 70 cm	Dark brown (10 YR 3/3) medium clay; moderate fine (6 mm) subangular blocky structure; rough-ped fabric; firm when moist; many roots; 10% bedrock fragments up to 10 mm; pH 4.5; smooth boundary
C	70 - 120+ cm	Dark yellowish brown (10YR 4/4) medium clay; moderate fine (6 mm) angular blocky structure; rough-ped fabric; firm when moist; 70% soft Cretaceous mudstone fragments up to 50 mm; pH 4.0

LABORATORY ANALYSES 1005

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	C	18	8	15	23	42					4.4	79	0.004					
Al	10 - 18	C	17	5	13	24	50					4.3	59	0.003					
B21	20 - 30	C	5	3	13	23	51					4.6	52	0.002					
B21	30 - 60		6					73	40	33	16								
B22	60 - 70	C	9	5	14	23	55					4.5	46	0.002					
C	90 - 120	C	0	11	24	24	36					4.5	43	0.003					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 10	5.5	0.43	17	3.4	14	480	0.032	0.39	0.5	1.1	1.3	0.2	48.4	1.	2	3	<1	94
Al	10 - 18	4.7	0.37	17	3.3	12	360	0.027	0.44	0.06	0.3	1.0	0.2	46.9	<1	1	2	<1	97
B21	20 - 30	3.8	0.32	15	3.2	7	340	0.022	0.44	<0.01	0.2	1.0	0.2	44.2	<1	<1	2	<1	98
B21	30 - 60																		
B22	60 - 70				3.6			0.022	0.39	<0.01	0.08	0.5	0.2	37.6	<1	<1	1	1	98
C	90 - 120				3.3			0.036	0.44	0.02	0.07	0.4	0.2	35.0	<1	<1	1	1	98

PROFILE NUMBER: 15

Laboratory number: 1006

Site number: 727

Classification: Northcote (1979) - Uf6.12
Stace *et* al.(1972) - Brown Earth

Location: Moe 8121, grid ref. 449395
Road cutting 20 km S of Churchill

Land system, component: Livingston, 2

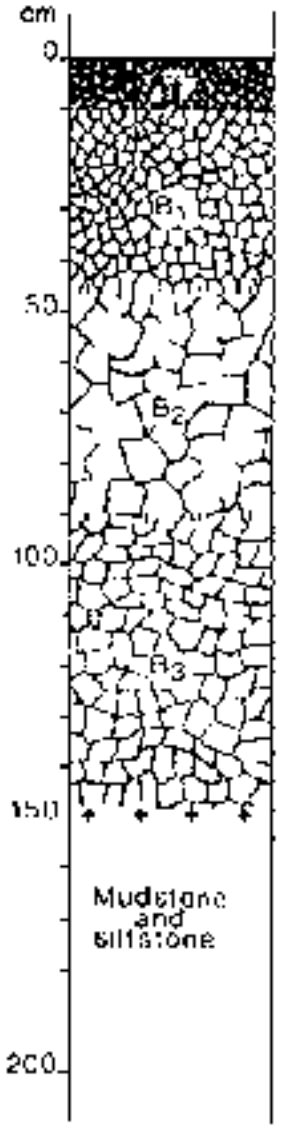
Topography: 21% slope facing SE on plateau remnant

Elevation: 340 m

Drainage: Moderate

Parent material: Cretaceous mudstone and siltstone

Vegetation: *Pin us radiata* plantation with Cassinia *aculeata*, *Olearia lirata* and Rubus sp. in the understorey



PROFILE DESCRIPTION:

A1	0 - 10 cm	Very dark greyish brown (10YR 3/2) light clay; common distinct reddish-brown (<5 mm) mottles; moderate fine (4 mm) subangular blocky structure; rough-ped fabric; hard when dry; pH 5.5; gradual boundary
B_1	10 - 45 cm	Dark brown (10YR 4/3) medium clay; common distinct reddish brown (5 - 15 mm) mottles; moderate medium (8 mm) angular blocky structure; rough-ped fabric; very hard when dry; pH 5.0; diffuse smooth boundary
B_2	45 - 90 cm	Dark yellowish brown (10YR 4/4) medium clay; abundant distinct reddish brown (5 - 15 mm) mottles; weak coarse (25 mm) angula^r blocky structure; rough-ped fabric; firm when moist; pH 5.0; diffuse smooth boundary
B_3	90 - 150+ cm	Brownish yellow (10YR 6/8) medium clay; abundant prominent pale grey (>15 mm) and abundant distinct reddish brown (5 - 15 mm) mottles; moderate fine (4 mm) angula^r blocky structure; rough-ped fabric; firm when moist; pH 5.0

LABORATORY ANALYSES 1006

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	SiCL	1	3	24	25	39					4.7	43	0.003					
B1	20 - 30	SiC	0	1	24	25	41					4.7	42	0.001					
B2	45 - 60	SiC	0	1	23	25	44	59	32	27	14	4.6	33	0.001					
B3	90 - 120	C	0	1	12	18	57					4.6	25	0.003					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 10	4.5	0.30	20	3.0	8	240	0.022	0.20	0.4	0.7	0.6	0.2	36.9	1	2	2	1	94
B1	20 - 30	2.7	0.21	17	3.2	9	140	0.016	0.21	0.2	0.2	0.3	0.1	26.6	1	1	1	<1	97
B2	45 - 60				3.3			0.012	0.21	0.06	0.07	0.2	0.06	20.7	<1	<1	1	<1	99
B3	90 - 120				5.3			0.009	0.19	0.2	0.09	0.2	0.07	18.0	1	1	1	<1	97

PROFILE NUMBER: 16

Laboratory number: 1007

Site number: 728

Classification: Northcote (1979) - Uf6.12
Stace *et* al.(1972) - Brown Earth

Location: Traralgon 8221, grid ref. 586456
Road cutting 27 km S of Traralgon near Tarra Valley National Park

Land system, component: Jeeralang, 1

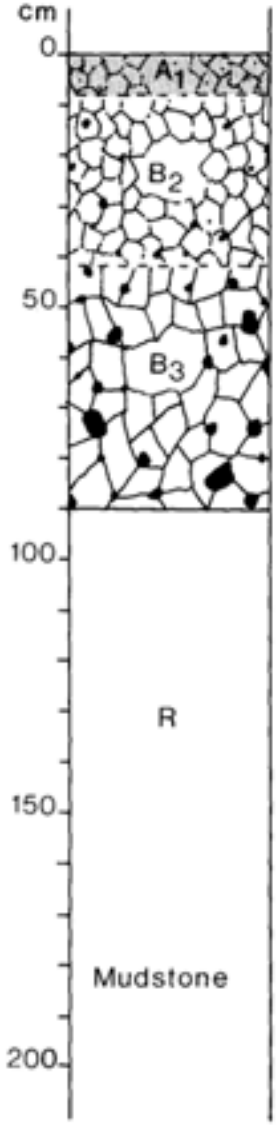
Topography: Mountain mid-slope, W aspect, 37% gradient

Elevation: 520 m

Drainage: -

Parent material: Cretaceous mudstone (feldspathic)

Vegetation: Regenerating shrubby open forest II: *Eucalyptus globulus, E. obliqua* and *Acacia melanoxylon; Goodenia ovata, Olearia lirata, Bedfordia arborescens, Correa lawrenciana* and *Coprosma quadrifida* predominant in understorey



PROFILE DESCRIPTION:

A1	0 - 8 cm	Dark brown (10YR 3/3) light clay; moderate medium (10 mm) subangular blocky structure; rough-ped fabric; very porous; firm when moist; 1% bedrock fragments up to 2 mm; abundant roots; pH 5.5; gradual smooth boundary
B_2	8 - 42 cm	Dark brown (10YR 4/3) medium clay; common faint brown (>15 mm) mottles; moderate medium (10 mm) subangular blocky structure; rough-ped fabric; moderately porous; very firm when moist; abundant roots; 5% feldspathic mudstone fragments up to 30 mm; pH 5.5; gradual smooth boundary
B_3	42 - 90 cm	Dark yellowish brown (10YR 4/4) medium clay; common faint yellowish brown (>15 mm) mottles; moderate medium (100 mm) angular blocky structure; rough-ped fabric; firm when moist; 20% feldspathic mudstone fragments up to 50 mm; common roots; pH 5.0
R	90+ cm	Bedrock

LABORATORY ANALYSES 1007

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 8	CL	1	9	27	23	33					4.6	65	0.004					
B2	10 - 20	C	0	5	25	19	42					5.4	46	0.002					
B2	30 - 42	C	0	3	23	16	50					5.2	42	0.001					
B3	60 - 78	C	0	5	26	15	49					5.0	40	0.002					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 8	3.3	0.26	17	3.2	10	460	0.021	0.24	2.7	1.6	1.3	0.3	36.1	7	4	4	1	84
B2	10 - 20	2.5	0.19	17	3.2	8	400	0.017	0.25	1.7	1.1	1.0	0.2	31.4	5	4	3	1	87
B2	30 - 42				3.5			0.012	0.21	1.3	0.9	0.8	0.3	27.9	5	3	3	1	88
B3	60 - 78				3.7			0.012	0.19	0.6	0.9	0.5	0.2	28.8	2	3	2	1	82

PROFILE NUMBER: 17

Laboratory Number: 0935

Site number: 382

Classification: Northcote (1979) - Uc1.23
Stace *et at.* (1972) - Alluvial Soil

Location: Stratford 8322, grid ref. 004063 8 km SW of Briagolong

Land system, component: Stratford, 1

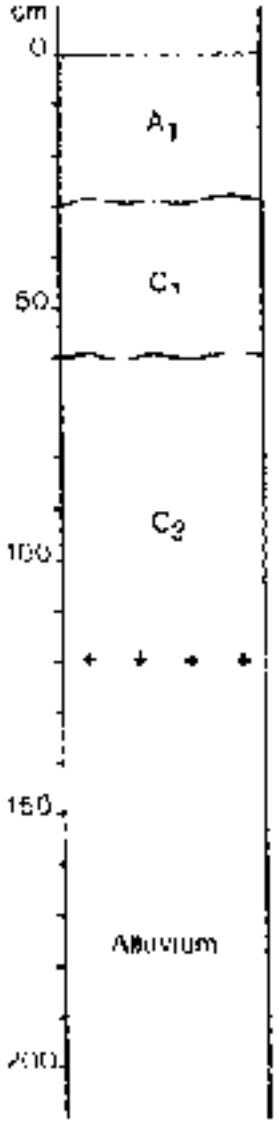
Topography: Undulating alluvial terrace, 0% slope

Elevation: 40 m

Drainage: Good

Parent material: Holocene coarse-textured alluvium

Vegetation: Cleared; grassland occasionally with *Acacia mearnsii*



PROFILE DESCRIPTION:

A1	0 - 30 cm	Dark brown (10YR 4/3) sand; apedal; sandy fabric; loose when moist; abundant roots and rhizomes; pH 5.9; clear wavy boundary
C_1	30 - 60 cm	Dark brown (10YR 4/3) sand; gravelly lenses 80 mm thick at top and bottom of horizon; apedal; sandy fabric; loose when moist; abundant roots; pH 6.5; clear wavy boundary
C_2	60 - 120+ cm	Dark greyish brown (10YR 4/2) sand; apedal; sandy fabric; hard when dry; few roots; pH 6.5

LABORATORY ANALYSES

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	1 - 10	S	0	62	34	2	2					6.0	40	0.003					
Cl	20 - 30	S	2	22	66	6	5					5.8	27	0.001					
Cl	30 - 60	S	1	81	17	<1	3					5.8	13	0.001					
C2	90 - 120	S	0	51	44	4	2					6.5	13	0.001					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	1 - 10	0.54	0.046	15	0.5	11	220	0.008	0.16	0.8	0.8	0.5	<0.01	3.1	26	26	16	<1	32
Cl	20 - 30	0.65	0.047	18	1.0	11	200	0.012	0.23	1.6	0.8	0.4	0.03	7.5	21	11	5	<1	63
C1	30 - 60				4.9	6	50	0.005	0.11	0.7	0.4	0.1	0.01	2.1	33	19	5	<1	43
C2	90 - 120				0.5	8	70	0.078	0.19	1.0	1.0	0.1	<0.01	3.3	30	30	3	<1	37

PROFILE NUMBER: 18

Laboratory Number: 0961

Site number: 479

Classification: Northcote (1979) - Uc1.43
Stace *et al.* (1972) - Alluvial Soil

Location: Stratford 8322, grid ref. 191478
8 km S of Dargo on Wonnangatta River

Land system, component: Walnut, 1

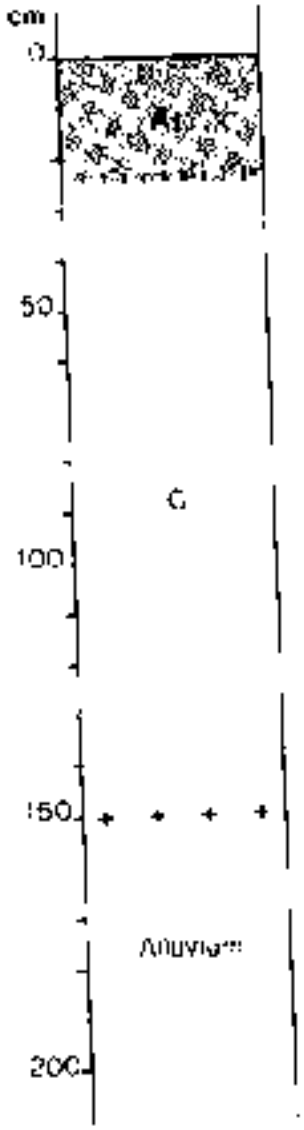
Topography: Modern river terrace, 1% slope

Elevation: 220 m

Drainage: Good

Parent material: Holocene coarse-textured alluvium

Vegetation: Cleared; mostly introduced grasses with occasional *Eucalyptus melliodora*, *E. viminalis* and *Acacia dealbata*



PROFILE DESCRIPTION:

A1	0 - 25 cm	Very dark greyish brown (10YR 3/2) sandy loam; weak crumb structure; rough-ped fabric; friable when moist; pH 8.0; diffuse boundary
C	25 - 150+ cm	Dark brown (10YR 3/3) loamy sand; apedal; earthy fabric; friable when moist; pH 6.5 increasing to pH 7.0 at 150 cm

LABORATORY ANALYSES 955

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	LS	1	19	57	14	7					6.4	120	0.012					
Al	20 - 25	LS	0	16	67	12	3					6.3	32	0.003					
C	30 - 60	LS	0	15	70	9	6					6.5	23	0.002					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 10	2.3	0.22	14	1.1	22	560	0.035	0.32	3.9	2.0	1.3	0.01	13.8	28	15	9	<1	48
Al	20 - 25	0.82	0.064	17	1.3	17	300	0.030	0.30	2.9	1.1	0.6	<0.01	9.7	30	11	6	<1	63
C	30 - 60	0.56	0.047	15	1.2	9	220	0.026	0.32	3.3	0.9	0.4	<0.01	8.6	38	11	5	<1	46

PROFILE NUMBER: 19

Laboratory Number: 0955

Site number: 402

Classification: Northcote (1979) - Uc1.44
Stace *et al.* (1972) - Alluvial Soil

Location: Bairnsdale 8422, grid ref. 570100 3 km S of Bairnsdale East

Land system, component: Delta, 2

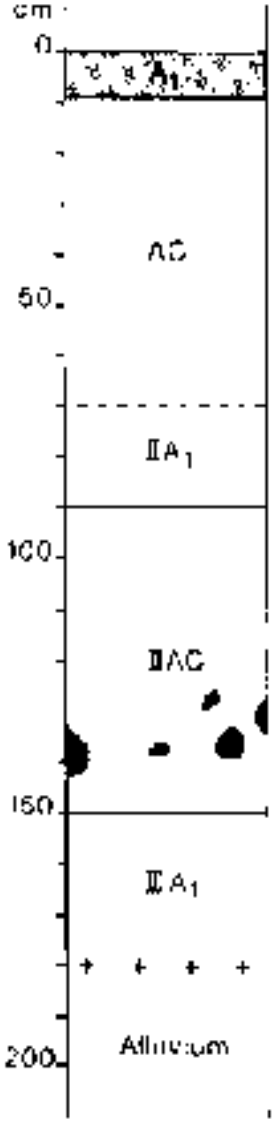
Topography: 1% slope near crest of levee on Mitchell River

Elevation: 20 m

Drainage: Good

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; introduced grasses, including *Lolium perenne*, *Dactylis glomerata* and *Bromus catharticus*, with occasional *Acacia mearnsii*



PROFILE DESCRIPTION:

A1 0 - 8 cm Dark brown (7.5YR 3/2) fine sandy loam; weak fine to medium (1 - 5 mm) crumb structure; rough-ped fabric; soft when dry; mica; abundant roots; pH 5.5; clear smooth boundary

AC 8 - 70 cm (7.5YR 3/2) fine sandy loam; apedal; earthy fabric; soft when dry; mica; pH 5.5; gradual smooth boundary

IIA1 70 - 90 cm Very dark greyish brown (10YR 3/2) sand; apedal; earthy fabric; soft when dry

IIAC 90 - 150 cm Dark brown (10YR 3/3) sand; apedal; earthy fabric; soft when dry; mica, 1% river gravel up to 200 mm; pH 5.8; clear smooth boundary

$IIIA_1$ 150 - 180 cm Very dark grey (10YR 3/1) fine sandy clay loam; apedal; earthy fabric; soft when dry; pH 6.8

LABORATORY ANALYSES 955

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 8	SL	0	12	62	10	10					5.4	100	0.006					
AC	30 - 60	LS	0	13	66	9	10	22	20	2	2.0	5.0	32	0.002					
IIA1	70 - 90	LS	0	11	67	9	8	19	18	1	1.4	5.3	31	0.001					
IIAC	90 - 120	SL	0	9	76	4	9					6.0	36	0.001					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 8	2.22	0.23	13	1.0	88	480	0.044	0.26	2.7	1.9	1.2	0.2	13.9	19	14	9	1	57
AC	30 - 60				1.3	36	90	0.038	0.26	2.1	1.1	0.2	0.2	13.7	15	8	1	1	75
IIAI	70 - 90				1.2	38	80	0.040	0.22	2.0	1.3	0.2	0.3	10.8	19	12	2	3	64
IIAC	90 - 120				1.1	44	70	0.036	0.21	1.5	1.0	0.2	0.4	7.9	19	13	3	5	60

PROFILE NUMBER: 20

Laboratory Number: 0949

Site number: 396

Classification: Northcote (1979) - Uc4.32

Location: Stace *et al* (1972) - Siliceous Sand
Sale 8321, grid ref. 102877 7 km NE of Sale

Land system, component: Nuntin, 1

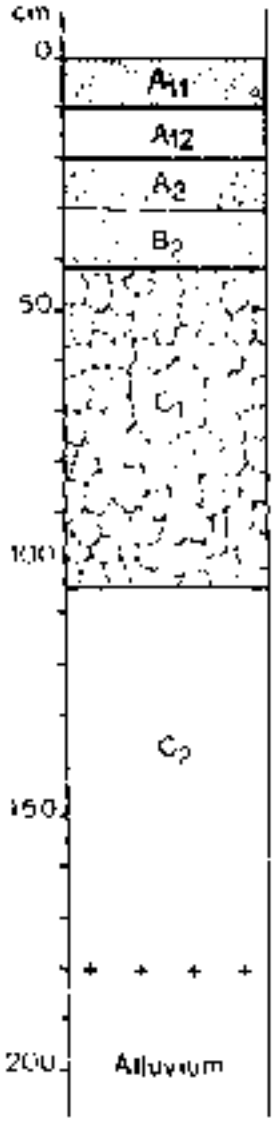
Topography: Depression below sandy rise, 1% slope

Elevation: 20 m

Drainage: -

Parent Material: Pleistocene fine-textured alluvium

Vegetation: Cleared; grassland with *Dactylis glomerata, Bromus catharticus, Cynodon dactylon*



PROFILE DESCRIPTION:

A11 0 - 10 cm Very dark greyish brown (10YR 3/2) fine sandy loam; moderate coarse (10 mm) crumb structure; rough-ped fabric; soft when dry; common grass roots; pH 6.0; clear smooth boundary

Al2 10 - 20 cm Dark brown (10YR 3/3) fine sandy loam; apedal; earthy fabric; soft when dry; common roots; pH 5.0; clear smooth boundary

A_2 20 - 30 cm Dark brown to brown (7.5YR 4/4) sandy loam; apedal; earthy fabric; hard when dry; 2% ferruginous nodules up to 5 mm; few roots; pH 5.5; clear boundary

B_2 30 - 42 cm Strong brown (7.5YR 4/6) loamy sand; common distinct reddish brown (5 - 15 mm) mottles; apedal; earthy fabric; very hard when dry; 2% ferruginous nodules up to 5 mm; pH 6.5; clear smooth boundary

C_1 42 - 105 cm Strong brown (7.5YR 4/6) sandy loam; abundant distinct reddish brown (>15 mm) mottles; weak coarse (20 mm) subangular blocky structure; rough-ped fabric; very firm when moist; few roots; pH 7.5; clear wavy boundary

C_2 105 - 180 cm Brown (7.5YR 5/4) very fine sandy clay loam; distinct yellowish brown (>15 mm) mottles; apedal; earthy fabric; friable when moist; pH 8.5

LABORATORY ANALYSES 949

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 10	SL	0	20	53	10	11					5.7	210	0.031					
Al2	10 - 20	LS	0	24	54	12	9					5.5	61	0.003					
A2	20 - 30	LS	0	23	55	12	9					5.1	35	0.001					
B2	30 - 42	LS	1	24	56	12	7					5.1	23	0.001					
Cl	42 - 60	L	1	21	54	12	12					5.7	30	0.002					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
All	0 - 10	2.54	0.22	15	1.7	20	560	0.023	0.23	1.8	1.2	1.6	0.5	12.6	14	10	13	4	59
Al2	10 - 20	1.63	0.14	15	1.9	9	420	0.017	0.19	0.7	0.3	1.2	0.4	11.7	6	3	10	3	79
A2	20 - 30	0.84	0.069	16	2.1	6	220	0.013	0.15	0.5	0.1	0.6	0.2	8.2	6	1	7	2	84
B2	30 - 42				2.5			0.009	0.13	0.5	0.05	0.4	0.1	4.9	10	1	8	2	79
Cl	42 - 60				2.7			0.010	0.21	1.1	1.0	0.3	0.2	6.2	18	16	5	3	58

PROFILE NUMBER: 21

Laboratory number: 0963

Site number: 481

Classification: Northcote (1979) - Um4.31
Stace *et al.* (1972) - Non-calcic Brown Soil

Location: Maffra 8222; grid ref. 672344
1 km SE of Licola on Licola-Heyfield Road

Land system, component: Walnut, 2

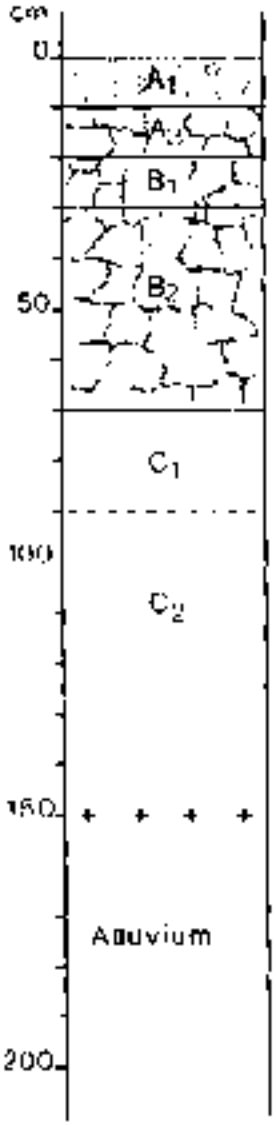
Topography: Alluvial terrace, 1% slope

Elevation: 200 m

Drainage: Good

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; mainly introduced grasses with scattered *Eucalyptus melliodora*



PROFILE DESCRIPTION:

A_1	0 - 10 cm	Very dark greyish brown (10YR 3/2) loam; medium crumb structure; rough-ped fabric; very hard when dry; pH 6.0; clear boundary
A_3	10 - 20 cm	Dark brown (7.5YR 3/2) silty loam; weak coarse angular blocky structure (30 mm); rough-ped fabric; very hard when dry; pH 6.0; clear boundary
B_1	20 - 30 cm	Dark reddish brown (5YR 3/2) silty loam; weak coarse angular blocky structure (30 mm); rough-ped fabric; very firm when moist; pH 6.5; clear boundary
B_2	30 - 70 cm	Dark reddish brown (5YR 3/3) silty clay loam; weak coarse angular blocky structure (40 mm); rough-ped fabric; very firm when moist; pH 8.0; abrupt boundary
C1	70 - 90 cm	Dark reddish brown (5YR 3/4) loam; apedal; earthy fabric; firm when moist; pH 8.5; gradual boundary
C_2	90 - 150+ cm	Dark reddish brown (5YR 3/4) sand; apedal; earthy fabric; firm when moist; pH 8.5

LABORATORY ANALYSES 963

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	SiL	1	5	45	25	23					6.0	110	0.006					
A3	10 - 20	SiL	1	1	46	27	24					6.1	42	0.003					
Bl	20 - 30	SiL	0	1	45	28	25	31	19	12	6.8	6.2	33	0.003					
B2	30 - 60	SiCL	0	1	45	26	28	30	22	8	7.0	6.6	32	0.003					
CI	70 - 90	L	1	1	57	20	23					8.5	80	0.004					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 10	4.1	0.40	13	1.4	57	600	0.065	0.44	6.1	2.6	1.4	0.05	26.7	23	10	5	<1	62
A3	10 - 20	1.8	0.17	14	1.6	39	400	0.049	0.40	4.6	2.0	1.0	0.07	20.8	22	10	5	<1	63
Bl	20 - 30	0.90	0.096	12	1.7	39	320	0.054	0.45	4.8	2.3	0.8	0.05	17.8	27	13	5	<1	55
B2	30 - 60				1.9			0.051	0.46	5.8	4.0	0.4	0.2	17.2	34	23	2	1	40
Cl	70 - 90				1.5			0.035	0.32	4.4	4.0	0.2	0.3	10.7	41	37	2	3	17

PROFILE NUMBER: 22

Laboratory Number: 0972

Site number: 490

Classification: Northcote (1979) - Um5.52 Stace *et al.* (1972) - Alluvial Soil

Location: Omeo 8423, grid ref. 633778 3 km N of The Walnuts

Land system, component: Walnut, 1

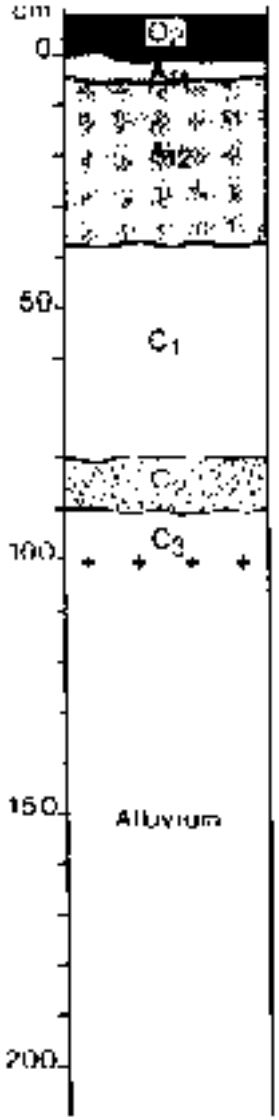
Topography: Alluvial terrace, 0% slope

Elevation: 320 m

Drainage: Good

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; grassland, mostly with introduced species and occasional *Eucalyptus melliodora* and *E. viminalis.* (Original vegetation probably an open forest III)



PROFILE DESCRIPTION:

02 7 - 0 cm		Loam; moderate crumb structure; rough-ped fabric; abundant roots; pH 4.0; abrupt wavy boundary
A11 0 - 4 cm		Dark brown (10YR 3/3) fine sandy clay loam; apedal; earthy fabric; slightly hard when dry; abundant roots; pH 4.0; abrupt wavy boundary
A_{12} 4 - 37 cm		Very dark greyish brown (10YR 3/2) fine sandy clay loam; apedal; earthy fabric; slightly hard when dry; common roots; pH 7.0; clear wavy boundary
C_1	37 - 80 cm	Dark brown to brown (10YR 4/3) sandy loam; apedal; soft when dry; unevenly distributed organic staining; common roots; pH 8.0; clear wavy boundary
C_2	80 - 90 cm	Dark brown to brown (10YR 4/3) gravelly sand; apedal; sandy fabric; soft when dry; 60% fine gravel (3 mm); pH 8.5; wavy boundary
C_3	90 - 100+ cm	Very dark greyish brown (10YR 3/2) silty clay loam; common distinct yellowish brown (5 - 15 mm) mottles; apedal; earthy fabric; soft when dry; pH 8.0

LABORATORY ANALYSES 972

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
O2	7 - 0	L	0	5	26	16	17	44	32	12	8.4	5.4	380	0.014					
All	0 - 4	L	2	5	52	21	21	19	14	5	1.6	6.4	120	0.011					
Al2	10 - 20	L	3	6	51	21	18					7.3	78	0.006					
Cl	30 - 60	LS	0	15	69	5	8					8.0	56	0.004					
C2	80 - 90		10																

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
O2	7 - 0	22.0	1.74	16	0.9	155	800	0.073	0.44	14.7	4.7	2.1	0.1	60.4	24	8	3	<1	65
All	0 - 4	2.7	0.23	15	1.5	140	640	0.066	0.58	9.4	2.4	1.6	0.09	21.5	44	11	7	<1	38
Al2	10 - 20	1.0	0.10	13	1.5	115	780	0.060	0.64	7.8	2.3	1.0	0.08	15.8	49	15	6	1	29
Cl	30 - 60				1.4			0.042	0.42	3.9	1.0	1.0	0.05	7.3	53	14	14	1	18
C2	80 - 90																		

PROFILE NUMBER: 23

Laboratory Number: 0941

Site number: 388

Classification: Northcote (1979) - Um6.21 Stace *et al.* (1972) - Prairie Soil

Location: Sale 8321, grid ref. 010847 6 km NW of Sale

Land system, component: Thomson, 3

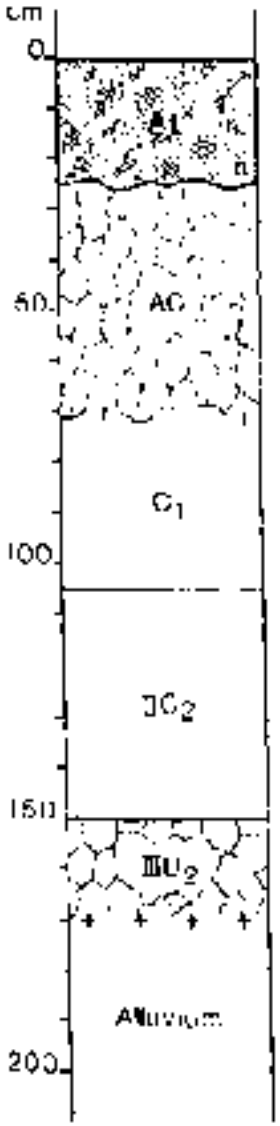
Topography: River levee, 0% slope

Elevation: 20 m

Drainage: Good

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; mostly introduced grasses with occasional *Eucalyptus tereticornis* and *Acacia mearnsii*



PROFILE DESCRIPTION:

A_1 0 - 25 cm Black (10YR 2/1) silty loam; moderate medium (10 mm) subangular blocky structure; rough-ped fabric; hard when dry; abundant roots; pH 5.5; clear wavy boundary

AC 25 - 72 cm Very dark greyish brown (10YR 3/2) fine sandy clay loam; weak coarse (30 mm) subangular blocky structure; rough-ped fabric; very hard when dry; abundant roots; pH 6.0; diffuse wavy boundary

C_1 72 - 105 cm Dark brown (10YR 3/3) fine sandy clay loam; apedal; earthy fabric; hard when dry; pH 6.5; clear smooth boundary

IIC_2 105 - 150 cm Dark brown to brown (10YR 4/3) sand; few distinct yellowish brown (5 - 15 mm) mottles; apedal; sandy fabric; hard when dry; pH 6.5; clear smooth boundary

$IIIB_2$ 150 - 170 cm Reddish brown (5YR 4/3) sandy clay; common distinct yellowish brown (>15 mm) mottles; moderate coarse (50 mm) subangular blocky structure; rough-ped fabric; hard when dry; pH 7.0

LABORATORY ANALYSES 941

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	L	0	10	56	12	17					5.6	74	0.005					
Al	20 - 25	L	0	5	56	15	22					6.0	39	0.003					
AC	30 - 60	L	0	7	57	17	19					6.7	22	0.001					
Cl	72 - 90	L	0	12	60	13	15					7.3	21	0.001					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
Al	0 - 10	2.98	0.27	14	1.3	12	140	0.027	0.26	3.0	2.1	0.4	0.3	17.0	18	12	2	2	66
Al	20 - 25	1.95	0.19	13	1.3	6	40	0.027	0.29	3.9	2.0	0.2	0.4	17.3	23	12	1	2	62
AC	30 - 60				1.4			0.019	0.28	3.6	2.4	0.1	0.3	10.9	33	22	1	3	41
Cl	72 - 90				1.3			0.015	0.19	2.1	2.1	0.1	0.3	7.5	28	28	1	4	39

PROFILE NUMBER: 24

Laboratory Number: 0991

Site number: 661

Classification: Northcote (1979) - Um6.21

Stace *et al.* (1972) - Alluvial Soil

Location: Bairnsdale 8422, grid ref. 724240 2 km S of Bruthen

Land system, component: Maffra 1, 3

Topography: Tambo River flood plain, hummocky, 1% slope

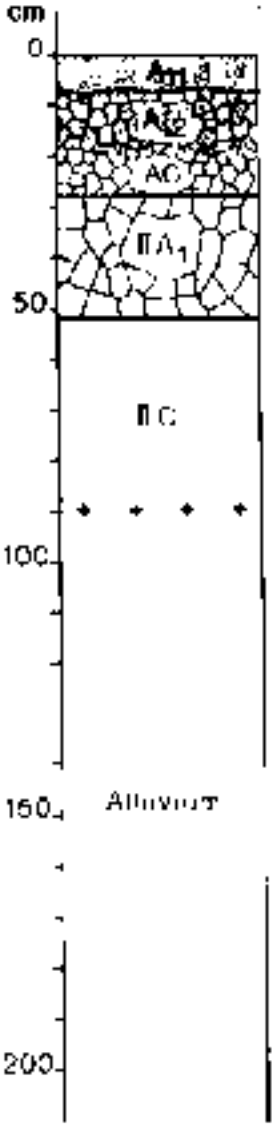
Elevation: 15 m

Drainage: Poor

Parent material: Holocene medium-textured alluvium

Vegetation: Cleared; grassland mostly with introduced species

Remarks An older, buried profile occurs below 27 cm depth



PROFILE DESCRIPTION:

A_{11} 0 - 7 cm — Very dark greyish brown (10YR 3/2) silty loam; moderate crumb structure; rough-ped fabric; friable when moist; pH 5.9; clear wavy boundary

A_{12} 7 - 17 cm — Very dark greyish brown (10YR 3/2) silty loam; abundant distinct brown (<5 mm) mottles; moderate fine (5 mm) subangular blocky structure; rough-ped fabric; friable when moist; pH 5.7; diffuse wavy boundary

AC 17 - 27 cm — Very dark greyish brown (10YR 3/2) silty loam (with thin fine sand lenses); abundant distinct brown (<5 mm) mottles; moderate fine (5 mm) subangular blocky structure; rough-ped fabric; friable when moist, (fine sand is loose when moist); pH 5.9; abrupt smooth boundary

IIA_1 27 - 52 cm — Very dark greyish brown (10YR 3/2) silty clay loam; abundant distinct brown (5 - 15 mm) mottles; moderate coarse (20 mm) angular blocky structure; rough-ped fabric; firm when moist; pH 5.9; abrupt boundary

IIC 52 - 90+ cm — Yellowish brown (10YR 5/6) silty loam; abundant distinct grey (5 -15 mm) mottles; apedal; earthy fabric; friable when moist; pH 5.9

LABORATORY ANALYSES 991

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 7	L	0	2	43	18	17					6.2	210	0.007					
Al2	10 - 17	L	0	1	54	18	15					6.3	140	0.008					
IIA1	30 - 52	SiL	0	<1	37	34	19					6.1	310	0.028					
IIC	52 - 60	SiL	0	<1	55	26	15					6.3	230	0.019					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
All	0 - 7	4.0	0.43	12	1.6	52	180	0.037	0.26	8.7	6.0	0.4	0.5	26.9	32	22	1	2	43
Al2	10 - 17	2.3	0.20	15	1.8	25	70			8.0	4.3	0.1	0.5	20.9	38	21	<1	2	30
IIA1	30 - 52	1.4	0.15	12		12	40	0.028	0.28	8.2	5.1	0.09	1.0	24.5	33	21	<1	4	42
IIC	52 - 60	1.5	0.11	18						7.0	4.1	0.04	0.8	21.2	33	19	<1	4	44

PROFILE NUMBER: 25

Laboratory Number: 0988

Site number: 662

Classification: Northcote (1979) - Um6.21
Stace *et al.* (1972) - Alluvial Soil

Location: Bairnsdale 8422, grid ref. 707103
On bank of Tambo River 1 km from its mouth

Land system, component: Delta, 1

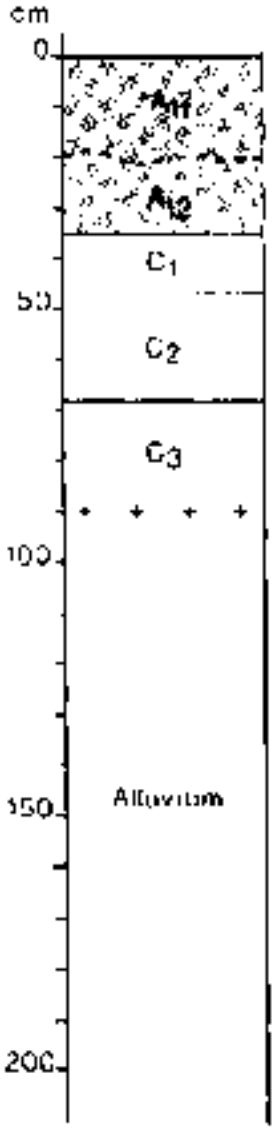
Topography: 1% levee slope on river delta

Elevation: 10 m

Drainage: Imperfect

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; mostly introduced grasses with occasional *Eucalyptus tereticornis*



PROFILE DESCRIPTION:

A_{11}	0 - 20 cm	Very dark brown (10YR 2/2) silty loam; moderate crumb structure; rough-ped fabric; friable when moist; abundant roots; mica; pH 5.5; gradual wavy boundary
A_{12}	20 - 35 cm	Black (10YR 2/1) silty clay loam; moderate crumb structure; rough-ped fabric; friable when moist; common roots; mica; pH 6.0; clear smooth boundary
C1	35 - 46 cm	Dark brown (10YR 4/3) silty clay loam; abundant distinct grey (5 - 15 mm) mottles; apedal; earthy fabric; friable when moist; few roots; mica; pH 6.0; clear smooth boundary
C2	46 - 68 cm	Dark brown (10YR 4/3) loamy sand; abundant distinct grey (5 - 15 mm) mottles; apedal; earthy fabric; firm when moist; mica; pH 7.0; clear smooth boundary
C3	68 - 90 cm	Dark yellowish brown (10YR 4/6) silty loam clay; abundant prominent grey (5 - 15 mm) mottles; apedal; earthy fabric; very firm when moist; mica; pH 7.0

LABORATORY ANALYSES 988

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 10	L	0	2	34	22	19					5.4	210	0.016					
All	10 - 20	L	0	2	41	24	19					5.6	71	0.004					
Al2	20 - 30	L	0	2	52	23	16					5.9	51	0.002					
Al2	30 - 35	L	0	2	51	23	16					6.2	64	0.003					
Cl	35 - 46	L	0	3	54	23	14					6.5	71	0.003					
C3	68 - 90	L	0	2	53	20	18					6.9	390	0.037					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
All	0 - 10	3.9	0.53	10	1.2	69	320	0.045	0.26	2.7	3.1	0.9	0.7	36.7	7	8	2	2	81
All	10 - 20	4.0	0.33	16		47	180			1.8	2.1	0.5	0.6	32.7	6	6	2	2	84
Al2	20 - 30	2.7	0.20	18						1.6	2.5	0.4	0.7	25.4	6	10	2	3	79
Al2	30 - 35	1.6	0.14	15	1.3	16	120	0.025	0.26	2.2	3.5	0.3	0.9	20.5	11	17	1	4	67
Cl	35 - 46	1.1	0.077	19	1.8	8	90	0.026	0.26	2.7	4.7	0.2	1.1	16.3	17	29	1	7	46
C3	68 - 90					16	240	0.026	0.32	2.4	5.4	0.5	3.6	16.0	15	34	3	23	25

PROFILE NUMBER: 26

Laboratory Number: 0936

Site number: 383

Classification: Northcote (1979) - Uf6.11
Stace *et al.* (1972) – Wiesenboden

Location: Maffra 8222, grid ref. 961974 2 km W of Maffra

Land system, component: Maffra 1, 2

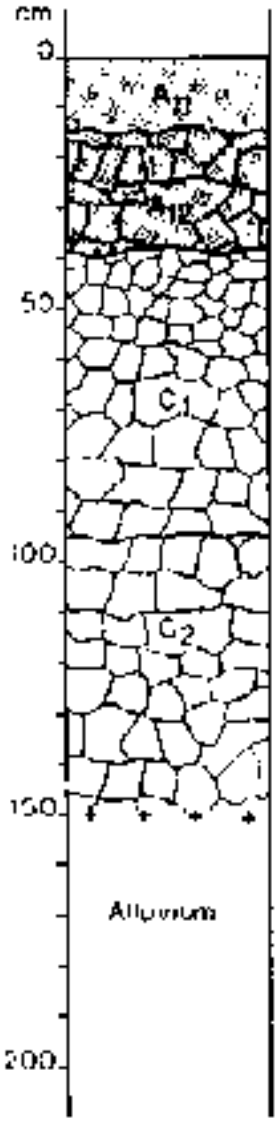
Topography: 1% slope on alluvial terrace

Elevation: 20 m

Drainage: Moderate

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; grassland predominantly of *Phalaris aquatica*



PROFILE DESCRIPTION:

A_{11}	0 - 15 cm	Very dark greyish brown (10YR 3/2) clay loam; moderate medium (3 mm) crumb structure; rough-ped fabric; slightly hard when dry; abundant roots; pH 5.7; clear wavy boundary
A_{12}	15 - 38 cm	Very dark greyish brown (10YR 3/2) medium clay; moderate fine to medium (5 - 10 mm) angular blocky structure; rough-ped fabric; hard when dry; abundant roots; pH 5.7; clear wavy boundary
C1	38 - 95 cm	Very dark grey (10YR 3/1) heavy clay; abundant distinct yellowish brown (5 - 15 mm) mottles; strong fine to medium (8 - 12 mm) angular blocky to moderate coarse (35 mm) angular blocky structure; rough-ped fabric; hard when dry; pH 7.0; clear wavy boundary
C_2	95 - 150 cm	Dark brown (7.5YR 4/4) sandy clay; abundant faint grey (5 - 15 mm) mottles; angular block structure; earthy fabric; firm when moist; few roots; pH 9.0

LABORATORY ANALYSES 936

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 10	SiCL	3	4	21	30	35					5.4	120	0.011					
Al2	20 - 30	SiC	0	3	17	31	45					5.6	62	0.005					
Cl	38 - 60		0					41	23	18	10								
Cl	60 - 90	SiCL	0	1	26	37	37					8.0	390	0.045					
C2	95 - 120	L	0	<1	58	21	20					8.8	440	0.054					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
All	0 - 10	6.96	0.46	20	2.0	20	280	0.046	0.50	5.5	4.7	0.7	0.7	32.5	17	14	2	2	65
Al2	20 - 30	2.85	0.26	14	2.5	12	90	0.039	0.54	5.8	4.4	0.2	0.8	29.9	19	15	1	3	62
Cl	38-60																		
Cl	60 - 90				2.6			0.014	0.44	5.0	7.2	0.08	4.3	17.4	29	41	<1	25	5
C2	95 - 120				1.8			0.009	0.33	1.9	4.1	0.2	3.2	9.4	20	44	2	34	0

PROFILE NUMBER: 27

Laboratory Number: 0939

Site number: 386

Classification: Northcote (1979) - Uf6.11
Stace *et al.* (1972) - Prairie Soil

Location: Maffra 8222, grid ref. 983106 13 km N of Maffra

Land system, component: Maffra 1, 1

Topography: Alluvial terrace, 0% slope

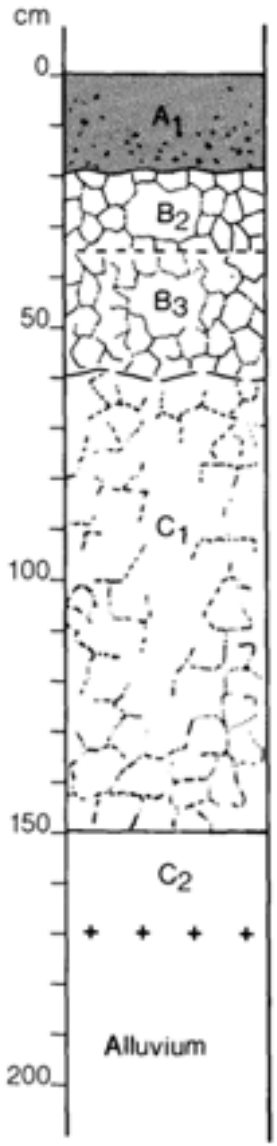
Elevation: 40 m

Drainage: Good

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; grassland, mostly of introduced species, and scattered *Eucalyptus tereticornis*

Remarks: Monolith taken



PROFILE DESCRIPTION:

A_1	0 - 20 cm	Black (10YR 2/1) light clay; strong coarse (10 mm) subangular blocky structure; rough-ped fabric; friable when moist; 5% quartz gravel up to 10 mm; abundant grass roots; pH 6.0; clear wavy boundary
B_2	20 - 35 cm	Very dark grey (10YR 3/1) medium clay; moderate coarse (20 mm) subangular blocky structure; rough-ped fabric; firm when moist; few roots; pH 6.5; gradual smooth boundary
B_3	35 - 60 cm	Dark reddish brown (5YR 3/2) sandy clay; weak coarse (40 mm) subangular blocky structure; rough-ped fabric; few roots; pH 7.0; gradual wavy boundary
C_1	60 - 150 cm	Dark reddish brown (5YR 3/3) light sandy clay; common distinct yellowish brown (5 - 15 mm) mottles; weak coarse (40 mm) angular blocky structure; rough-ped fabric; firm when moist; few roots; pH 7.0; clear boundary
C_2	150 - 170 cm	Reddish brown (5YR 4/4) sandy loam; common distinct yellowish brown (5 - 15 mm) mottles; apedal; earthy fabric; friable when moist; pH 7.5

LABORATORY ANALYSES 939

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
Al	0 - 10	SiCL	4	4	31	27	31					5.7	43	0.005	20 - 30	mica 50;
Al	10 - 20		0					46	27	19	10					Kaolinite 10;
B2	20 - 30	SiCL	0	1	36	30	30	37	22	15	10	6.2	31	0.003		illite 40
B3	35 - 60	SiL	0	3	45	27	23					6.7	23	0.002		
CI	90 - 120	SiL	0	1	44	32	24					7.3	35	0.002		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 10	4.76	0.27	23	2.1	9	120	0.038	0.34	8.7	2.9	0.5	0.3	27.6	32	11	2	1	54
Al	10-20																		
B2	20 - 30	1.79	0.15	16	2.4	4	50	0.031	0.36	10.1	3.3	0.3	0.3	23.0	44	14	1	1	40
B3	35 - 60				2.2			0.021	0.31	6.8	2.8	0.2	0.3	14.1	48	20	1	2	29
Cl	90 - 120				2.8			0.021	0.29	5.3	3.4	0.2	0.6	12.8	41	27	2	5	25

Horizon	Sample Depth cm	Bulk Density g/mL	Total Porosity %(V/V)	Volumetric field capacity %	Water content wilting point %	Calculated Available Water %	Calculated macro-porosity %(V/V)
Al	0 - 10	1.04	60.7	42.6	20.4	22.2	18.1
B2	20 - 30	1.50	43.2	33.2	20.4	12.8	10.0
B3	35 - 60	1.56	41.0	30.9	18.2	12.7	10.1

PROFILE NUMBER: 28

Laboratory Number: 0942

Site number: 389

Classification: Northcote (1979) - Uf6.41

Stace *et al.* (1972) - Humic Gley

Location: Traralgon 8221, grid ref. 898837 11 km NE of Rosedale

Land system, component: Nambrok, 2

Topography: Drainage depression on alluvial terrace, 0% slope

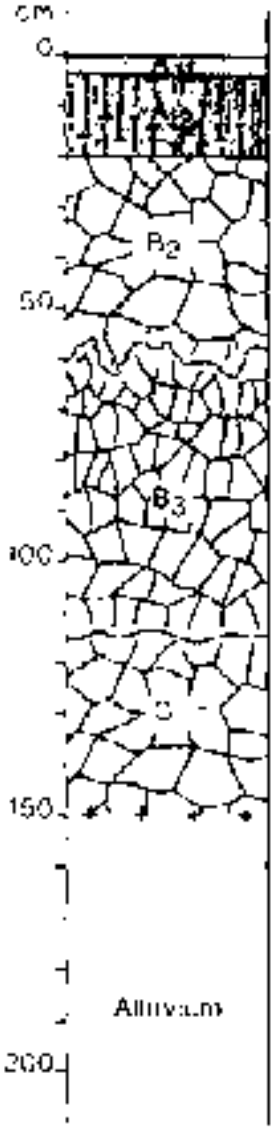
Elevation: 20 m

Drainage: Poor

Parent material: Pleistocene fine-textured alluvium

Vegetation: Cleared; mostly grasses, rushes and sedges

Remarks: Watertable at 174 cm at time of sampling (July)



PROFILE DESCRIPTION:

All	0 - 3 cm	Very dark grey (10YR 3/1) silty clay loam; common distinct yellowish brown (5 - 15 mm) mottles; moderate medium (10 mm) subangular blocky structure; rough-ped fabric; porous; slightly hard when thy; abundant grass roots; pH 6.0; clear smooth boundary
Al2	3 - 20 cm	Very dark grey (10YR 3/1) medium clay; common distinct yellowish brown (5 - 15 mm) mottles; moderate prismatic (80 mm) structure; rough-ped fabric; porous; very hard when dry; common grass roots; pH 8.0; clear smooth boundary
B_2	20 - 60 cm	Dark grey (2.5Y 4/1) heavy clay; common prominent yellowish brown (5 - 15 mm) mottles; strong medium (10 mm) angular blocky structure; smooth-ped fabric; porous; very firm when moist; few roots; irregular boundary
B_3	60 - 115 cm	Yellowish brown (10YR 5/6) heavy clay; common prominent grey (<5 mm) mottles; strong fine (5 mm) angular blocky structure; smooth-ped fabric; very firm when moist; few roots; pH 9.5; clear wavy boundary
C	115 - 150 cm	Yellowish brown (10YR 5/6) heavy clay; common prominent grey (5 - 15 mm) mottles; moderate coarse (20 mm) angular blocky structure; smooth-ped fabric; very firm when moist; few roots; pH 9.5

LABORATORY ANALYSES 942

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 3	SiC	1	1	12	34	41	59	44	14	5.8	830	0.10						
Al2	10 - 20	SiC	0	<1	10	36	49	15			8.1	530	0.059						
B2	30 - 60	SiC	0	1	7	27	63				9.3	1400	0.15						
B3	60 - 90	C	1	1	5	23	70				9.2	1400	0.15						
C	120 - 150	SiC	1	<1	4	29	66				8.5	480	0.051						

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
All	0 - 3	6.63	0.57	15	1.3	68	420	0.047	0.51	3.9	8.2	1.6	3.9	33.7	12	24	5	12	47
Al2	10 - 20	1.23	0.13	12	1.8	3	220	0.011	0.61	2.9	8.4	0.8	5.2	20.9	14	40	4	25	17
B2	30 - 60				2.2			0.009	0.71	2.7	9.8	1.0	11.6	25.6	11	38	4	45	2
B3	60 - 90				2.5			0.008	0.85	2.7	9.6	0.5	9.3	22.1	12	44	2	42	0
C	120 - 150				2.7			0.008	0.71	2.1	10.6	0.3	6.5	20.0	11	53	2	33	1

PROFILE NUMBER: 29

Laboratory Number: 0983

Site number: 573

Classification: Northcote (1979) - Gn2.11
Stace *et al.* (1972) - Lithosol - Red Earth intergrade

Location: Maffra 8222, grid ref. 686450 5 km SE of Sugarloaf

Land system, component: Bulltown Spur, 1

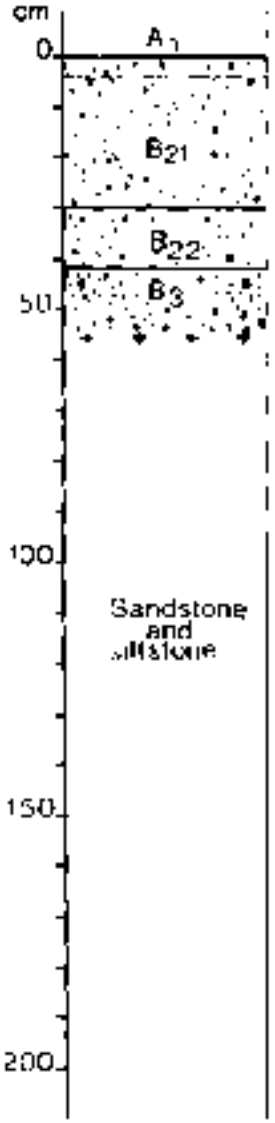
Topography: Upper slope of ridge, 30% gradient, SW aspect

Elevation: 1020 m

Drainage: Good

Parent material: Sandstone and siltstone

Vegetation: Woodland I: *Eucalyptus macrorhyncha*, *E. dives* and *E. mannifera* with *Cassinia longifolia*, *Prostanthera sp.* and *Platylobium formosum* common in shrub layers. Herb layer sparse — *Poa* sp., *Stylidium graminifolium* and *Helichrysum semipapposum* predominant



PROFILE DESCRIPTION:

A_1	0 - 4 cm	Dark reddish brown (5YR 3/3) stony loam; weak crumb structure; rough-ped fabric; slightly hard when dry; 15% bedrock fragments (10 mm); pH 5.0, clear boundary
B_{21}	4 - 30 cm	Yellowish red (5YR 4/6) stony clay loam; apedal; earthy fabric; slightly hard when dry; 15% bedrock fragments (10 mm); pH 5.5; clear boundary
B_{22}	30 - 42 cm	Dark red (2.5YR 3/6) stony light clay; apedal; earthy fabric; slightly hard when dry; 15% bedrock fragments (10 mm); pH 5.0; clear boundary
B_3	42 - 55 cm	Red (2.5YR 4/6) stony light clay; apedal earthy fabric; slightly hard when dry; 30% bedrock fragments (20 mm); pH 5.0

LABORATORY ANALYSES 983

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 4	SiL	47	13	30	29	17		4.4	110	0.003								
B21	10 - 20	SiL	43	12	30	30	20		4.6	35	0.002								
B22	30 - 42	C	43	11	24	22	43		4.7	26	0.001								

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 4	6.1	0.25	32	2.2	11	280	0.018	0.19	0.2	0.2	0.8	0.2	43.0	<1	<1	2	<1	98
B21	10 - 20	2.3	0.095	31	2.5	7	80	0.011	0.14	0.07	0.05	0.3	0.05	33.0	<1	<1	1	<1	99
B22	30 - 42				3.6	6	60	0.017	0.24	0.07	0.3	0.3	0.08	24.7	<1	1	1	<1	98

PROFILE NUMBER: 30

Laboratory Number: 0977

Site number: 351

Classification: Northcote (1979) - Gn3.11 Stace *et al.* (1972) – Krasnozem

Location: Warragul 8021, grid ref. 077793 4 km N of Warragul

Land system, component: Thorpdale, 1

Topography: Hillslope facing N, 19% gradient

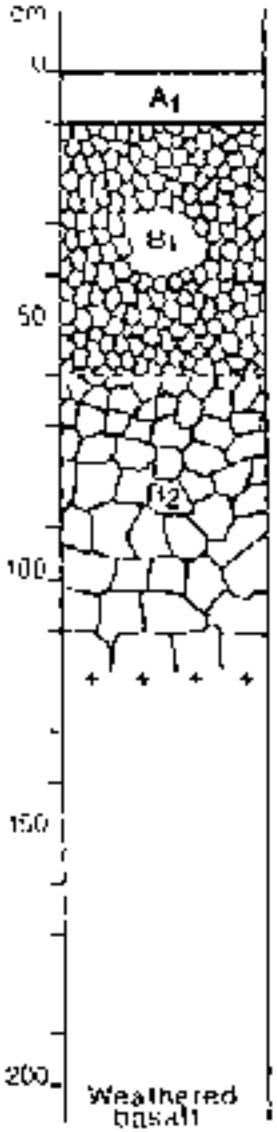
Elevation: 120 m

Drainage: Good

Parent material: Weathered Tertiary basalt

Vegetation: Cleared; introduced grasses with scattered *Eucalyptus viminalis*, *E. ovata* and *Acacia melanoxylon*

Remarks: A landslip occurs on nearby hill



PROFILE DESCRIPTION:

A_1	0 - 10 cm	Dark brown (7.5YR 3/4) silty clay loam; strong fine (2 mm) crumb structure; earthy fabric; slightly hard when dry; many fine roots; pH 6.0; clear boundary
B_1	10 - 60 cm	Dark reddish brown (5YR 3/4) light silty clay; strong fine (8 mm) subangular blocky structure; rough-ped fabric; hard when dry; many fine roots; pH 5.7; gradual boundary
B_2	60 - 120+ cm	Dark reddish brown (2.5YR 3/4) silty clay; strong medium (15 mm) angular blocky structure becoming progressively coarser (40 - 50 mm) at depth; smooth-ped fabric; pH 5.7

LABORATORY ANALYSES 977

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	SiCL	26	14	32	26	26	68	36	32	18	5.8	100	0.014					
Bl	10 - 20	SiL	26	14	34	27	23	83	36	47	20	5.5	54	0.009					
B1	30 - 60	C	12	1	16	13	67					52	62	0.006					
B2	60 - 90		7																
B2	90 - 120		10																

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 10	6.2	0.49	16	6.2	17	200	0.097	0.07	6.1	1.8	0.5	0.3	38.5	16	5	1	1	77
B1	10 - 20																		
B1	30 - 60				11.6			0.11	0.05	2.8	0.4	0.04	0.3	28.1	10	1	<1	1	88
B2	60-90																		
B2	90 - 120				12.3			0.092	0.08	3.3	0.7	0.03	0.3	20.6	16	3	<1	2	79

PROFILE NUMBER: 31

Laboratory Number: 0978

Site number: 449

Classification: Northcote (1979) - Gn3.11 Stace *et al.* (1972) – Krasnozem

Location: Warragul 8021, grid ref. 057705 5 km S of Warragul

Land system, component: Neerim, 1

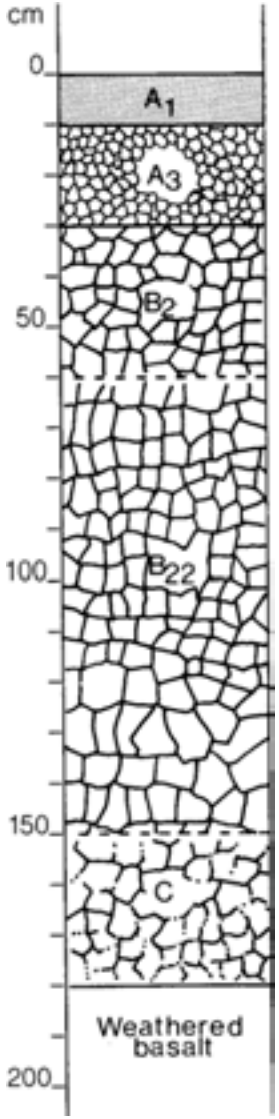
Topography: Upper hillslope, 11% gradient

Elevation: 160 m

Drainage: Good

Parent material: Strongly weathered Tertiary basalt, often kaolinitic at Depth

Vegetation: Cleared; mostly introduced grasses with scattered *Eucalyptus obliqua* and *Acacia verticillata*



PROFILE DESCRIPTION:

A_1	0 - 10 cm	Dark reddish brown (5YR 3/4) sandy clay loam; strong fine (1 mm) crumb structure; rough-ped fabric; soft when dry; many fine roots; pH 6.5; abrupt boundary
A_3	10 - 30 cm	Dark reddish brown (5YR 3/4) clay loam; moderate fine (3 mm) subangular blocky structure; rough-ped fabric; hard when dry; many fine roots; pH 6.0; clear boundary
B21	30 - 60 cm	Dark red (2.5YR 3/6) clay loam; strong fine (3 mm) angular blocky structure; rough-ped fabric; hard when dry; many fine roots; pH 5.5; gradual boundary
B_{22}	60 - 150 cm	Dark red (2.5YR 3/8) clay loam; strong fine (5 mm) angular blocky structure; smooth-ped fabric; extremely hard when dry; pH 5.5; gradual boundary
C	150 - 180 cm	Red (2.5YR 4/6) sandy clay loam; abundant (5 - 15 mm) distinct yellowish red mottles; weak fine (5 mm) angular blocky structure; extremely hard when dry; pH 5.0; weathered basalt below this horizon 408

LABORATORY ANALYSES 978

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
Al	0 - 10	SiL	7	10	27	37	21	64	35	5.5			140	0.015	120 - 150	kaolinite 80;
A3	10 - 20		7	2	14	19	62	70	32	29	16		41	0.006		chlorite 20
B21	30 - 60	C	7	4	14	17	64	79	55	38	21	5.4	36	0.004		
B22	120 - 150	C	7							24	19	5.7				

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P ppm	K ppm	P %	K %	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%					Milliequivalents/100g					% of CEC				
Al	0 - 10	5.4	0.42	17	6.0	10	300	0.07	0.08	2.1	1.3	0.8	0.4	41.2	5	3	2	2	88
A3	10 - 20																		
B21	30 - 60				6.4			0.025	0.05	0.7	0.5	0.06	0.2	28.7	2	2	<1	1	95
B22	120 - 150				6.7			0.022	0.06	0.1	0.9	0.03	0.4	21.3	1	4	<1	2	93

PROFILE NUMBER: 32

Laboratory Number: 0975

Site number: 493

Classification: Northcote (1979) - Gn3.11 Stace *et al* (1972) – Krasnozem

Location: Bairnsdale 8422, grid ref. 808484
Road cutting 23 km N of Bruthen, 6 km E of Tambo Crossing

Land system, component: Wellington, 1

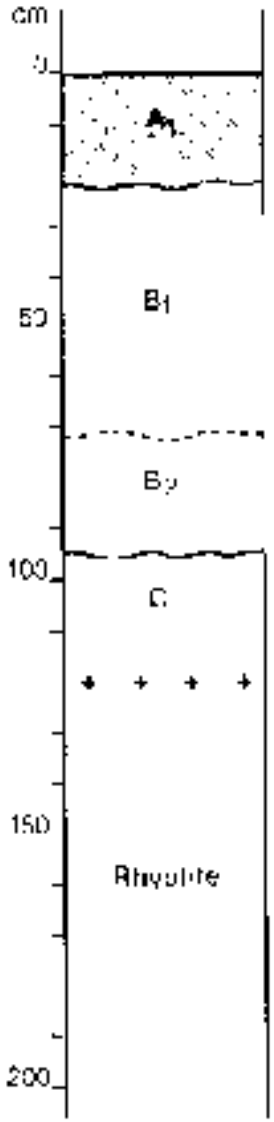
Topography: Mid-slope of ridge with 35% gradient, E aspect

Elevation: 650 m

Drainage: Good

Parent material: Devonian rhyolite

Vegetation: Regenerating after logging; layered open forest II: *Eucalyptus obliqua, E. regnans* and *E. cypellocarpa* with *Acacia dealbata, A. melanoxylon, Pomaderris aspera, Pteridium esculentum* and *Tetrarrhena juncea* common in understorey



PROFILE DESCRIPTION:

A1	0 - 22 cm	Dark reddish grey (2.5YR 3/1) light sandy clay loam; strong crumb structure; rough-ped fabric; soft when dry; abundant roots; pH 6.0; clear wavy boundary
B_1	22 - 72 cm	Dark reddish brown (2.5YR 3/4) sandy clay loam; strong granular structure; smooth-ped fabric; slightly hard when dry; common roots; pH 5.8; gradual wavy boundary
B_2	72 - 95 cm	Yellowish red (2.5YR 4/6) clay loam; strong granular structure; smooth-ped fabric; hard when dry; pH 4.0; clear wavy boundary
C	95 - 120+ cm	Yellowish red (2.5YR 4/8) sandy clay loam; apedal; rough-ped fabric; very hard when dry; pH 5.5

LABORATORY ANALYSES 975

Horizon	Sample Depth	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
	cm		Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
Al	0 - 10	L	11	33	27	20	14	62	34	28	15	6.0	53	0.005	72 - 90	Kaolinite 60;
B1	30 - 60	CL	2	22	26	22	28					5.7	23	0.002		Chlorite40
B2	72 - 90	C	2	25	19	15	40					5.4	17	0.003		
C	95 - 120	CL	7	30	17	18	35					5.1	17	0.001		

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
Al	0 - 10	10.5	0.66	21	3.9	9	440	0.037	0.12	3.5	1.7	1.3	0.1	67.6	5	3	2	<1	90
Bl	30 - 60				5.1			0.023	0.08	0.2	0.08	0.8	0.08	39.2	1	<1	2	<1	97
B2	72 - 90				5.9			0.020	0.06	0.1	0.1	0.5	0.07	18.5	1	1	3	<1	95
C	95 - 120				6.3			0.023	0.04	0.1	0.08	0.4	0.07	11.1	1	1	4	1	93

PROFILE NUMBER: 33

Laboratory Number: 0971

Site number: 489

Classification: Northcote (1979) - Gn3.15 Stace *et al.* (1972) - Terra Rossa

Location: Omeo 8423, grid ref. 742911 2 km SE of Bindi

Land system, component: Bindi, 3

Topography: Mid-slope of alluvial fan, 10% gradient

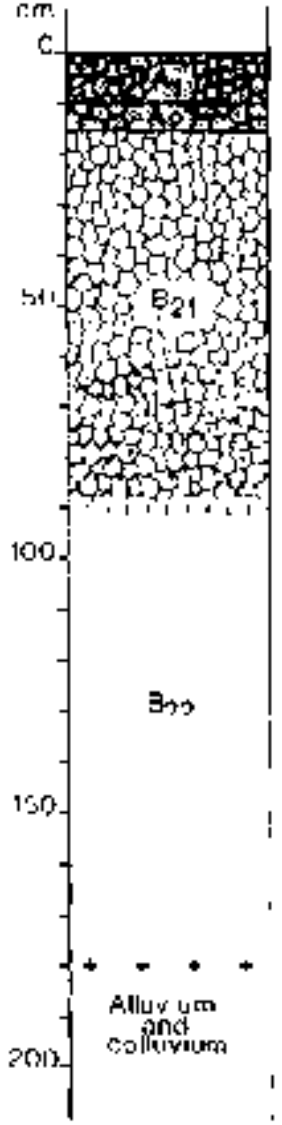
Elevation: 480 m

Drainage: Good

Parent material: Fine-textured alluvium and colluvium from limestone Hills

Vegetation: Cleared; mostly introduced grasses

Remarks: Sampling site is within an old disused sheepyard



PROFILE DESCRIPTION:

A_1 0 - 10 cm	Very dark greyish brown (10YR 3/2) clay loam; moderate subangular blocky structure (7 mm); rough-ped fabric; very hard when dry; common roots; pH 5.7; abrupt smooth boundary
A_2 10 - 15 cm	Dark brown (7.5YR 3/2) light clay; moderate angular blocky structure (10 mm); rough-ped fabric; very hard when dry; common roots; pH 5.5; clear boundary
B_{21} 15 - 90 cm	Dark reddish brown (5YR 3/4) medium clay; strong subangular blocky structure (6 mm); smooth-ped fabric; firm when moist; common roots to 60 cm, few to 90 cm; pH 7.0; diffuse boundary
B_{22} 90 - 180 cm	Yellowish red (5YR 4/6) medium clay; structure and consistence not recorded but probably similar to B_{21}; 2% calcareous nodules (2 mm); pH 7.0

LABORATORY ANALYSES 971

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
Al	0 - 5	SiCL	15	1	24	33	34						150	0.006	60 - 90	mica 80;
Al	5 - 10		20					53	26	27	12	6.0	47	0.003		kaolinite 20
A2	10 - 15	SiC	5	2	28	27	40						30	0.002		
B21	20 - 30	C	7	2	28	24	44	45	19	26	12	6.8	26	0.002		
B22	90 - 120	C	4	3	21	14	59						22	0.002		
B22	150 - 180	C	6	3	17	16	59						23	0.001		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 5	4.2	0.40	14	2.7	33	760	0.041	0.72	11.8	1.3	2.1	0.05	27.0	44	5	8	<1	43
Al	5-10																		
A2	10 - 15	1.8	0.19	12	3.0	9	360	0.032	0.62	9.8	0.7	1.0	0.05	20.4	48	3	5	<1	44
B21	20 - 30	0.69	0.097	9	3.6	5	240	0.027	0.72	10.7	0.7	0.7	0.05	17.8	60	4	4	<1	32
B22	90 - 120				4.4			0.027	0.96	13.9	2.3	1.0	0.2	27.3	51	8	4	1	36
B22	150 - 180				4.0			0.019	0.98	16.9	2.8	1.0	0.3	28.8	59	10	3	1	27

PROFILE NUMBER: 34

Laboratory Number: 0959

Site number: 472

Classification: Northcote (1979) - Gn3.21
Stace *et al.* (1972) - Brown Earth

Location: Moe 8121, grid ref. 488425 17 km S of Churchill

Land system, component: Gunyah, 1

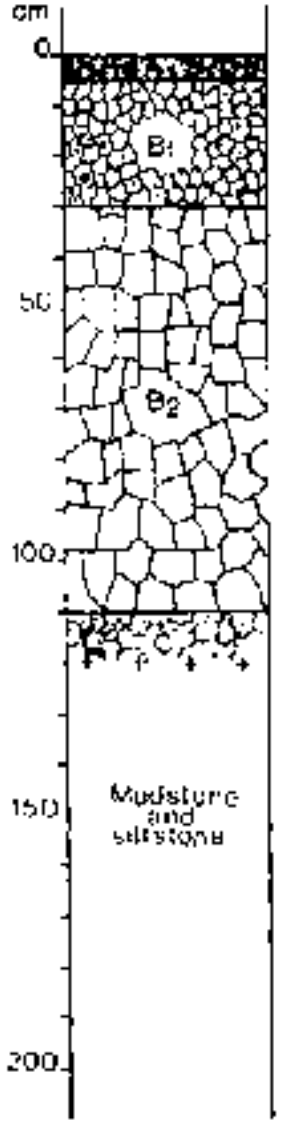
Topography: Mid-slope of hill, 45% gradient

Elevation: 440 m

Drainage: Good

Parent material: Cretaceous mudstone and siltstone

Vegetation: Shrubby open forest II: *Eucalyptus regnans* with *Acacia melanoxylon, Cassinia aculeata, Pomaderris aspera, Olearia argophylla, Goodenia ovata* and *Tetrarrhena juncea* common in understorey



PROFILE DESCRIPTION:

A_1	0 - 5 cm	Very dark greyish brown (10YR 3/2) clay loam; moderate medium (15 mm) subangular blocky structure; rough-ped fabric; friable when moist; pH 4.7; clear boundary
B_1	5 - 30 cm	Dark brown (10YR 4/3) silty clay loam; moderate medium to coarse (20 mm) subangular blocky structure; rough-ped fabric; firm when moist; 2% rock fragments up to 10 mm; pH 5.0
B_2	30 - 110 cm	Dark brown (10YR 4/3) silty clay; few faint yellowish brown (<5 mm) mottles; strong coarse (25 mm) angular blocky structure; smooth-ped fabric; firm when moist; pH 5.0
C	110 - 120+ cm	Yellowish brown (10YR 5/4) silty clay; common faint dark yellowish brown (<5 mm) mottles; weak coarse (50 mm) subangular blocky structure; rough-ped fabric; firm when moist; 5% rock fragments up to 8 mm; pH 5.0

LABORATORY ANALYSES 959

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 5	SiCL	2	11	23	32	29	69	45	24	10	4.8	120	0.010					
B1	10 - 20	SiCL	0	3	19	37	38					4.9	49	0.006					
B2	60 - 90	SiC	0	1	16	32	49	59	31	28	14	5.0	50	0.006					
C	110 - 120	SiC	0	2	17	33	45					4.9	49	0.006					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 5	11.2	0.44	33	2.6	270	580	0.11	0.39	1.7	1.7	1.5	0.4	60.4	3	3	2	1	91
Bl	10 - 20	2.6	0.21	16	3.0	6	120	0.025	0.36	0.7	0.8	0.4	0.3	29.7	2	3	1	1	93
B2	60 - 90				3.5			0.017	0.37	0.6	0.7	0.6	0.3	28.0	2	3	2	1	92
C	110 - 120				4.0			0.022	0.37	0.5	0.6	0.6	0.2	28.1	2	2	2	1	93

PROFILE NUMBER: 35

Laboratory Number: 0976

Site number: 506

Classification: Northcote (1979) - Gn4.11 Stace *et al.* (1972) – Krasnozem

Location: Healesville 8022, grid ref. 953094
1.8 km NNE of The Bump, about 5 km ENE of Powelltown

Land system, component: Kirchubel, 2

Topography: Broad crest, 15% gradient

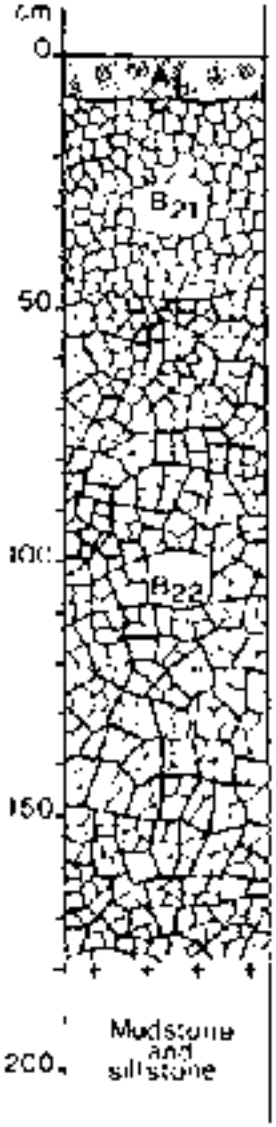
Elevation: 620 m

Drainage: Good

Parent material: Devonian granodiorite or granite

Vegetation: Shrubby open forest II: *Eucalyptus sieberi, E. obliqua*

and *E. cypellocarpa* with an understorey including *Leptospermum* sp., *Phebalium squamulosum* and *Platylobium formosum*



PROFILE DESCRIPTION:

A_1	0 - 10 cm	Black (10YR 2/1) sandy loam; strong fine (<2 mm) crumb structure; rough-ped fabric; soft when dry; micaceous; abundant roots; pH 5.0; clear boundary
B_1	10 - 30 cm	Dark brown to brown (7.5YR 4/4) sandy clay loam; strong medium (3 mm) crumb structure; rough-ped fabric; soft when dry; micaceous; abundant roots; pH 6.0; gradual boundary
B_2	30 - 90 cm	Yellowish red (5YR 5/8) light sandy clay; moderate very fine to fine (5 mm) subangular blocky structure; rough-ped fabric; firm when moist; micaceous; 20% granite fragments up to 300 mm; abundant roots; pH 5.5; gradual boundary
C	90+ cm	Strong brown (7.5YR 4/8) clayey sand; apedal; earthy fabric; very firm when moist; mostly rotten rock, quite micaceous; 8% granite fragments up to 300 mm; pH 5.7

LABORATORY ANALYSES 976

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
Al	0 - 10	LS	17	22	38	14	9					4.9	88	0.009	60 - 90	kaolinite
B4	20 - 30	L	27	34	18	21	24					5.8	29	0.003		80; illite 20
B2	30 - 60		33					63	35	28	14					
B2	60 - 90	C	38	33	18	11	37					5.6	18	0.002		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 10	7.7	0.27	37	1.9	6	420	0.015	0.26	0.2	0.3	1.0	0.2	49.5	<1	1	2	<1	97
B1	20 - 30	3.2	0.15	28	3.4	4	160	0.009	0.07	0.1	0.06	0.7	0.2	33.5	<1	<1	2	1	97
B2	30 - 60																		
B2	60 - 90				3.5			0.012	0.10	<0.01	0.3	0.3	0.2	13.8	<1	2	2	1	95

PROFILE NUMBER: 36

Laboratory Number: 1002

Site number: 522

Classification: Northcote (1979) - Gn4.11 Stace *et al.* (1972) – Krasnozem

Location: Omeo 8423, grid ref. 564578 20 km SW of Swifts Creek

Land system, component: Jamieson, 3

Topography: Upper slope of ridge, 8% gradient

Elevation: 880 m

Drainage: Good

Parent material: Ordovician mudstone and sandstone

Vegetation: Layered open forest III: *Eucalyptus obliqua, E. delegatensis* and *Acacia dealbata. Olearia argophylla, Bedfordia arborescens, Pteridium esculentum, Tetrarrhena juncea* and *Poa* sp. predominant in understorey

PROFILE DESCRIPTION:

A_1	0 - 8 cm	Dark reddish brown (5YR 2/2) loam; strong crumb structure; rough-ped fabric; hard when dry; abundant roots; pH 4.0; clear wavy boundary
B_{21}	8 - 44 cm	Dark reddish brown (5YR 3/3) clay loam; moderate fine (8 mm) subangular blocky structure; rough-ped fabric; slightly hard when dry; common roots; pH 5.0; gradual wavy boundary
B_{22}	44 - 180+ cm	Dark red (2.5YR 3/6) light clay; moderate fine (8 mm) angular blocky structure; rough-ped fabric; slightly hard when dry; common roots to 90 cm depth, few between 90 - 180 cm; 5% small fragments of parent rock (about 3 mm); pH 6.0

LABORATORY ANALYSES 1002

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 8	SiL	18	11	32	30	19	59	30	29	16	5.0	37	0.005					
B21	10 - 20	SiL	4	8	39	28	22					5.2	17	0.003					
B21	30 - 44	SiL	5	5	36	36	21					5.3	14	0.003					
B22	60 - 90	C	18	4	25	22	46					5.2	13	0.002					
B22	120 - 150	C	14	5	26	23	44					5.2	12	0.002					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 8	10.6	0.63	22	4.1	16	200	0.035	0.22	0.4	0.2	0.7	0.09	81.5	1	<1	1	<1	98
B21	10 - 20	6.5	0.41	21	4.6	10	120	0.025	0.17	<0.05	0.08	0.6	0.1	68.1	<1	<1	1	1	98
B21	30 - 44				4.5			0.023	0.18	0.1	0.01	0.5	0.09	53.5	<1	<1	1	<1	99
B22	60 - 90				4.6			0.021	0.20	0.1	0.07	0.4	0.04	29.3	<1	<1	1	<1	99
B22	120 - 150				4.9			0.021	0.17	0.07	0.01	0.4	0.05	23.3	<1	<1	2	<1	98

PROFILE NUMBER: 37

Laboratory Number: 1008

Site number: 729

Classification: Northcote (1979) - Gn4.41
Stace *et al.* (1972) - Chocolate Soil

Location: Traralgon 8221, grid ref. 613498
Road cutting Mount Tassie — Traralgon road 0.3 km N of Mount Tassie

Land system, component: Neerim, 5

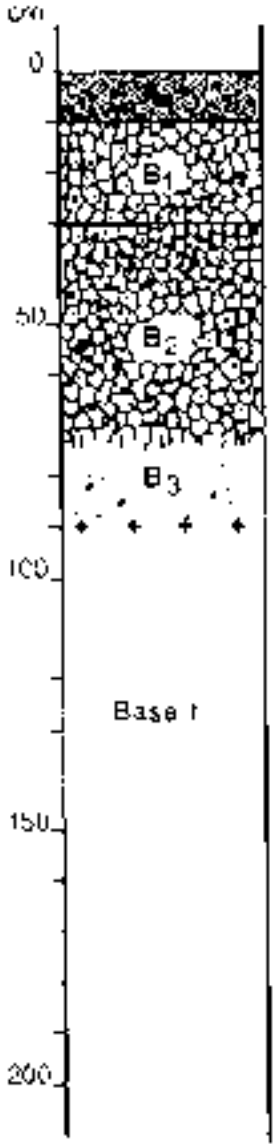
Topography: Crest slope of hill, 11% gradient

Elevation: 680 m

Drainage: Moderate

Parent material: Tertiary basalt

Vegetation: Cleared; predominantly *Poa* sp. with scattered *Eucalyptus obliqua* and *Pomaderris aspera*



PROFILE DESCRIPTION:

A1	0 - 10 cm	Black (10YR 2/1) clay loam; strong crumb structure; rough-ped fabric; slightly hard when dry; 1% basalt fragments up to 5 mm; pH 6.0; clear boundary
B_1	10 - 30 cm	Dark brown (7.5YR 3/2) light clay; strong fine (5 mm) subangular blocky structure; rough-ped fabric; hard when dry; 3% basalt fragments up to 8 mm; pH 6.5; clear boundary
B_2	30 - 72 cm	Dark brown to brown (7.5YR 4/2) medium clay; moderate fine (5 mm) subangular blocky structure; rough-ped fabric; firm when moist; 30% basalt fragments up to 50 mm; pH 6.5; diffuse boundary
B_3	72 - 90 cm	Strong brown (7.5YR 4/6) medium clay; moderate (3 mm) granular structure; smooth-ped fabric; 2% disintegrating yellowish brown and red basalt fragments up to 15 mm; pH 6.0

LABORATORY ANALYSES 1008

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	SiL	3	23	26	28	16					6.0	110	0.006					
B1	20-30	SiCL	0	9	27	27	31	69	42	27	17	6.3	72	0.003					
B2	32-60	CL	<1	11	27	22	35					6.2	51	0.003					
B3	72-90	C	2	7	23	15	50					5.8	42	0.003					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-10	6.6	0.56	15	5.7	38	480	0.084	0.18	9.8	2.1	1.4	0.5	462	21	5	3	1	70
B1	20-30	3.0	0.30	13	5.8	11	260	0.056	0.13	7.7	1.8	0.8	0.3	.4.4	22	5	2	1	70
B2	32-60				7.0			0.064	0.12	5.5	2.3	0.8	0.2	32.1	17	7	2	1	73
B3	72-90				6.9			0.075	0.086	6.0	3.2	0.4	0.4	32.1	19	10	1	1	69

PROFILE NUMBER: 38

Laboratory Number: 0998

Site number: 710
Classification: Northcote (1979) - Gn4.51
Stace *et al.* (1972) - Brown Earth

Location: Moe 8121, grid ref. 478534
Road cutting 6 km S of Churchill

Land system, component: Jeeralang, 2

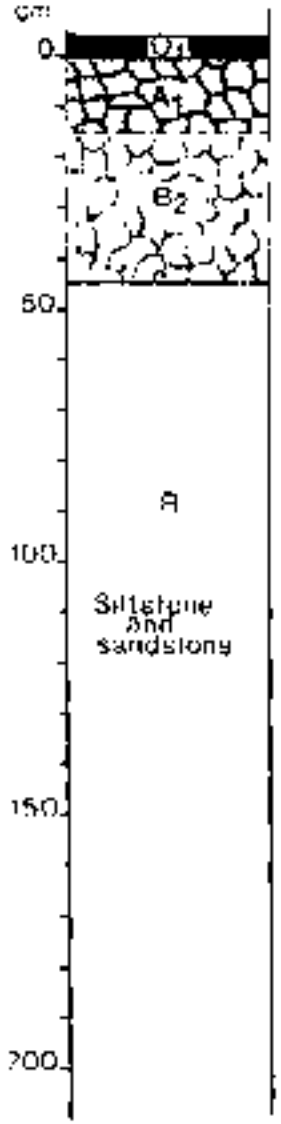
Topography: Upper hillslope with 45% gradient

Elevation: 140 m

Drainage: Good

Parent material: Cretaceous siltstone and sandstone

Vegetation: Open forest III: *Eucalyptus globulus* with *Acacia melanoxylon*, *Cassinia longifolia* and *Olearia argophylla* common in shrub layers



FIELD DESCRIPTION:

O_1	5 - 0 cm	Black organic material; pH 5.5; abrupt boundary
A1	0 - 15 cm	Dark greyish brown (10YR 4/2) clay loam; moderate angular blocky structure; rough-ped fabric; slightly hard when dry; pH 6.0; gradual boundary
B_2	15 - 45 cm	Light yellowish brown (10YR 6/4) light clay; common faint dark yellowish brown (<5 mm) mottles; weak angular blocky structure; rough-ped fabric; hard when dry; pH 5.5; clear boundary
R	45+ cm	Fractured sandstone and siltstone

LABORATORY ANALYSES 998

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 5	L	2	7	43	22	20					5.9	52	0.003					
B2	25 - 45	L	16	8	44	24	20	27	18	9	7.5	5.6	43	0.007					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available		HCl extract		Exchangeable cations									
						P ppm	K ppm	P %	K %	Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 5	2.7	0.19	18		11	200	0.20	0.13	4.6	2.0	0.4	0.2	19.8	23	10	2	1	64
B2	25 - 45				1.5					3.0	2.2	0.2	0.5	14.5	21	15	1	3	60

PROFILE NUMBER: 39

Laboratory Number: 0932

Site number: 379

Classification: Northcote (1979) - Gn2.81
Stace *et al.* (1972) – Wiesenboden

Location: Moe 8121, grid ref. 251738 4 km S of Trafalgar

Land system, component: Moe, 1

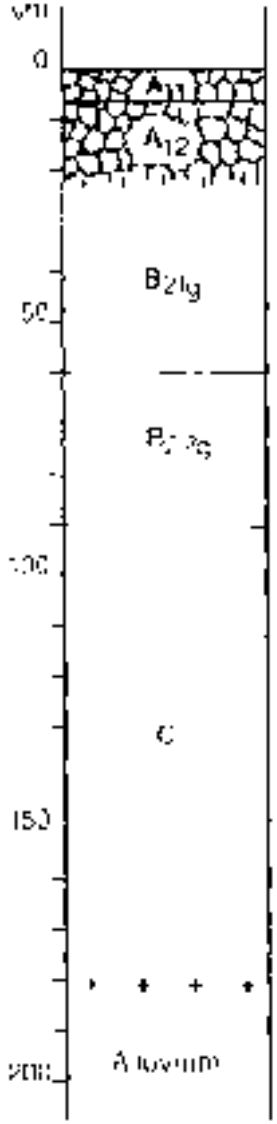
Topography: Alluvial plain, 1% slope

Elevation: 60 m

Drainage: Poor

Parent Material: Holocene fine-textured alluvium

Vegetation: Cleared; grassland of introduced species including *Holcus lanatus*, *Paspalum dilatatum* and *Bromus catharticus*



PROFILE DESCRIPTION:

A_{11}	0 - 7 cm	Very dark greyish brown (10YR 3/2) organic loam; strong fine (7 mm) subangular blocky structure; rough-ped fabric; friable when moist; abundant fine and thick grass roots; pH 5.5; clear boundary
A_{12} 7	- 21 cm	Very dark greyish brown (10YR 3/20) organic loam; moderate very fine (4 mm) subangular blocky structure; rough-ped fabric; firm when moist; reddish brown root stains; abundant fine roots; pH 5.5; diffuse boundary
B_{21g}	21 - 60 cm	Grey (10YR 5/1) silty clay; abundant distinct yellowish brown (<5 mm) mottles; apedal; earthy fabric; firm when moist; few fine roots; pH 5.0; clear boundary
B_{22g}	60 - 90cm	Grey (10YR 5/1) heavy clay; abundant prominent yellowish brown (<5 mm) mottles; apedal; earthy fabric; firm when moist; few fine roots; pH 4.5; clear boundary
C	90 - 180 cm	Light grey to grey (10YR 6/1) silty clay loam; common distinct yellowish brown (5 - 15 mm) mottles; apedal; earthy fabric; firm when moist; pH 4.5

LABORATORY ANALYSES 932

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 7	C	11	16	18	18	37	29	16	13	6.5	4.9	150	0.011					
Al2	10 - 20	C	3	2	11	17	62					5.1	68	0.005					
B21g	30 - 60	SiCL	0	1	28	42	29					5.0	35	0.003					
B22g	60 - 90	SiC	0	<1	21	35	43					4.8	77	0.006					
C	90 - 120	SiCL	0	<1	24	38	38					4.9	68	0.005					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
All	0 - 7	7.02	0.64	14	1.3	34	540	0.053	0.24	3.6	4.7	1.4	0.3	39.4	9	12	4	1	74
Al2	10 - 20	5.18	0.44	15	1.5	16	300	0.044	0.31	3.1	5.4	0.9	0.3	49.0	6	11	2	1	80
B21g	30 - 60				0.6			0.009	0.12	1.5	2.4	0.2	0.2	13.1	11	18	2	2	67
B22g	60 - 90				1.4			0.011	0.17	2.0	4.0	0.2	0.6	16.7	12	24	1	4	59
C	90 - 120				1.0			0.009	0.14	1.6	3.7	0.2	0.5	15.0	11	25	1	3	60

Horizon	Sample Depth	Bulk Density	Total Porosity	Volumetric water content			Calculated macro-porosity
				field capacity	wilting point	calculated available water	
	cm	g/mL	%(V/V)	%	%	%	%(V/V)
All	0 - 7	0.61	77.0	34.1	19.1	15.0	42.9
Al2	10 - 20	0.80	69.7	44.4	25.6	18.8	25.3
B22g	60 - 90	1.49	43.8	36.9	15.9	21.0	6.9

PROFILE NUMBER: 40

Laboratory Number: 1001

Site number: 707

Classification: Northcote (1979) - Gn3.43
Stace *et al* (1972) – Wiesenboden

Location: Maffra 8222, grid ref. 901965 8 km E of Heyfield

Land system, component: Maffra 1, 2

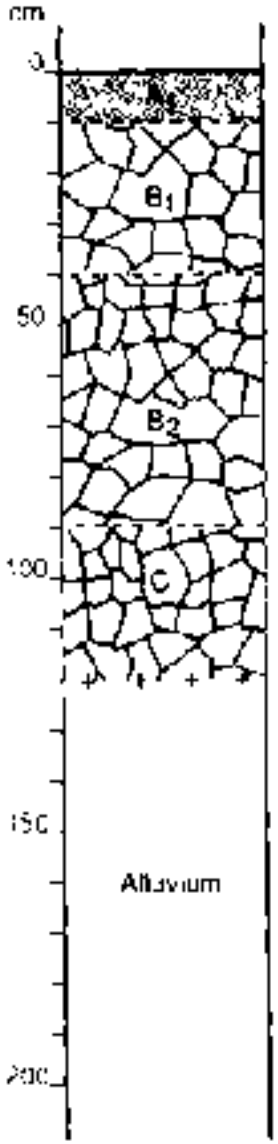
Topography: Slight depression in plain, 1% slope

Elevation: 10 m

Drainage: Poor

Parent Material: Holocene fine-textured alluvium

Vegetation: Cleared; some remaining *Eucalyptus tereticornis* near site



PROFILE DESCRIPTION:

A_1	0 - 10 cm	Very dark grey (10YR 3/1) clay loam; moderate crumb structure; rough-ped fabric; friable when moist; pH 6.0; gradual boundary
B_1	10 - 40 cm	Dark grey (10YR 4/1) medium clay; common distinct yellowish brown (5 - 15 mm) mottles; moderate coarse (20 mm) angular blocky structure; smooth-ped fabric; very firm when moist; pH 7.0; gradual boundary
B_2	40 - 90 cm	Very dark greyish (10YR 3/2) heavy clay; abundant prominent yellowish brown (>15 mm) mottles; moderate coarse (30 mm) angular blocky structure; smooth-ped fabric; very firm when moist; pH 8.0; gradual boundary
C	90 - 120+ cm	Reddish brown (5YR 4/3) light-medium clay; common distinct yellowish brown and dark brown (5 - 15 mm) mottles; moderate coarse (20 mm) angular blocky structure; smooth-ped fabric; friable when moist; pH 9.0

LABORATORY ANALYSES 1001

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	SiCL	5	3	20	36	33	39	21	18	11	6.0	92	0.002					
B1	20 - 30	SiCL	17	2	20	28	39	55	22	33	14	6.7	150	0.014					
B2	60 - 90	C	7	3	18	24	52					8.8	590	0.024					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 10	2.6	0.23	15		42	280	0.023	0.38	5.5	3.9	0.8	0.6	20.8	26	19	4	3	48
B1	20 - 30	1.1	0.11	13		9	180	0.014	0.44	6.0	5.0	0.5	1.3	18.8	32	27	3	7	21
B2	60 - 90					3	120	0.012	0.77	6.2	10.0	0.4	5.0	22.8	27	44	2	22	5

PROFILE NUMBER: 41

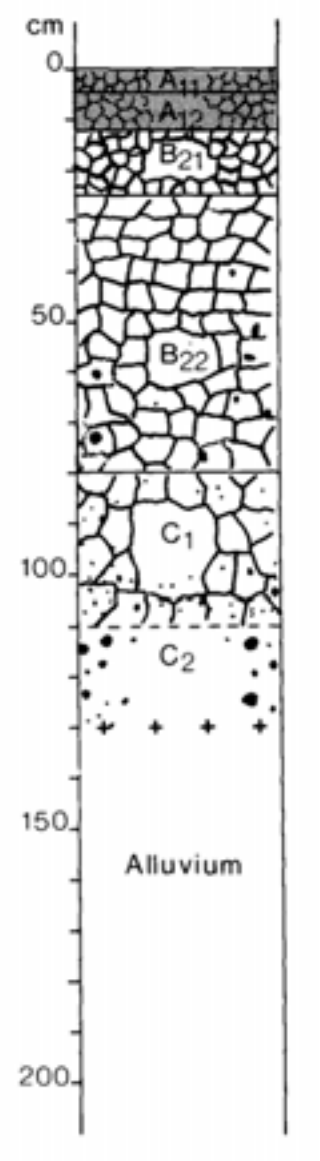
Laboratory number: 0969

Site number: 487

Classification: Northcote (1979) - Gn3.93
Stace *et al.* (1972) – Wiesenboden

Location: Sale 8321, grid ref. 365908
4 km SE of Meerlieu, between Lakes Wellington and Victoria

Land system, component: Clydebank, 3
Topography: Young marine plain, 1% slope
Elevation: 10 m
Drainage: Poor
Parent material: Holocene clays, silts, sands and gravels
Vegetation: Cleared; grassland with *Phalaris aquatica* and *Bromus* p.



PROFILE DESCRIPTION:

A_{l1}	0 - 4 cm	Very dark brown (10YR 2/2) organic clay loam; weak very fine (5 mm) subangular blocky structure; rough-ped fabric; slightly hard when dry; abundant roots; pH 5.5; abrupt boundary
A_{l2}	4 - 12 cm	Very dark grey (10YR 3/1) loamy clay; weak fine (10 mm) subangular blocky structure; rough-ped fabric; hard when dry; abundant roots; pH 6.0; clear boundary
B_{21}	12 - 25 cm	Very dark greyish brown (10YR 3/2) medium clay; moderate fine (10 mm) angular blocky structure; rough-ped fabric; very firm when moist; common faint brown mottles (5 - 15 mm); abundant roots; pH 6.5; clear boundary
B_{22}	25 - 80 cm	Yellowish brown (10YR 5/4) heavy clay; common distinct yellowish brown mottles (5 - 15 mm); moderate medium (20 mm) angular blocky structure; smooth-ped fabric; very firm when moist; few roots to 60 cm; some water-worn quartz gravel between 10 and 30 mm; pH 8.5; clear boundary
C_I	80 - 110 cm	Light grey (10YR 7/2) clay loam; common distinct yellowish brown mottles (>15 mm); moderate angular blocky structure; smooth-ped fabric; firm when moist; 3% calcareous nodules (up to 20 mm) increasing to 7% at depth; pH 8.5; gradual boundary
C_2	110 - 120+ cm	Greyish brown (10YR 5/2) clay loam; few distinct yellowish brown mottles (5 - 15 mm); probably blocky structure; rough-ped fabric; firm when moist; 2% calcareous nodules up to 20 mm; pH 8.5

LABORATORY ANALYSES 969

Horizon	Sample Depth	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
	cm		Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
All	0 - 4	C	8	2	21	13	51					5.7	180	0.015	30 - 60	mica 60;
Al2	4 - 10	C	5	13	25	14	45					5.9	110	0.003		Kaolinite 25;
B21	12 - 20	CL	17	4	30	25	38					6.8	140	0.010		illite 15
B22	30 - 60	C	11	7	32	13	51	73	20	53	18	8.3	1200	0.16		
Cl	90 - 110	C	41	4	38	15	45					9.3	2200	0.28		

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
All	0 - 4	7.7	0.57	18	0.7	29	640	0.039	0.35	4.3	4.5	1.7	1.2	35.6	12	13	5	3	67
Al2	4 - 10	3.0	0.27	14	0.7	11	300	0.021	0.34	2.8	3.2	0.9	1.1	24.8	11	13	4	4	68
B21	12 - 20	1.5	0.14	14	1.1	4	220	0.013	0.39	4.1	6.8	0.7	2.5	22.7	18	30	3	11	38
B22	30 - 60				1.7			0.008	0.58	4.2	11.4	1.0	7.9	28.2	15	40	4	28	13
C	90 - 110				0.4			0.006	0.41	4.8	9.2	0.7	7.7	22.4	22	41	3	34	0

PROFILE NUMBER: 42

Laboratory Number: 1000

Site number: 706

Classification: Northcote (1979) - Gn4.13
Stace *et al.* (1972) - Terra Rossa

Location: Maffra 8222, grid ref. 867005 7 km NE of Heyfield

Land system, component: Maffra 1, 4

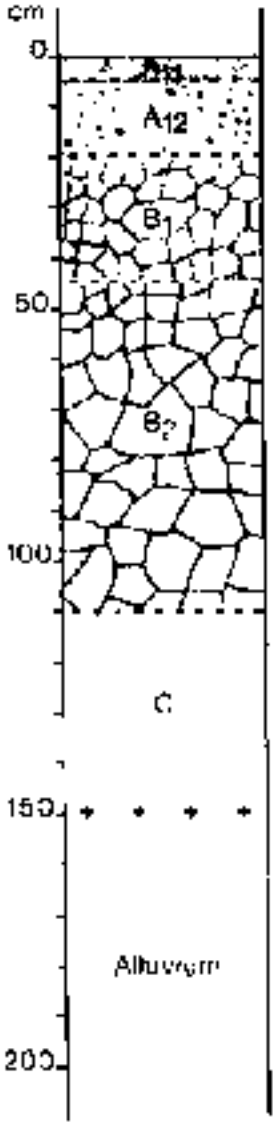
Topography: Plain, 1% slope

Elevation: 10 m

Drainage: Moderate

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; some *Eucalyptus tereticornis* remaining



PROFILE DESCRIPTION:

A_{11}	0 - 5 cm	Dark reddish brown (5YR 3/2) loam; some coarse sand particles; moderate crumb structure; rough-ped fabric; hard when thy; pH 5.5; gradual boundary
A_{12}	5 - 20 cm	Dark reddish brown (5YR 3/3) clay loam to loamy clay; weak crumb structure; rough-ped fabric; hard when dry; 5% quartz gravel up to 10 mm; pH 5.5; gradual boundary
B_1	20 - 45 cm	Dark reddish brown (5YR 3/4) medium clay; common distinct dark brown (<5 mm) mottles; weak angular blocky structure; rough-ped fabric; very firm when moist; pH 6.0; gradual boundary
B_2	45 - 110 cm	Dark red (2.5YR 3/6) medium to light clay; common distinct dark brown (5 - 15 mm) mottles; moderate medium (10 mm) angular blocky structure; rough-ped fabric; very firm when moist; pH 7.0; gradual boundary
C	110 - 150 cm	Reddish brown (5YR 4/4) light clay; apedal; earthy fabric; friable when moist; pH 8.0

LABORATORY ANALYSES 1000

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 5	SiL	13	8	41	28	18					5.6	45	0.001					
B1	20 - 30	SiL	3	8	46	28	17	20	15	5	4.0	5.9	22	0.001					
B2	45 - 60	C	5	2	24	17	54	58	21	37	15	6.1	71	0.001					

Horizon	**Sample Depth cm**	**Org. C %**	**Total N %**	**1.3C N**	**Free Fe_2O_3 %**	**Available**		**HCl extract**		**Exchangeable cations**									
						P ppm	**K ppm**	**P %**	**K %**	**Ca**	**Mg**	**K**	**Na**	**CEC**	**Ca % of CEC**	**Mg**	**K**	**Na**	**H**
										Milliequivalents/100g									
All	0 - 5	1.9	0.17	15		11	260	0.014	0.22	2.2	1.3	0.6	0.05	12.0	18	11	5	<1	66
Bl	20 - 30	0.31	0.046	9	1.4	5	70	0.008	0.19				0.1	6.0	22	17	3	2	56
B2	45 - 60				4.2					3.5	5.7	0.2	1.0	19.6	18	29	1	5	47

PROFILE NUMBER: 43

Laboratory Number: 0933

Site number: 380

Classification: Northcote (1979) - Gn4.51
Stace *et al.* (1972) – Wiesenboden

Location: Moe 8121, grid ref. 186696 1 km SE of Yarragon

Land system, component: Trafalgar, 1

Topography: Colluvial apron, 1% slope

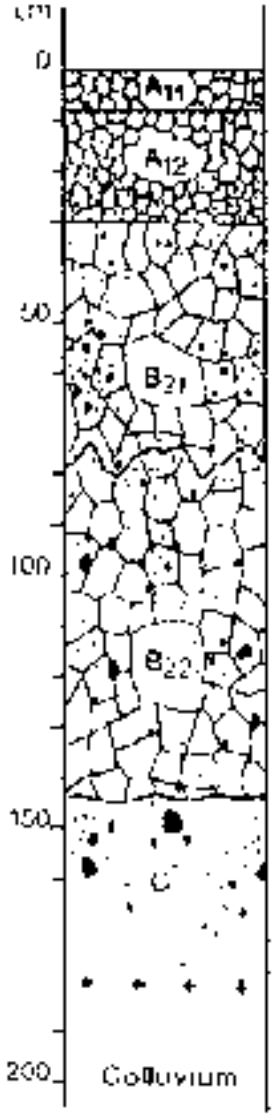
Elevation: 100 m

Drainage: Poor

Parent Material: Pleistocene-Holocene fine-textured colluvium

Vegetation: Cleared; introduced grasses with scattered *Eucalyptus ovata* and *Acacia melanoxylon*

Remarks: Monolith taken



PROFILE DESCRIPTION:

A_{11}	0 - 8cm	Very dark greyish brown (10YR 3/2) clay loam; moderate fine (5 mm) subangular blocky structure; rough-ped fabric; friable when moist; abundant fine and large roots; pH 6.0; clear smooth boundary
A_{12}	8 - 30 cm	Dark greyish brown (10YR 4/2) light clay; moderate fine (8 mm) subangular blocky structure; rough-ped fabric; friable when moist; abundant roots, 2% charcoal fragments up to 10 mm; pH 6.0; clear smooth boundary
B_{21}	30 - 78 cm	Dark greyish brown (10YR 4/2) medium clay; abundant distinct yellowish brown (5 - 15 mm) mottles; moderate coarse (20 mm) angular blocky structure; rough-ped fabric; very hard when moist; 8% ferruginous nodules up to 10 mm, 5% charcoal fragments up to 10 mm; pH 5.0; clear irregular boundary
B_{22}	78 - 144 cm	Brown (10YR 5/3) heavy clay; abundant prominent reddish brown (>15 mm) mottles; large vertical cracks; moderate coarse (30 mm) angular blocky structure; rough-ped fabric; very hard when moist; 2% charcoal fragments up to 20 mm, 5% ferruginous nodules up to 20 mm; pH 5.0; wavy boundary
C	144 - 180 cm	Pale brown (10YR 6/3) clay; abundant prominent reddish brown (>15 mm) mottles; apedal; earthy fabric; firm when moist; 5% ferruginous nodules up to 40 mm, 2% charcoal fragments up to 20 mm; pH 5.0

LABORATORY ANALYSES 933

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 8	CL	14	15	32	22	26					5.6	92	0.006					
Al2	20 - 30	SiCL	1	3	38	30	30					5.7	41	0.003					
B21	30 - 60	SiCL	2	5	31	26	37	45	18	27	11	5.8	36	0.003					
B22	90 - 120	C	2	3	29	23	45					5.5	50	0.005					
C	150 - 180	L	6	7	48	22	24					5.4	110	0.011					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available		HCl extract		Exchangeable cations									
						P ppm	K ppm	P %	K %	Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
All	0 - 8	3.22	0.31	14	1.5	24	500	0.044	0.22	5.0	3.6	1.2	0.2	22.8	22	16	5	1	56
Al2	20 - 30	1.26	0.13	13	2.7	16	260	0.040	0.28	4.6	3.3	0.7	0.3	21.7	21	15	3	1	60
B21	30 - 60				2.4			0.031	0.31	5.6	5.1	0.4	0.7	23.8	24	21	2	3	50
B22	90 - 120				2.5			0.041	0.38	9.2	9.9	0.3	2.2	36.4	25	27	1	6	41
C	150 - 180				2.9			0.064	0.35	8.8	8.1	0.2	*2.6*	*29.3*	30	28	1	9	32

Horizon	Sample Depth cm	Bulk Density g/mL	Total Porosity %(V/V)	Volumetric water content			Calculated macro-porosity %(V/V)
				field capacity %	wilting point %	calculated available water %	
All	0 - 8	1.03	61.2	47.4	21.3	26.1	13.8
Al2	20 - 30	1.33	49.9	37.1	20.3	16.8	12.8
B21	30 - 60	1.44	45.6	35.0	21.5	13.5	10.6

PROFILE NUMBER: 44

Laboratory Number: 0943

Site number: 390

Classification: Northcote (1979) - Gn4.51
Stace *et al.* (1972) - Humic Gley

Location: Maffra 8222, grid ref. 803944 2 km S of Heyfield

Land system, component: Maffra 1, 2

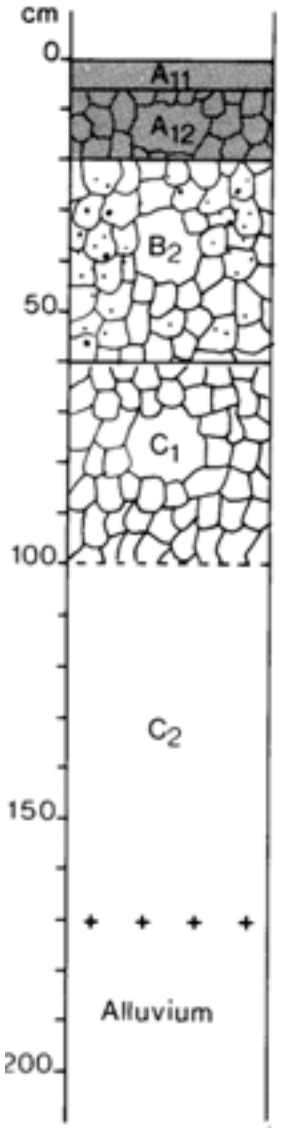
Topography: Alluvial terrace, 0% slope

Elevation: 40 m

Drainage: Poor

Parent material: Holocene fine-textured alluvium

Vegetation: Cleared; mostly introduced grasses with occasional *Eucalyptus polyanthemos*



PROFILE DESCRIPTION:

A_{11}	0 - 6 cm	Very dark greyish brown (10YR 3/2) silty clay loam; common prominent reddish brown (<5 mm) mottles; strong medium (5 mm) crumb structure; rough-ped fabric; very hard when dry; common fine roots; pH 5.5; abrupt smooth boundary
A_{12}	6 - 20 cm	Very dark greyish brown (10YR 3/2) silty clay; few faint yellow (<5 mm) mottles; moderate coarse (20 mm) subangular blocky structure; smooth-ped fabric; extremely hard when dry; common fine roots; pH 5.8; abrupt smooth boundary
B_2	20 - 60 cm	Greyish brown (10YR 5/2) heavy clay; abundant prominent yellowish brown (>15 mm) mottles; strong coarse (30 mm) subangular blocky structure; rough-ped fabric; very hard when dry; 1% ferruginous nodules (5 mm), 1% charcoal fragments (10 mm); pH 6.2; clear smooth boundary
C_1	60 - 100 cm	Dark grey (5Y 4/1) medium clay; common prominent yellowish brown (<5 mm) mottles; moderate coarse (20 mm) subangular blocky structure; smooth-ped fabric; very firm when moist; few roots; pH 8.0; gradual smooth boundary
C_2	100 - 170+ cm	Grey (5Y 5/1) heavy clay; common prominent yellowish brown (5 - 15 mm) mottles; apedal; earthy fabric; firm when moist; few roots; pH 9.0

LABORATORY ANALYSES 943

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 6	SiC	0	1	6	34	40			5.4	120	0.009							
Al2	10 - 20	SiC	0	1	9	39	46			5.7	57	0.004							
B2	30 - 60	SiC	1	1	10	41	46			6.1	80	0.007							
Cl	60 - 90	SiC	0	3	12	43	40			7.7	140	0.054							
C2	100 - 120	SiCL	0	2	15	43	39			8.6	220	0.020							

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
All	0 - 6	7.76	0.70	14	1.6	65	260	0.065	0.53	5.4	4.5	0.8	0.8	39.0	14	12	2	2	70
Al2	10 - 20	2.50	0.25	13	2.0	34	80	0.030	0.41	4.4	4.5	0.3	0.7	25.0	18	18	1	3	60
B2	30 - 60				3.5			0.039	0.51	2.2	5.6	0.2	1.5	19.6	11	29	1	8	51
Cl	60 - 90				3.8			0.029	0.47	2.7	6.6	0.1	3.3	15.5	17	43	1	21	18
C2	100 - 120				3.3			0.031	0.49	2.6	6.0	0.1	4.1	12.8	20	47	1	32	0

PROFILE NUMBER: 45

Laboratory Number: 0974

Site Number: 492

Classification: Northcote (1979) – Dr2.22
Stace *et al* (1972) – Red Podzolic Soil

Location: Omeo 8423, grid ref, 778622
20 km SE of Swifts Creek, 4 km SE of Ensay

Land System Component: Dargo 1

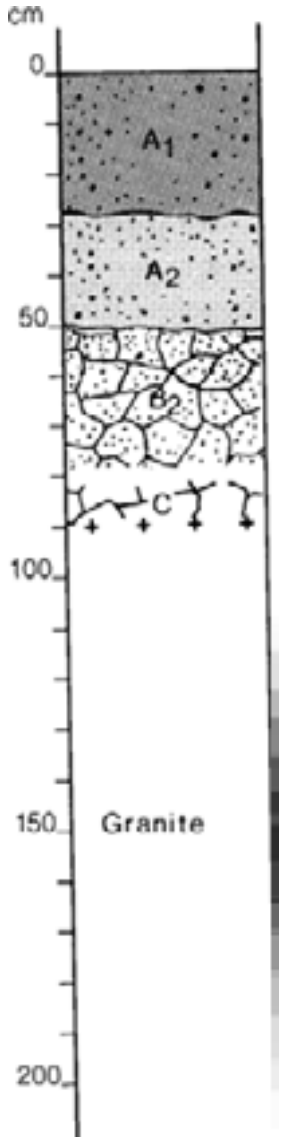
Topography: Lower hillslope, E aspect, 37% gradient

Elevation: 280 m

Drainage: Moderate

Parent material: Palaeozoic granite

Vegetation: Cleared; predominantly introduced herbs and grasses with scattered *Eucalyptus bridgesiana, Acacia melanoxylon and A. mearnsii*



PROFILE DESCRIPTION

A_1	0-27 cm	Dark brown (7.5YR 3/2) sandy loam; apedal earthy fabric; hard when dry; 5% granite fragments up to 8 mm; pH 6.0;clear wavy boundary
A_2	27-50 cm	Strong brown (7.5YR 5/6) gritty sandy loam; apedal; earthy fabric; hard when dry; 15% granite fragments up to 800; pH 6.0; clear wavy boundary
B_2	50-80 cm	Yellowish red (5YR 5/6) sandy clay; moderate coarse (25 mm) angular blocky structure; smooth-ped fabric; firm when moist; 25% quartz and weathering feldspar crystals up to 3 mm and dark mica grains; pH 7.0
C	80-90+ cm	Strong brown (7.5YR 5/6) sandy clay loam; moderate medium (20 mm) angular blocky structure; smooth-ped fabric; friable when moist; pH 7.0

LABORATORY ANALYSES 974

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	SL	6	31	43	10	13					5.9	33	0.002					
Al	10 - 20		12					30	19	11	5.6								
A2	30 - 50	SL	22	37	42	11	11					6.7	15	0.002					
B2	60 - 80	CL	18	30	25	15	31	64	23	41	15	7.0	19	0.002					
C	80 - 90	CL	5	29	27	14	28					7.1	20	0.002					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 10	2.2	0.16	18	1.1	19	220	0.029	0.16	4.0	1.0	0.5	0.05	13.7	29	7	4	<1	60
Al	10 - 20																		
A2	30 - 50				1.4			0.026	0.16	4.4	0.8	0.3	0.08	7.8	56	10	4	1	29
B2	60 - 80				3.3			0.043	0.23	10.6	2.5	0.5	0.3	18.2	58	14	3	2	23
C	80 - 90				4.0			0.031	0.18	11.3	2.9	0.5	0.4	19.9	57	15	3	2	23

PROFILE NUMBER: 46

Laboratory number: 0973

Site number: 491

Classification: Northcote (1979) – Db2.21
Stace et al (1972) – Brown Podzolic Soil

Location: Omeo 8423, grid ref: 617854
12 km SE of Omeo

Land system component: Dargo, 1

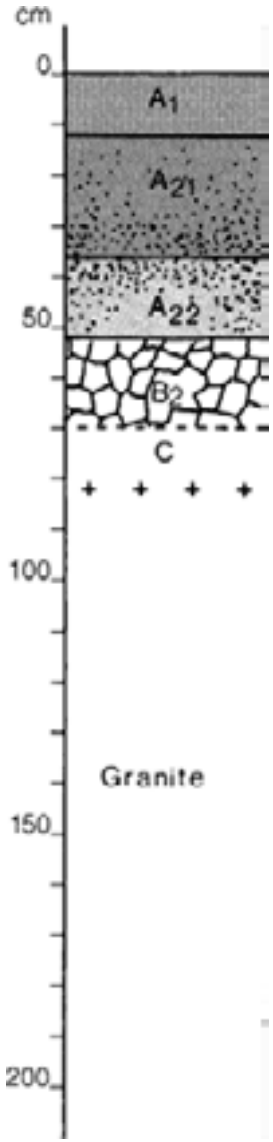
Topography: Upper mid-slope of hill, SW aspect, 15% gradient

Elevation: 440 m

Drainage: Imperfect

Parent material: Palaeozoic granite

Vegetation: Cleared; grassland with *Themeda australis*, *Cynosurus echinatus* and Dactylis glomerata with a few remaining *Eucalyptus albens* and *E. viminalis*



PROFILE DESCRIPTION

A_1	0-12 cm	Dark brown (7.5YR 3/2) sandy loam; weak crumb structure; rough-ped fabric; hard when dry; abundant roots; pH 5.7; clear boundary
A_{21}	12-36 cm	Dark brown (7.5YR 3/2) gritty sandy loam; apedal; earthy fabric; hard when dry; about 30% of fine quartz gravel up to 3 mm; common roots; pH 6.0; clear boundary
A_{22}	36-52 cm	Strong brown (7.5YR 5/6) gritty sandy loam; apedal; earthy fabric; hard when dry; 30% of fine quartz gravel up to 3 mm; common roots; pH 5.5; clear boundary
B_2	52-70 cm	Strong brown (7.5YR 4/6) medium clay becoming yellowish red (5YR 5/6) at depth; abundant faint red (<5 mm) mottles; moderate (10 mm) angular blocky structure; smooth-ped fabric; very hard when dry; few roots; pH 5.5; gradual boundary
C	70 - 83+ cm	Sandy clay; apedal; rough-ped fabric; very hard when dry; biotite, plagioclase feldspar, quartz and small amount of muscovite are clearly visible; pH 5.0

LABORATORY ANALYSES 973

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
Al	0 - 10	L	11	34	36	15	12					6.2	45	0.005					
A21	20 - 30	LS	15	38	36	18	7					6.5	14	0.002					
A22	36 - 52	L	20	38	31	14	16					6.7	17	0.002					
B2	52 - 60	C	16	16	16	5	63	75	26	49	15	6.3	26	0.004					
C	70 - 83	C	21	28	25	10	34					6.4	17	0.002					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available		HCl extract		Exchangeable cations									
						P ppm	K ppm	P %	K %	Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
Al	0 - 10	2.2	0.20	14	0.9	10	280	0.023	0.24	4.5	1.3	0.5	0.08	14.6	31	9	3	1	56
A21	20 - 30	0.76	0.031	32	0.7	3	120	0.012	0.14	3.9	0.5	0.2	0.02	8.2	48	6	2	<1	44
A22	36 - 52				1.5			0.012	026	3.6	0.8	0.3	0.07	7.8	46	10	4	1	39
B2	52 - 60				3.7			0.013	0.36	9.3	2.9	0.5	0.3	25.1	37	12	2	1	48
C	70 - 83				2.5			0.009	0.42	9.5	3.1	0.5	0.4	21.2	45	15	2	2	36

PROFILE NUMBER: 47

Laboratory number: 0999

Site number: 711

Classification: Northcote (1979) - Dy3.11
Stace *et al.* (1972) – Soloth

Location: Moe 8121, grid ref. 466554 4 km SW of Churchill

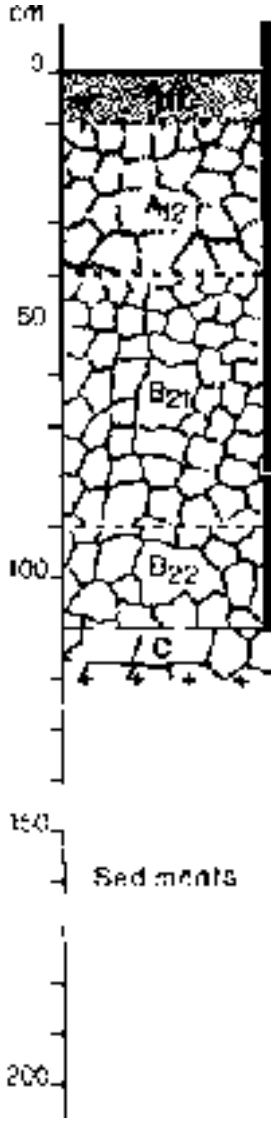
Land system component: Anderson 2, 1

Topography: Mid-slope of hill, 10% gradient 80 m

Elevation: Moderate

Parent material: Tertiary fine-textured sediments

Vegetation: Scattered *Eucalyptus obliqua, E. radiata* and *E. bridgesiana*, with grassy understorey



PROFILE DESCRIPTION

A11	0-10 cm	Very dark greyish brown (10YR 3/2) sandy clay loam; moderate subangular blocky structure; rough-ped fabric; hard when dry; pH 5.5; diffuse boundary
A12	10-40 cm	Dark greyish brown (10YR 4/2) silty clay loam; common faint yellowish brown mottles (>15 mm); weak angular blocky structure; rough-ped fabric; very hard when dry; pH 5.0; gradual boundary
B21	40-90 cm	Greyish brown (10YR 5/2) heavy clay; abundant distinct yellowish brown mottles (5 - 15 mm); moderate angular blocky structure; smooth-ped fabric; firm when moist; gradual boundary
B22	90-110 cm	Yellowish brown (10YR 5/4) heavy clay; abundant prominent grey mottles (5 - 15 mm); moderate angular blocky structure; smooth-ped fabric; firm when moist; pH 5.5; clear boundary
C	110-120+ cm	Brownish yellow (10YR 6/6) heavy clay; common distinct red and yellow mottles (5 - 15 mm); common prominent light grey mottles (5 - 15 mm); strong angular blocky structure; smooth-ped fabric; firm when moist; pH 5.5; clear boundary

LABORATORY ANALYSES 999

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
All	0 - 10	SiCL	9	4	22	30	33			5.3	86	0.007							
Al2	20 - 30	SiCL	11	1	21	29	39			5.4	43	0.006							
B21	40 - 60	C	24	1	12	15	69			5.1	88	0.011							
B22	90 - 110	C	21	1	6	12	76			5.3	330	0.039							

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
All	0 - 10	8.2	0.43	25		23	160	0.021	0.069	1.8	2.5	0.5	0.6	43.3	4	6	1	1	88
Al2	20 - 30	1.8	0.11	21		9	70	0.011	0.045	0.3	1.5	0.2	0.4	22.4	1	7	1	2	89
B21	40 - 60				3.6					0.4	4.4	0.2	1.1	22.5	2	20	1	5	72
B22	90 - 110				3.7					0.8	10.1	0.2	2.7	19.9	4	51	1	14	30

PROFILE NUMBER: 48

Laboratory number: 0953

Site number: 400

Classification: Northcote (1979) - Dy3.21
Stace *et al.* (1972) - Yellow Podzolic Soil

Location: Bairnsdale 8422, grid ref. 834203
Railway cutting, 12 km SE of Bruthen

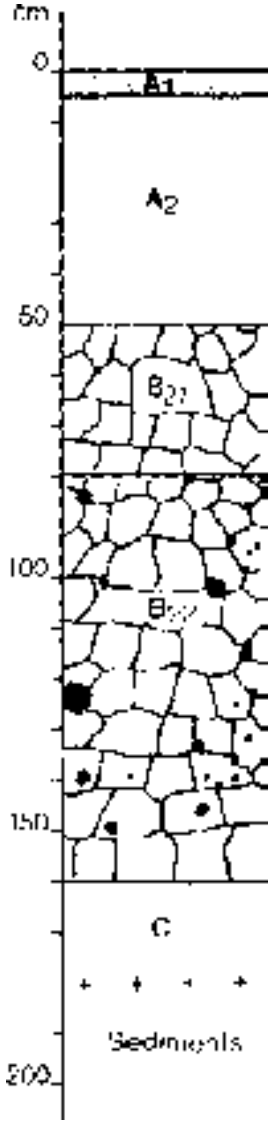
Land system, component: Clifton, 2

Topography: 2% slope on plateau, NW aspect 120 m

Elevation: Good

Parent material: Tertiary sediments

Vegetation: Open forest II: *Eucalyptus sieberi, E. globoidea* and *E. cypellocarpa* and with *Kunzea ericoides* predominant in the shrub layer



PROFILE DESCRIPTION:

A_1	0-5 cm	Very dark greyish brown (10YR 3/1) organic sand; apedal; earthy fabric; soft when dry; abundant small roots; pH 4.5; abrupt smooth boundary; hydrophobic
A_2	5-50 cm	Light yellowish brown (10YR 6/4) loamy sand; few faint yellowish brown mottles (>5 mm); apedal; earthy fabric; hard when dry; abundant small roots; pH 5.5; abrupt smooth boundary
B_{21}	50-80 cm	Yellowish brown (10YR 5/6) medium clay; common prominent reddish brown mottles (5 - 15 mm), abundant prominent grey mottles (>15 mm); strong medium angular blocky structure (20 mm); smooth-ped fabric; firm when moist; abundant small roots; pH 5.0; clear smooth boundary
B_{22}	80-160 cm	Yellowish brown (10YR 5/8) medium clay; abundant prominent grey and reddish brown mottles (>15 mm); strong coarse angular blocky structure (30 mm); smooth-ped fabric; very firm when moist; 2% quartz gravel up to 40 mm; pH 5.0; abrupt smooth boundary
C	160-180 cm	Yellow (IOYR 7/8) sandy clay; abundant prominent reddish brown mottles (>15 mm); apedal; earthy fabric; hard when dry; pH 4.5

LABORATORY ANALYSES 953

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %
Al	0 - 5	LS	1	42	38	10	8					4.4	48	0.004	60 - 80	kaolinite 75;
A2	30 - 50	LS	2	42	40	9	7	13	12	1	0.8	4.9	17	0.001		montmorillonite
B21	60 - 80	C	2	12	12	2	71	100	29	71	23	4.4	34	0.002		(chloritized) 25
B22	80 - 90		2									4.4	33	0.002	160 - 180	kaolite 80;
B22	90 - 120	C	2	12	10	2	73					4.5	46	0.003		illite 20
C	160 - 180	C	1	36	12	11	38					5.0	51	0.003		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
Al	0 - 5	1.79	0.094	25	0.4	6	60	0.005	0.038	0.6	0.4	0.2	0.1	11.3	5	4	2	1	88
A2	30 - 50				0.3			0.002	0.01	0.1	0.2	0.04	0.1	2.1	5	10	2	5	78
B21	60 - 80				5.4			0.003	0.08	0.1	4.2	0.1	0.6	23.5	<1	18	<1	3	79
B22	80 - 90									0.3	4.1	0.2	0.5	23.9	1	17	1	2	79
B22	90 - 120				5.2			0.003	0.08	0.04	4.6	0.2	0.9	25.9	<1	18	1	3	78
C	160 - 180				3.5			0.003	0.10	0.1	3.7	0.1	0.9	18.6	1	20	1	5	73

PROFILE NUMBER 49

Laboratory number: 0967

Site number: 485

Classification: Northcote (1979) – Dy3.21
Stace *et al* (1972) - Soloth

Location: Bairnsdale 8422, grid ref. 803114
8 km NW of Lakes Entrance

Land system, component: Westbury 1, 2

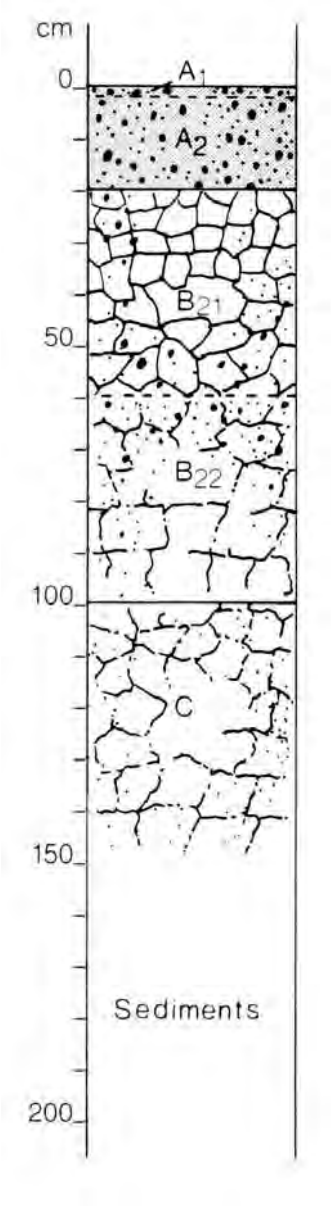
Topography: Crest slope of hill, NW aspect 10% gradient

Elevation: 60 m

Drainage: Poor

Parent material: Tertiary and Pleistocene fine-textured sediments

Vegetation: Open forest II: *Eucalyptus bosistoana*, *E. cypellocarpa* and *E. globoidea*



PROFILE DESCRIPTION:

A_1	0-2 cm	Dark brown (10YR 3/3) sandy loam; weak crumb structure; rough-ped fabric; slightly hard when moist; 5% quartz gravel up to 15 mm; pH 4.5; gradual boundary
A_2	2-20 cm	Dark greyish brown (10YR 4/2) sandy clay loam; apedal; earthy fabric; very hard when dry; 20% quartz gravel up to 20 mm; pH 5.0; abrupt boundary
B_{21}	20-60 cm	Yellowish brown (10YR 5/6) heavy clay; abundant distinct greyish brown (>15 mm) and common prominent reddish brown (5-15 mm) mottles; moderate medium (10 mm) angular blocky structure; smooth-ped fabric; firm when moist; 5% quartz gravel up to 15 mm; pH 5.5; gradual boundary
B_{22}	60-100 cm	Dark brown to brown (10YR 4/3) medium clay; greyish brown (3 mm) and common distinct reddish brown (5-15 mm) mottles; weak coarse (20 mm) angular blocky structure; smooth-ped fabric; very firm when moist; 5% quartz gravel up to 15 mm; pH 6.0; clear boundary
C	100-150 cm	Dark brown to brown (10YR 4/3) sandy clay; common prominent reddish brown (5-15 mm) and common distinct greyish brown (>15 mm) mottles; weak coarse (30 mm) angular blocky structure' smooth-ped fabric; very firm when moist; 2% quartz gravel up to 5 mm; pH 6.5

LABORATORY ANALYSES 967

Horizon	Sample Depth	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
	cm		Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C uS/cm	Cl- %	Depth cm	Composition %			
A2	2-10	L	33	35	41	14	11					5.1	45	0.005					
A2	10-20		35					31	19	12	6.2								
B21	20-30	C	37	27	34	9	32	47	20	27	13	5.9	90	0.008					
B22	60-90	C	20	28	26	11	37					5.9	380	0.042					
C	100-120	C	15	17	23	13	48					5.8	510	0.066					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
A2	2-10	13	0.065	26	0.5	4	80	0.006	0.07	0.3	0.5	0.2	0.2	8.6	3	6	2	2	87
A2	10-20																		
B21	20-30	0.56	0.041	18	1.6	2	60	0.004	0.14	0.1	3.0	0.2	0.8	11.6	1	26	2	7	65
B22	60-90				2.5			0.004	0.18	0.1	5.6	0.08	2.5	13.3	1	42	1	19	37
C	100-120				2.7			0.006	0.26	0.08	6.5	0.2	3.3	14.6	1	45	1	23	30

PROFILE NUMBER 50

Laboratory number: 0997

Site number: 709

Classification: Northcote (1979) – Dy3.21
Stace *et al* (1972) - Soloth

Location: Moe 8121, grid ref. 475572
2 km SW of Churchill

Land system, component: Westbury 2, 2

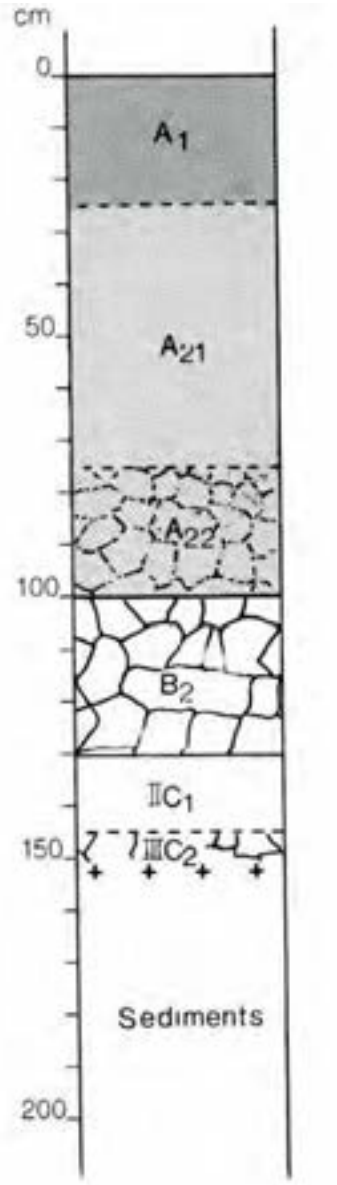
Topography: Mid-slope of rise, 6% slope

Elevation: 60 m

Drainage: Moderately good

Parent material: Tertiary and Pleistocene sediments

Vegetation: Cleared: a few remnant trees of *Eucalyptus radiata* and introduced grasses



PROFILE DESCRIPTION:

A_1	0-25 cm	Very dark grey (10YR 3/1) loam; weak subangular blocky structure; rough-ped fabric; slightly hard when dry; pH 5.0; gradual boundary
A_21	25-75 cm	Dark greyish brown (10YR 4/2) sandy clay loam; few faint yellowish brown mottles; apedal; hard when dry; pH 5.5; gradual boundary
A_{22}	75-100 cm	Greyish brown (10YR 5/2) sandy clay loam; common distinct yellowish brown (5-15 mm) mottles; weak angular blocky structure; rough-ped fabric; hard when dry; pH 6.5; clear boundary
B_2	100-130 cm	Greyish brown (10YR 5/2) sandy clay; common distinct yellowish brown (5-15 mm) and pale brown mottles; strong angular blocky structure; smooth-ped fabric; very hard when dry; pH 7.0; clear boundary
IIC	130-145 cm	Yellowish brown (10YR 5/6) clayey coarse sand; apedal; soft when dry; pH 7.0; gradual boundary
IIIC	145-150+ cm	Greyish brown (10YR5/2) heavy clay; common yellowish brown and pale brown (5-15mm) mottles; strong angular blocky structure; smooth-ped fabric; firm when moist; pH 7.0

LABORATORY ANALYSES 997

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	L	3	11	46	19	16					4.9	87	0.004					
A21	30-60	L	4	13	50	25	15	19	13	6	4.0	5.2	130	0.011					
A22	75-90	L	3	13	51	20	16	19	13	6	5.0	5.9	250	0.031					
B2	100-120	SiCL	2	10	44	14	29	33	15	18	11	6.4	380	0.053					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
A1	0-10	4.5	0.28	21		28	140	0.014	0.041	0.9	1.3	0.4	0.4	27.3	3	5	1	1	90
A21		0.47	0.040	15	0.5	5	60	0.003	0.032	0.4	1.4	0.1	0.7	9.4	4	15	1	7	73
A22	75-90				0.8					0.4	2.5	0.03	1.2	7.5	5	33	<1	16	46
B2	100-120				0.5					0.9	7.5	0.1	3.5	14.0	6	54	1	25	14

PROFILE NUMBER 51

Laboratory number: 0958

Site number: 405

Classification: Northcote (1979) – Dy3.21
Stace *et al* (1972) - Soloth

Location: Bairnsdale 8422, grid ref. 751084
Road cutting on Nungurner Road, 15km W of Lake Entrance

Land system, component: Westbury 1, 2

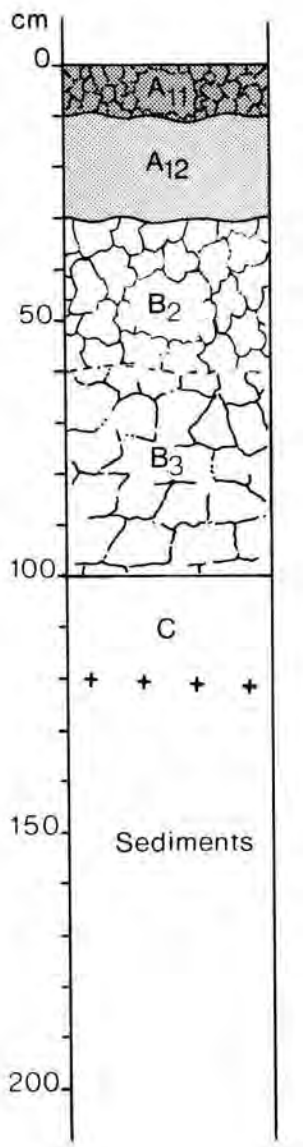
Topography: Mid-slope of hill, NSW aspect, 5% slope

Elevation: 40 m

Drainage: Moderate

Parent material: Tertiary and Pleistocene fine-textured sediments

Vegetation: Cleared: grassland with scattered *Eucalyptus tereticornis* and *E. bosistoana*



PROFILE DESCRIPTION:

A_{11}	0-10 cm	Very dark grey (10YR 3/1) sandy clay loam; weak fine (6 mm) subangular blocky structure; rough-ped fabric; firm when moist; abundant roots; pH 6.0; clear wavy boundary
A_{12}	10-30 cm	Very dark greyish brown (10YR 3/2) sandy clay loam; apedal, earthy fabric; very firm when moist; abundant roots; pH 6.0; clear wavy boundary
B_2	30-60 cm	Yellowish brown (10YR 5/4) heavy clay; abundant distinct dark brown (5-15 mm) and yellow (<5 mm) mottles; moderate coarse (30 mm) subangular blocky (almost primary columnar) structure; rough-ped fabric; hard when dry; common roots, abundant organic matter along root lines; pH 6.8; gradual wavy boundary
B_3	60-100 cm	Yellowish brown (10YR 5/6) sandy clay; abundant distinct grey (>15 mm) and reddish brown (5-15 mm) mottles; weak coarse (40 mm) angular blocky structure; rough-ped fabric; very hard when dry; few roots; pH 6.0; clear smooth boundary
C	100-120 cm	Brownish yellow (10YR 6/8) sandy clay loam; abundant distinct grey (>15 mm) mottles; apedal; earthy fabric; very hard when dry; pH 5.5.

LABORATORY ANALYSES 958

Horizon	Sample Depth	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
	cm		Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A11	0-10	SL	5	33	41	8	12					4.8	59	0.005					
A12	20-30	LS	2	33	45	11	9					5.7	26	0.002					
B2	30-60	C	1	20	33	6	40					5.1	26	0.002					
B3	60-90	SC	2	23	40	2	33					5.1	390	0.043					
B3	90-100	SCL	1	26	43	7	22					5.1	400	0.043					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
A11	0-10	1.89	0.15	16	0.8	19	80	0.011	0.12	27	1.6	0.2	0.2	14.8	18	11	1	1	69
A12	20-30	0.68	0.046	19	0.8	2	40	0.007	0.12	1.3	2.4	0.1	0.3	9.2	14	26	1	3	56
B2	30-60				2.1	2.1		0.005	0.27	0.4	6.3	0.2	3.1	14.9	3	42	1	21	33
B3	60-90				1.6	1.6		0.004	0.27	0.3	5.6	0.1	3.5	13.6	2	41	1	26	30
B3	90-100				1.4	1.4		0.004	0.29	0.29	4.3	0.	2.8	9.9	2	43	1	28	26

PROFILE NUMBER 52

Laboratory number: 0966

Site number: 484

Classification: Northcote (1979) – Dy3.31
Stace et al (1972) – Yellow Podzolic Soil

Location: Stratford 8322; grid ref. 162168
Roadcuttng, 12km NE of Briagolong

Land system, component: Stockdale, 1

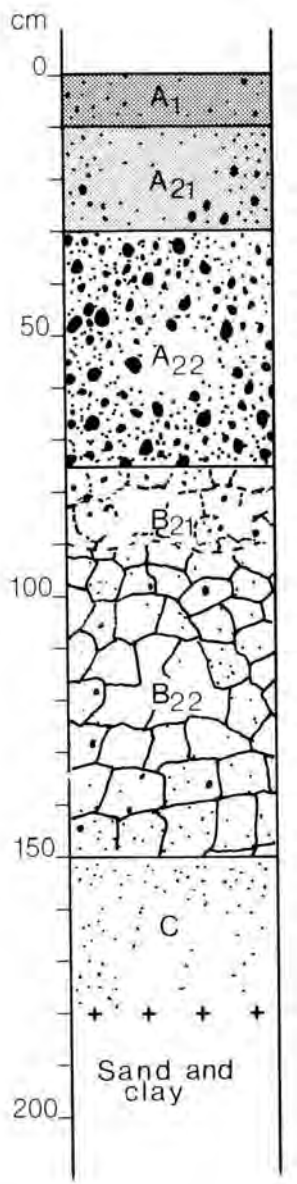
Topography: Lower slope of hill, S aspect, 4% gradient

Elevation: 120 m

Drainage: Good

Parent material: Tertiary sand and clay

Vegetation: *Pinus radiata* forest



PROFILE DESCRIPTION:

A_1	0-10 cm	Very dark greyish brown (10YR3/1) sandy loam; apedal; earthy fabric; hard when dry; 2% fine quartz gravel up to 5 mm; pH 4.5; clear boundary
A_{21}	10-30 cm	Dark brown to brown (10YR 4/3) fine sand; apedal; earthy fabric; hard when dry; 5% fine quartz gravel up to 5 mm; 2% ferruginous nodules up to 20 mm; pH 4.5; abrupt smooth boundary
A_{22}	30-75 cm	Yellowish brown (10YR 5/4) gravelly fine sand; apedal; earthy fabric; very firm when moist; 20% quartz gravel up to 30 mm, 60% ferruginous nodules up to 30 mm; pH 5.0; abrupt smooth boundary
B_{21}	75-90 cm	Yellowish brown (10YR 5/6) fine sandy clay; abundant prominent reddish brown and dark grey (>15 mm) mottles; weak coarse (20 mm) angular blocky structure; smooth-ped fabric; very firm when moist; 5% fine quartz gravel up to 5 mm; pH 5.0; gradual wavy boundary
B_{22}	90-150 cm	Yellowish brown (10YR 5/8) medium clay; abundant prominent reddish brown and grey (>15 mm) mottles; moderate medium (30 mm) angular blocky structure; smooth-ped fabric; very firm when moist; 5% fine quartz gravel up to 5 mm; pH 5.5; clear boundary
C	150-180 cm	Yellowish brown (10YR 5/6) fine sand; abundant prominent reddish brown (>15 mm) mottles; apedal; earthy fabric; extremely hard dry; pH 5.0.

LABORATORY ANALYSES 966

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	LS	4	19	62	8	7					5.1	67	0.007					
A21	20-30	LS	9	17	66	9	7					5.6	15	0.001					
A22	30-60	L	26	16	60	12	13					5.5	12	0.001					
B21	75-90	SC	5	16	43	1	38					5.6	21	0.001					
B22	90-120	C	4	12	36	11	38	46	21	25	13	5.4	30	0.002					
C	150-180	SL	5	18	62	4	13					5.9	31	0.005					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
A1	0-10	13	0.050	34	0.4	3	10	0.004	0.022	0.14	0.26	0.01	0.12	11.5	1	2	<1	1	96
A21	20-30	0.61	0.022	36	0.5			0.003	0.024	0.03	0.14	<0.01	0.07	7.8	<1	2	<1	1	97
A22	30-60				0.6			0.003	0.023	0.07	0.09	<0.01	0.08	4.9	1	2	<1	2	95
B21	75-90				2.3			0.005	0.10	0.1	0.7	0.04	0.3	9.2	1	8	<1	3	88
B22	90-120				2.5			0.005	0.14	0.05	0.8	0.05	0.4	12.6	<1	6	<1	3	91
C	150-180				1.7			0.003	0.07	0.09	1.0	0.04	0.6	4.8	2	21	1	12	64

PROFILE NUMBER 53

Laboratory number: 1003

Site number: 533

Classification: Northcote (1979) – Dy3.41
Stace *et al* (1972) – Yellow Podzolic Soil

Location: Moe 8121, grid ref. 309907 18 km N of Moe

Land system, component: Stewart, 1

Topography: Crest slope of hill, S aspect, 7% gradient

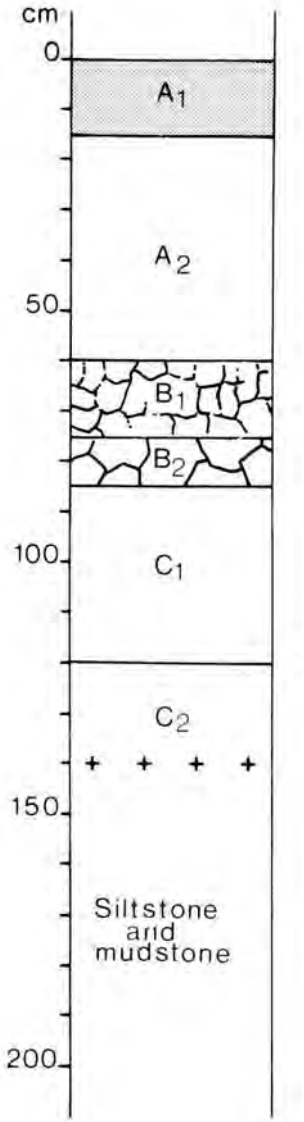
Elevation: 240 m

Drainage: Poor

Parent material: Devonian and Tertiary siltstone and mudstone

Vegetation: Woodland I*: Eucalyptus consideniana* with *Leptospermum juniperinum, Epacris impressa, Pultenaea* sp. and *Gahnia radula* common in the understorey

Remarks: Soil appears to be very silty, scattered mounds of clay dug up by land crabs may be indicative of poor drainage



PROFILE DESCRIPTION:

A1	0-15 cm	Dark greyish brown (10YR 4/2) silty loam; apedal; earthy fabric; hard when dry; pH 4.5; clear boundary
A2	15-60 cm	Light yellowish brown (10YR 6/4) silty loam; abundant distinct brownish yellow (5-15 mm) and grey mottles; apedal; earthy fabric; hard when dry; pH 4.5; clear boundary
B1	60-75 cm	Yellowish brown (10YR 5/4) silty clay loam; distinct dark yellow brown (5-15 mm)and common distinct grey (<5 mm) mottles; moderate medium (15 mm) subangular blocky structure; rough-ped fabric; firm when moist; pH 5.0; clear boundary
B2	75-80 cm	Dark brown to brown (10YR 4/3) silty clay; abundant distinct yellowish brown and few distinct dark grey (5-15 mm) mottles; strong coarse (25 mm) angular blocky structure; smooth-ped fabric; firm when moist; pH 5.0; clear boundary
C1	85-120 cm	Brownish yellow (10YR 6/8) silty clay; abundant distinct white (>15 mm) mottles; structure uncertain; firm when moist; pH 5.0
C2	120-140+ cm	Yellowish red (5YR 4/6) light clay; abundant distinct yellowish red and few prominent yellowish brown (5-15 mm) mottles; structure uncertain; slightly firm when moist

LABORATORY ANALYSES 1003

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	SiL	2	3	3*9	37	15					4.8	42	0.006					
A2	10-20							26	18	8	4.6								
A2	20-30	SiL	3	3	38	43	17					5.1	20	0.004					
B1	60-75	SiC	1	1	21	29	50	70	24	46	20	5.4	18	0.004					
B2	75-85	C	0	<1	21	23	52					5.5	19	0.003					
C	90-120	C	0	<1	19	19	62	45	28	17	8.0	5.6	17	0.003					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-10	1.8	0.084	28	1.5	1	40	0.004	0.05	0.1	0.2	0.1	0.1	12.4	1	2	1	1	95
A2	10-20																		
A2	20-30	0.44	0.027	21	2.0	1	30	0.004	0.04	0.1	0.1	0.07	0.1	7.9	1	1	1	1	96
B1	60-75				3.1			0.004	0.15	0.05	1.7	0.08	0.2	16.6	<1	10	1	1	88
B2	75-85				3.9			0.004	0.16										
C	90-120				2.3			0.004	0.26	0.07	2.0	0.1	0.3	18.5	<1	11	1	2	86

PROFILE NUMBER 54

Laboratory number: 0960

Site number: 478

Classification: Northcote (1979) – Dr2.22
Stace *et al* (1972) – Red Podzolic Soil

Location: Stratford 8322, grid ref. 176432
12 km SW of Dargo and 2 KM NE of Castleburn

Land system, component: Dargo, 2

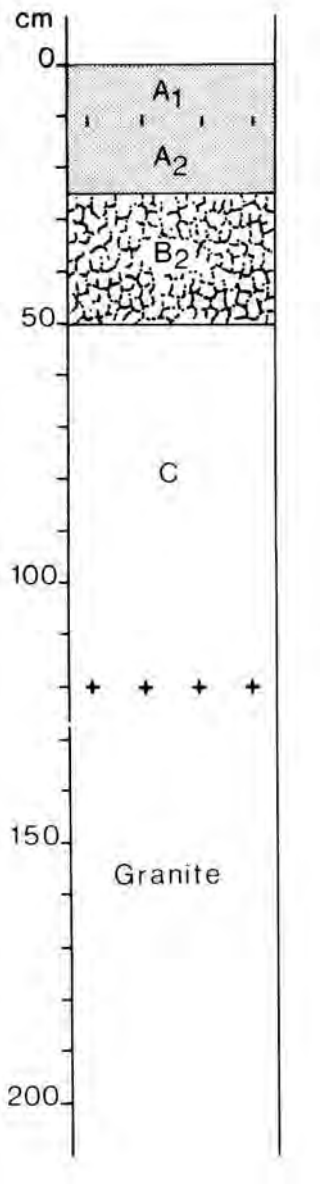
Topography: 5% slope facing NE on broad crest of spur

Elevation: 290 m

Drainage: Excessively drained

Parent material: Palaeozoic granite

Vegetation: Grassy open forest II: *Eucalyptus bridgesiana.*
Ground layer with *Medicago* spp., *Bromus* sp. and *Danthonia* sp.



PROFILE DESCRIPTION:

A1	0-10 cm	Dark brown (10YR 3/3) sandy loam; weak crumb structure; earthy fabric; soft when dry; pH 6.0; diffuse boundary
A2	10-25 cm	Brown (10YR 4/3) sandy loam; apedal; hard when dry; porous; pH 6.5; clear boundary
B2	25-50 cm	Dark red (2.5YR 3/6) sandy clay; weak fine (5 mm) angular blocky structure; smooth-ped fabric; very firm when moist; common weathered feldspar and mica; pH 6.5; clear boundary
C	50-120+ cm	Yellowish red (5YR 5/6) sandy clay loam; apedal; earthy fabric; firm when moist; pH 7.0

LABORATORY ANALYSES 960

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	LS	9	43	36	13	7					6.1	36	0.002					
A2	20-25	L	12	37	32	17	13	31	18	13	8.0	6.2	20	0.002					
B2	30-50	CL	13	31	25	15	29	52	19	33	13	6.6	23	0.002					
C	60-90	SL	14	40	31	9	19					7.2	2.2	0.002					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
A1	0-10	1.8	0.15	16	1.0	2	180	0.013	0.19	4.2	0.8	0.4	<0.01	10.7	39	8	4	<1	49
A2	20-25	0.19	0.025	10	1.9	<1	80	0.008	0.27	3.6	1.7	0.2	0.2	9.4	38	18	2	2	50
B2	30-50				3.3			0.008	0.40	7.5	3.3	0.3	0.5	16.5	45	20	2	3	30
C	60-90				2.7			0.005	0.32	8.9	3.1	0.2	0.6	13.7	65	23	2	4	6

PROFILE NUMBER 55

Laboratory number: 0990

Site number: 660

Classification: Northcote (1979) – Dr3.21
Stace *et al* (1972) – Red Podzolic Soil

Location: Bairnsdale 8422, grid ref. 832240
10 km E of Bruthen

Land system, component: Westbury 1, 1

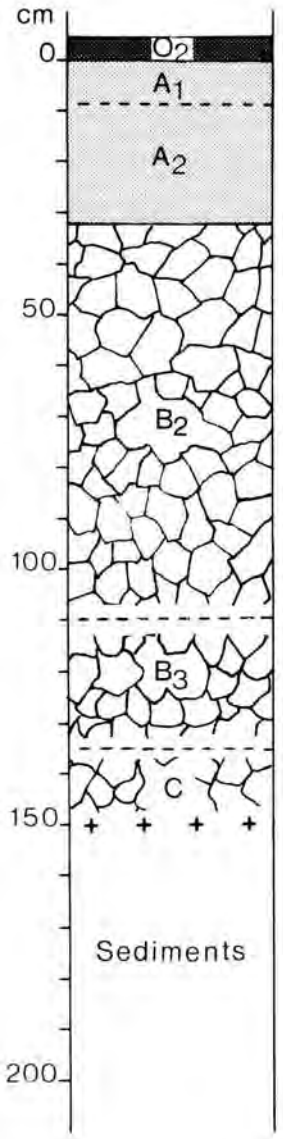
Topography: 2% slope facing N on edge of plateau remnant

Elevation: 165 m

Drainage: Moderate

Parent material: Tertiary unconsolidated fine-textured sediments

Vegetation: Regenerating after logging. Open forest II: *Eucalyptus globoidea* and *E. sieberi*, *Pteridium esculentum*, *Daviesia latifolia* and *Acacia myrtifolia* common in understorey. Herb layer sparse.



PROFILE DESCRIPTION:

O_2	5-0 cm	Black decayed organic matter, loamy texture; pH 3.5; clear boundary
A_1	0-9 cm	Dark brown (10YR 4/3) sandy loam; apedal; earthy fabric; friable when moist; 2% charcoal fragments up to 5 mm, pH 5.0; gradual boundary
A_2	9-32 cm	Strong brown (7.5YR 5/6) sandy loam; apedal; earthy fabric; friable when moist; 1% charcoal fragments up to 15 mm; 1% ferruginous nodules up to 10 mm; pH 5.5; abrupt boundary
B_2	32-110 cm	Yellowish red (5YR 5/8) medium clay; common distinct red (5-15 mm) mottles in lower half of B_2, becoming more abundant with depth; moderate medium (15 mm) angular blocky structure; smooth-ped fabric; firm when moist; pH 6.0; gradual boundary
B_3	110-135 cm	Yellowish red (5YR 5/8) medium clay; abundant distinct red (5-15 mm) and common distinct grey (>15 mm) mottles; moderate medium (15 mm) angular blocky structure; smooth-ped fabric; firm when moist; pH 6.0; gradual boundary
C	135-150 cm	Light brownish grey (10YR 6/2) medium clay; abundant prominent red and common distinct yellowish brown (5-15 mm) mottles; moderate angular blocky structure; smooth-ped fabric; pH 5.4.

LABORATORY ANALYSES 990

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
O2	5-0	SL	14	22	19	9	13					4.6	34	0.002					
A1	0-9	SL	1	32	43	10	12					5.3	30	0.002					
A2	20-30	L	0	29	42	12	12					5.4	26	0.001					
B2	32-60	C	5	19	25	8	43					5.6	30	0.001					
B2	60-90	C	4	8	10	3	73					5.7	37	0.003					
B2	90-110	C	1	8	10	4	69					5.4	49	0.005					
B3	110-120	C	<1	9	12	5	66					5.2	54	0.006					
C	135-150	C	1	13	18	4	60					4.9	59	0.007					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
O2	5-0	9.4	0.38	32		14	200	0.008	0.04	0.5	0.5	0.6	0.4	88.4	1	1	1	<1	97
A1	0-9	1.4	0.056	33	1.0	6	40	0.004	0.01	0.2	0.4	0.1	0.2	13.4	2	3	1	2	92
A2	20-30				1.5	3	40			0.07	0.3	0.1	0.1	11.8	1	3	1	1	94
B2	32-60																		
B2	60-90				4.2	3	30	0.005	0.03	0.3	6.8	0.1	0.7	24.7	1	28	<1	3	68
B2	90-110				7.0					0.1	6.3	0.1	0.7	26.8	<1	24	<1	3	72
B3	110-120									0.07	5.2	0.09	0.6	23.7	<1	22	<1	3	74
C	135-150									0.2	3.4	0.05	0.5	22.0	1	15	<1	2	82

PROFILE NUMBER 56

Laboratory number: 0962

Site number: 480

Classification: Northcote (1979) – Dy2.33
Stace *et al* (1972) – Solodic Soil

Location: Maffra 8222, grid ref. 684329
2 km W of Windmill Hill

Land system, component: Avon, 2

Topography: Spur crest, W Aspect, 5% gradient

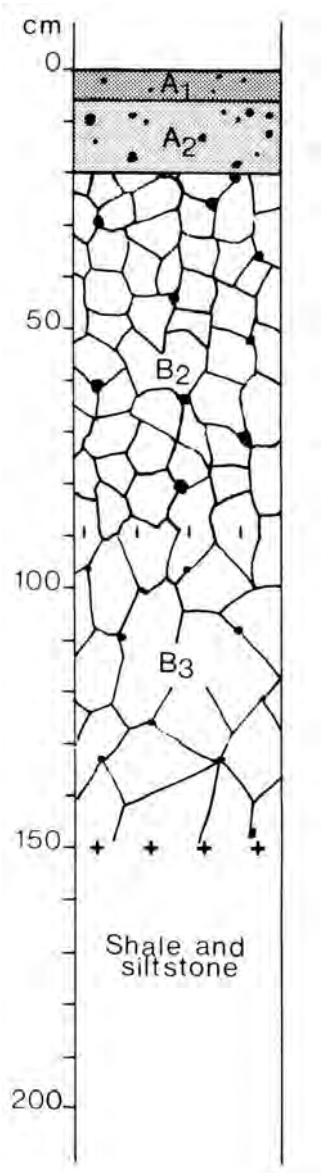
Elevation: 210 m

Drainage: Poor

Parent material: Carboniferous shale and siltstone

Vegetation: Open forest II: *Eucalyptus tereticornis* and *E. melliodora*

Remarks: 10% cover by surface stone



PROFILE DESCRIPTION:

A1	0-5 cm	Very dark greyish brown (10YR3/2) silty loam; weak crumb structure; rough-ped fabric; hard when dry; 2% ferruginous nodules (10 mm); pH 6.0; clear boundary
A2	5-20 cm	Dark brown (10YR 3/3) silty loam; apedal; earthy fabric; very hard when dry; 2% ferruginous nodules (10 mm) and 5% parent rock fragments (20 mm); pH 6.5; abrupt boundary
B2	20-90 cm	Yellowish brown (10YR 5/4) heavy clay; strong fine (10 mm) angular blocky structure; smooth-ped fabric; very hard when moist; 5% parent rock fragments (10 mm); pH 7.5; diffuse boundary
B3	90-150+ cm	Yellowish brown (10YR 5/6) medium clay; common faint reddish brown mottles (<5 mm); strong coarse (20 mm) angular blocky structure; smooth-ped fabric; firm when moist; 5% parent rock fragments (10 mm); pH 8.0

LABORATORY ANALYSES 962

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-5	L	19	11	55	22	12					6.3	110	0.009					
A2	10-20	LS	17	10	56	21	9	19	17	2	0.4	7.0	54	0.005					
B2	20-30	C	17	7	32	11	47					6.6	360	0.037					
B2	60-90	C	15	6	26	12	53	69	18	51	17	7.9	700	0.074					
B3	120-150	C	12	6	34	12	46					8.2	590	0.056					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-5	5.4	0.38	18	1.4	23	460	0.017	0.19	6.4	2.0	1.1	0.2	21.6	30	9	5	1	55
A2	10-20	1.1	0.091	16	2.1	6	180	0.016	0.10	3.0	1.5	0.5	0.3	8.7	35	17	6	3	39
B2	20-30	0.97	0.070	18	3.0	1	18	0.011	0.43	2.5	13.2	0.4	4.2	29.	8	45	1	14	32
B2	60-90				2.3			0.012	0.58	2.1	15.3	0.3	5.2	27.4	8	56	1	19	16
B3	120-150				2.3			0.010	0.51	2.0	13.7	0.3	4.8	23.6	8	58	1	20	13

PROFILE NUMBER 57

Laboratory number: 0940

Site number: 387

Classification: Northcote (1979) – Dy3.22
Stace *et al* (1972) – Non-calcic Brown Soil

Location: Stratford 8322, grid ref. 04616
1 km W of Briagolong (Gorge Road)

Land system, component: Briagolong, 1

Topography: 1% slope on alluvial terrace

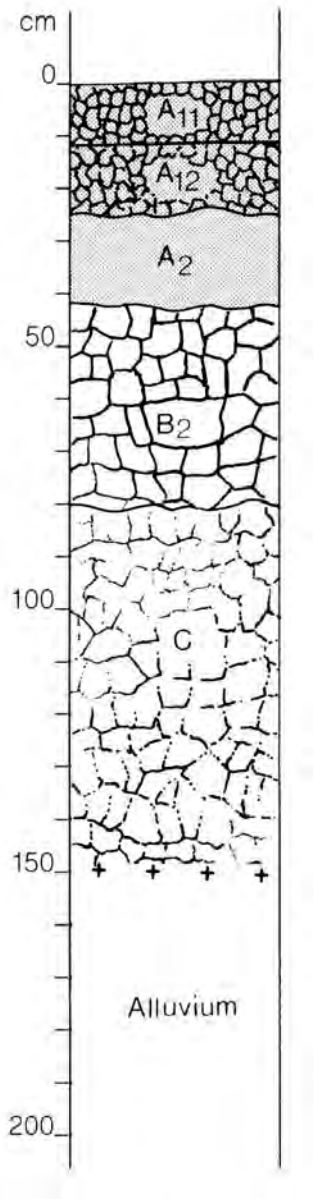
Elevation: 40 m

Drainage: Good

Parent material: Pleistocene fine-textured alluvium

Vegetation: Cleared: grassland with predominantly *Phalaris aquatica* and *Sporobolus africanus*

Remarks: Monolith taken



PROFILE DESCRIPTION:

A11	0-12 cm	Dark brown (10YR 3/3) fine sandy loam; moderate angular blocky structure (5 mm); rough-ped fabric; soft when dry; abundant roots; pH 5.5; clear boundary
A12	12-25 cm	Dark brown (10YR 3/3) fine sandy loam; weak subangular blocky structure (5 mm); rough-ped fabric; slightly hard when dry; abundant roots; pH 6.0; clear wavy boundary
A2	25-42 cm	Dark yellowish brown (10YR 4/4) fine sandy clay loam; apedal; earthy fabric; slightly hard when dry; many roots; pH 7.0; clear wavy boundary
B2	42-80 cm	Strong brown (7.5YR 4/6) light clay; abundant prominent dark red mottles (5-15 mm); strong angular blocky structure (7 mm); rough-ped fabric; slightly hard when dry; many roots; pH 7.0; clear wavy boundary
C	80-150 cm	Dark reddish brown (5YR ¾) fine sandy loam; weak angular blocky structure (5 mm); porous; rough-ped fabric; hard when dry; manganiferous nodules; pH 6.5

LABORATORY ANALYSES 940

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
A11	0-10	SiL	0	5	46	25	20					5.1	50	0.005	30-42	Mica 80;
A12	12-20	SiL	0	4	47	28	21	27	17	10	5.0	5.6	27	0002		Kaolinite 15;
A2	30-42	SiL	0	4	40	30	25					6.2	22	0.002		Illite 5
B2	60-80	SiC	0	1	26	54	41	40	18	22	12	6.3	35	0.002		
C	90-120	SiL	0	6	45	27	23					6.5	34	0.003		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
A11	0-10	2.07	0.21	13	1.4	8	260	0.020	0.31	1.9	0.8	0.9	0.1	13.1	15	6	7	1	71
A12	12-20	0.90	0.10	12	1.5	8	240	0.017	0.36	2.8	1.1	0.7	0.1	9.7	29	11	7	1	52
A2	30-42				2.2			0.013	0.48	2.7	1.5	0.7	0.1	7.9	34	19	9	1	37
B2	60-80				3.8			0.017	0.62	4.7	3.8	0.5	0.5	16.1	29	24	3	3	41
C	90-120				2.7			0.014	0.49	2.*9	2.9	0.2	0.5	0.4	28	28	2	5	37

PROFILE NUMBER 58

Laboratory number: 1004

Site number: 708

Classification: Northcote (1979) – Dr3.22
Stace *et al* (1972) – Non-calcic Brown Soil

Location: Bairnsdale 8422, grid ref. 575124
Southern boundary of Bairnsdale East

Land system, component: Briagolong, 1

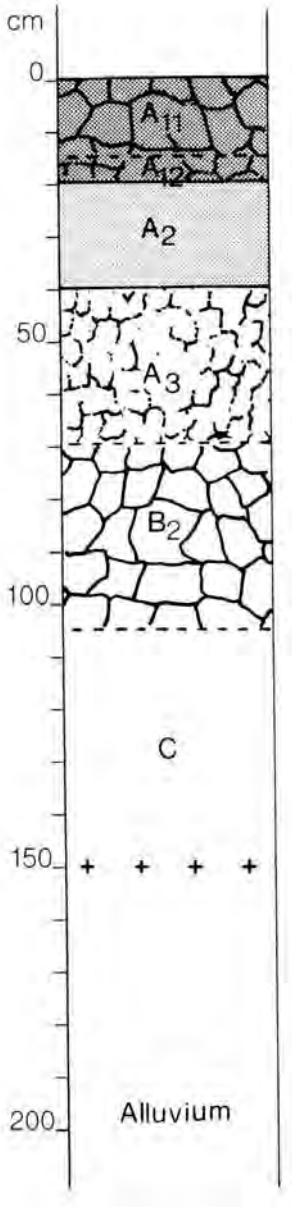
Topography: 4% slope of relict terrace

Elevation: 10 m

Drainage: Moderate

Parent material: Pleistocene fine-textured alluvium

Vegetation: Cleared, introduced grasses



PROFILE DESCRIPTION:

A11	0-15 cm	Black (10YR 2/1) clay loam; strong angular blocky structure (10 mm); rough-ped fabric; hard when dry; pH 5.0; gradual boundary
A12	15-20 cm	Dark brown (7.5YR 3/2) clay loam; weak angular blocky structure (5 mm); rough-ped fabric; hard when dry; pH 6.0; clear boundary
A2	20-40 cm	Dark brown (7.5YR ¾) clay loam; apedal earthy fabric; very hard when dry; pH 6.0; clear boundary
A3	40-70 cm	Dark brown (7.5YR ¾) light clay; common faint reddish brown mottles (>5 mm), weak subangular blocky structure (20 mm); very hard when dry; pH 6.5; gradual boundary
B2	70-105 cm	Yellowish red (5YR 4/6) medium clay; abundant distinct reddish brown mottles (>15 mm), common prominent black mottles (5-15 mm); moderate angular blocky structure (20 mm); smooth-ped fabric; very hard when dry; pH 7.0; gradual boundary
C	105-150+ cm	Reddish brown (5YR 4/4) light clay; common faint brown mottles (>5 mm); apedal; earthy fabric; hard when dry; pH 7.5

LABORATORY ANALYSES **1004**

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A11	0-10	L	7	5	47	22	22					5.7	88	0.001					
A2	20-30	L	4	2	53	22	20	27	19	8	6.5	6.1	47	0.003					
A3	40-60	L	1	3	57	21	19	19	13	6	4.0	6.8	24	0.001					
B2	70-90	CL	3	3	45	15	33	37	16	21	11	7.2	80	0.010					
C	120-150	CL	0	4	58	15	23					7.4	100	0.003					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A11	0-10	3.5	0.35	13		26	280	0.038	0.27	5.3	1.8	0.8	0.3	23.7	23	8	3	1	65
A2	20-30	1.6	0.14	15	1.4	11	60	0.026	0.21	4.7	1.4	0.2	0.2	15.7	30	9	1	1	59
A3	40-60				1.4					2.5	1.5	0.1	0.2	8.6	29	17	1	2	51
B2	70-90				2.8					2.6	4.5	0.2	1.1	13.5	19	33	1	8	39
C	120-150									2.0	3.8	0.07	1.4	9.3	22	41	1	15	21

PROFILE NUMBER 59

Laboratory number: 0937

Site number: 384

Classification: Northcote (1979) – Db2.23
Stace *et al* (1972) – Solodic Soil

Location: Maffra 8222, grid ref. 881966
7 km E of Heyfield

Land system, component: Valencia, 1

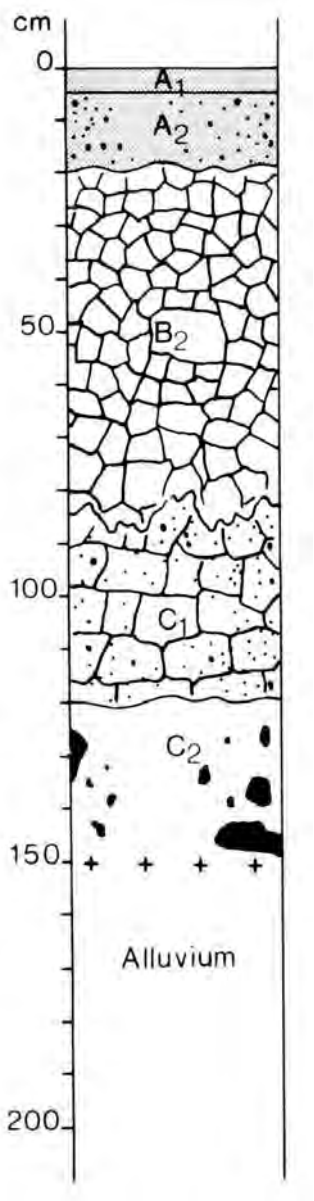
Topography: Alluvial terrace, 0% slope

Elevation: 40 m

Drainage: Poor

Parent material: Pleistocene fine-textured alluvium

Vegetation: Cleared; sedgeland with *Juncus* sp.



PROFILE DESCRIPTION:

A1	0-5 cm	Dark brown (10YR 3/3) fine sandy loam; moderate coarse (5 mm) crumb structure; rough-ped fabric; hard when dry; abundant grass roots; pH 5.5; abrupt smooth boundary
A2	5-20 cm	Dark brown (10YR 3/3) clay loam; common distinct yellowish brown (<5 mm) mottles; apedal; earthy fabric; hard when dry; 5% ferruginous nodules up to 10 mm; common roots; pH 5.5; abrupt wavy boundary
C1	85-120 cm	Reddish brown (5YR 4/3) medium clay; common faint yellowish brown (>15 mm) mottles; strong coarse (20 mm) angular blocky structure; smooth-ped fabric; very firm when moist; 5% manganiferous nodules up to 5 mm; pH 9.0; clear wavy boundary
C2	120-150 cm	Reddish brown (5YR 4/4) sandy clay; common faint yellowish brown (>15 mm) mottles; apedal; earthy fabric; friable when moist; pH 8.7

LABORATORY ANALYSES 937

Horizon	Sample Depth	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
	cm		Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-5	L	0	9	36	24	22					5.2	100	0.010					
A2	10-20	SiL	2	12	42	30	15					5.7	38	0.003					
B2	20-30	CL	2	12	34	23	30					6.1	58	0.004					
B2	30-60							55	17	38	14								
C1	90-120	SiC	0	<1	23	29	48					8.6	490	0.056					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
A1	0-5	4.88	0.39	16	1.1	25	320	0.026	0.26	2.3	2.4	0.7	0.3	21.4	11	11	3	1	74
A2	10-20	0.73	0.071	13	1.9	5	180	0.009	0.21	1.3	1.4	0.4	0.2	9.2	14	15	4	2	65
B2	20-30	0.37	0.052	9	3.0	2	300	0.009	0.43	1.9	4.2	0.7	0.4	13.4	14	31	5	3	47
B2	30-60																		
C1	90-120				3.0			0.009	0.76	2.3	9.7	0.3	3.3	16.6	14	58	2	20	6

PROFILE NUMBER 60

Laboratory number: 0934

Site number: 381

Classification: Northcote (1979) – Db2.41
Stace *et al* (1972) – Soloth – Yellow Podzolic Soil intergrade

Location: Traralgon 8221, grid ref. 581675
12 km S of Traralgon

Land system, component: Westbury 2, 1

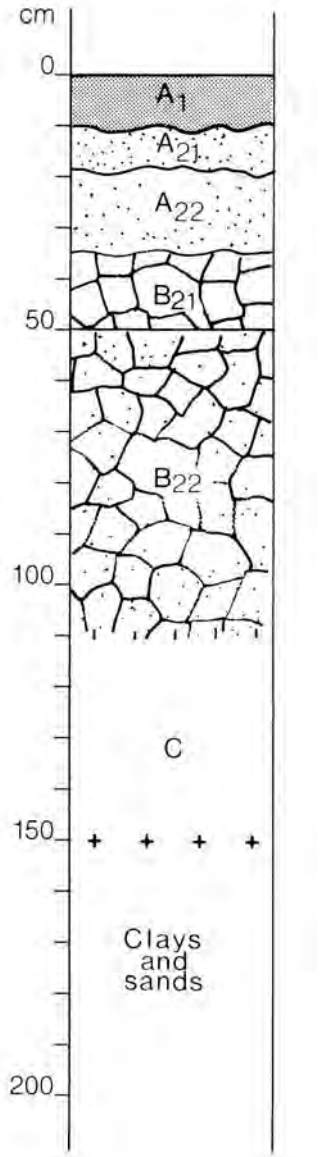
Topography: 2% slope in undulating terrain

Elevation: 100 m

Drainage: Poor

Parent material: Tertiary and Pleistocene clay and sand with some intermixed quartz gravel

Vegetation: Grassy open forest II: *Eucalyptus radiata, E. ovata, Acacia melanoxylon, A. mearnsii, Casuarina littoralis* and *Leptospermum juniperinum* predominant shrub species



PROFILE DESCRIPTION:

A1	0-10 cm	Very dark greyish brown (10YR 3/2) sandy clay loam; strong medium (5 mm) crumb structure; rough-ped fabric; slightly hard when dry; abundant fine and few large roots; pH 5.7; clear wavy boundary
A21	10-18 cm	Dark greyish brown (10YR 4/2) sandy clay loam; common distinct yellowish brown (1 mm) mottles; apedal; earthy fabric; slightly hard when dry; abundant fine and few large roots; 5% ferruginous nodules up to 3 mm; pH 5.8; clear wavy boundary
A22	18-35 cm	Brown (10YR 5/3) light sandy clay; common distinct yellowish brown (5-15 mm) mottles; apedal; earthy fabric; hard when dry; abundant fine and few large roots; 5% ferruginous nodules up to 3 mm; pH 6.0; clear wavy boundary
B21	35-50 cm	Dark yellowish brown (10YR 4/4) heavy clay; common distinct reddish brown (5-15 mm) mottles; strong coarse (20 mm) angular blocky structure; few roots; rough-ped fabric; extremely hard when dry; pH 5.5; clear boundary
B22	50-110 cm	Dark yellowish brown (10YR 4/6) heavy clay; common distinct grey (5-15 mm) mottles; moderate coarse (30 mm) angular blocky structure; smooth-ped fabric; very hard when dry; few roots; 5% ferruginous nodules up to 3 mm; pH 6.0; diffuse smooth boundary
C	110-150 cm	Light red (2.5YR 6/8) heavy clay; abundant prominent grey (>15 mm) mottles; apedal; earthy fabric; very hard when dry; pH 7.3

LABORATORY ANALYSES 934

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
A1	0-10	L	2	20	42	20	15					5.6	79	0.009	50-60	Kaolinite 90;
A21	10-18	L	3	22	42	19	17	26	15	11	6.0	5.6	42	0.005		Illite intergrade 10
A22	30-35	C	4	15	29	15	40					5.6	33	0.002		
B21	35-50	C	2	9	16	8	64					5.6	51	0.002		
B22	60-90	C	2	7	15	5	71	97	24	73	9.0	6.0	52	0.004		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
A1	0-10	2.45	0.18	18	2.3	13	70	0.012	0.037	3.2	1.8	0.1	0.2	14.0	23	13	1	1	62
A21	10-18	1.28	0.094	18	3.6	1	20	0.072	0.022	1.9	1.2	0.08	0.09	9.9	19	12	1	1	67
A22	30-35				5.0			0.006	0.066	2.2	3.5	0.06	0.3	146.4	13	21	<1	2	64
B21	35-50				5.2			0.007	0.094	2.8	5.5	0.09	0.8	24.2	12	23	<1	3	62
B22	60-90				0.6			0.006	0.13	2.9	6.5	0.09	1.0	22.7	13	29	<1	`4	5

PROFILE NUMBER 61

Laboratory number: 0947

Site number: 394

Classification: Northcote (1979) – Dy3.21
Stace *et al* (1972) - Soloth

Location: Stratford 8322, grid ref. 063051
Roadside verge, 8 km N of Stratford

Land system, component: Redgum 2, 1

Topography: Pleistocene alluvial terrace, 0% slope

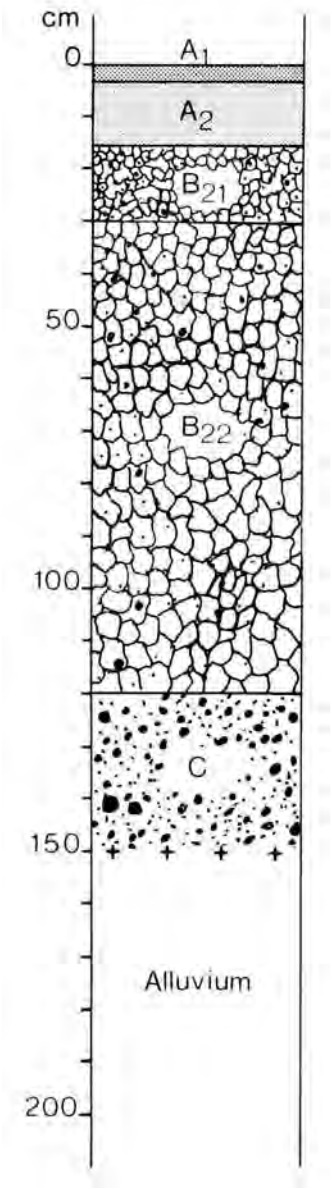
Elevation: 60 m

Drainage: Poor

Parent material: Pleistocene fine-textured alluvium

Vegetation: Regenerating after clearing; grassy open forest II: *Eucalyptus tereticornis*

Remarks: Monolith taken



PROFILE DESCRIPTION:

A1	0-3 cm	Very greyish brown (10YR 3/2) sandy loam; weak fine (3 mm) crumb structure; earthy fabric; soft when dry; common large and fine roots; pH 6.0; abrupt smooth boundary
A2	3-15 cm	Dark greyish brown (10YR 4/2) loamy sand; common faint yellowish brown (5-15 mm) mottles; apedal; earthy fabric; hard when dry; common large and fine roots; pH 5.0; abrupt smooth boundary
B21	15-30 cm	Dark greyish brown (10YR 4/2) medium clay; abundant distinct yellowish brown (>15 mm) mottles; strong medium (10 mm) subangular blocky structure; smooth-ped fabric; very firm when moist; 2% fine quartz gravel up to 5 mm; common roots; clear smooth boundary
B22	30-120 cm	Yellowish brown (10YR 5/6) heavy clay; abundant prominent reddish brown and grey (>15 mm) mottles; moderate medium subangular blocky structure; smooth-ped fabric; firm when moist; 2% ferruginous nodules up to 10 mm; common roots; pH 5.0; clear smooth boundary
C	120-150 cm	Brownish yellow (10YR 5/8) sandy clay; abundant prominent reddish brown (>15 mm) mottles; apedal; smooth-ped fabric; firm when moist; 80% quartz gravel up to 40 mm; pH 5.0

LABORATORY ANALYSES 947

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
A1	0-3	L	1	19	33	13	15					5.9	210	0.018	60-90	Mica 5;
A2	3-10		2					18	12	6	3					Kaolinite 60;
A2	10-15	L	3	29	39	18	12					5.3	38	0.004		Illite 35
B21	15-20	C	3	20	26	12	40					5.6	65	0.005		
B22	60-90	C	1	23	27	6	42					4.7	270	0.031		
B22	90-120	C	1	8	35	11	44	57	15	42	16	4.6	420	0.051		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
A1	0-3	11.6	0.76	20	0.5	54	320	0.032	0.099	11.0	4.4	0.8	0.6	31.0	35	14	3	2	46
A2	3-10																		
A2	10-15	0.54	0.043	16	1.8	4	20	0.006	0.056	0.3	0.69	0.06	0.3	8.0	4	11	1	4	80
B21	15-20	0.58	0.063	12	3.5	5	40	0.006	0.16	0.2	4.8	0.2	1.5	19.2	1	25	1	8	65
B22	60-90				2.8			0.004	0.21	0.1	4.4	0.2	3.4	17.8	1	25	1	19	54
B22	90-120				2.7			0.004	0.33	0.1	5.9	0.2	4.6	20.1	<1	29	1	23	47

PROFILE NUMBER 62

Laboratory number: 0957

Site number: 404

Classification: Northcote (1979) – Dy3.21
Stace *et al* (1972) - Soloth

Location: Bairnsdale 8422, grid ref. 528108
2 km S of Bairnsdale

Land system, component: Salt Creek 2

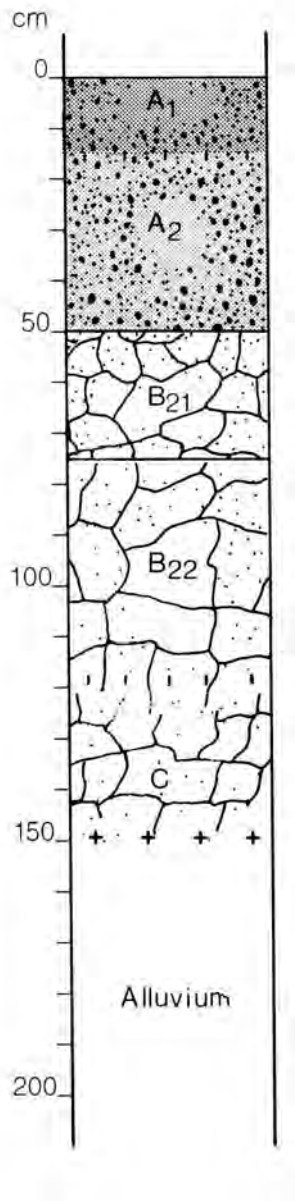
Topography: 5% slope on Pleistocene terrace, NW aspect

Elevation: 20 m

Drainage: Good

Parent material: Tertiary and Pleistocene alluvium of mixed texture

Vegetation: Cleared; grassland with *Themeda australis*, *Plantago lanceolata*, *Holcua lanatus* and *Briza maxima*



PROFILE DESCRIPTION:

A1	0-15 cm	Very dark greyish brown (10YR 3/2) sandy loam; moderate crumb structure; earthy fabric; friable when moist; 40% quartz gravel up to 20 mm; abundant fine roots; pH 5.5-6.0; diffuse boundary
A2	15-50 cm	Yellowish brown (10YR 5/4) loamy sand; apedal; earthy fabric; soft when dry; 60% quartz gravel up to 30 mm; abundant fine roots; pH 6.0; abrupt smooth boundary
B21	50-75 cm	Yellowish brown (10YR 5/6) heavy clay; common distinct reddish brown (>15 mm) mottles; strong coarse (30 mm) angular blocky structure; smooth-ped fabric; extremely hard when dry; 5% fine quartz gravel up to 3 mm; pH 7.0; clear smooth boundary
B22	75-120 cm	Yellowish brown (10YR 5/5) heavy clay; common distinct reddish brown (>15 mm) mottles; moderate very coarse (80 mm) angular blocky structure; smooth-ped fabric; extremely hard when dry; 5% fine quartz gravel up to 5 mm; pH 7.5; diffuse wavy boundary
C	120+ cm	Brownish yellow (10YR 6/6) light medium to light clay; common prominent yellowish brown (>15 mm) mottles; strong coarse (30 mm) angular blocky structure; smooth-ped fabric very firm when moist; 2% fine quartz gravel up to 5 mm' pH 6.0

LABORATORY ANALYSES 957

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	LS	16	24	49	16	9					4.8	51	0.004					
A2	30-50	LS	57	28	51	13	6	13.9	13.5	0.4	0.6	5.6	22	0.002					
B21	60-75	C	7	8	17	4	70	73	21	52	15	6.4	150	0.013					
B22	90-120	C	7	11	24	8	56					5.5	170	0.013					
C	150-180	SiC	20	1	13	34	52					4.9	240	0.026					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
A1	0-10	1.88	0.16	15	0.9	15	60	0.012	0.068	1.7	0.8	0.2	0.1	12.5	14	6	2	1	77
A2	30-50				0.5			0.005	0.047	1.0	0.4	0.1	0.1	2.9	34	14	3	3	46
B21	60-75				5.5			0.013	0.39	2.9	8.2	0.2	3.1	23.7	12	35	1	13	39
B22	90-120				4.3			0.007	0.38	1.2	6.9	0.2	3.0	18.7	6	37	1	16	40
C	150-180				5.4			0.012	0.49	0.5	7.4	0.2	4.7	20.0	3	37	1	24	35

PROFILE NUMBER 63

Laboratory number: 0968

Site number: 486

Classification: Northcote (1979) – Dy3.21
Stace *et al* (1972) – Yellow Podzolic Soil

Location: Bairnsdale 8422, grid ref. 454169
Road cutting 9 km NW of Bairnsdale

Land system, component: Salt Creek 2

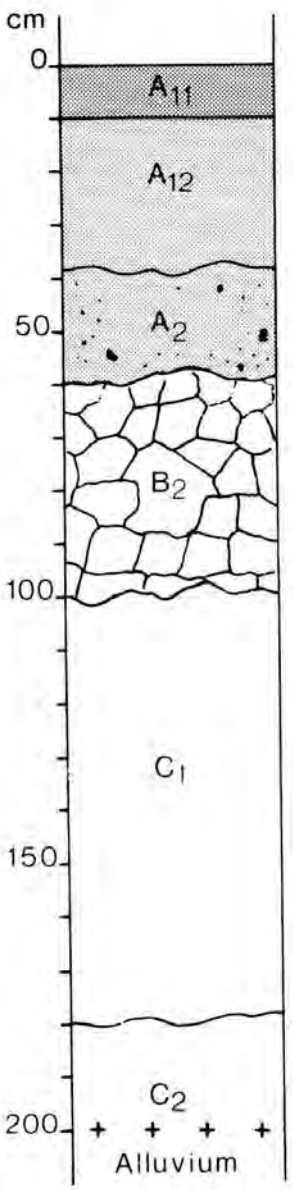
Topography: Crest slope of low hill, 1% gradient

Elevation: 40 m

Drainage: Moderate

Parent material: Tertiary and Pleistocene fine-textured alluvium

Vegetation: Cleared; grassland *with Themeda australis, Briza maxima and Holcus lanatus*. Scattered *Eucalyptus tereticornis, Acacia mearnsii*



PROFILE DESCRIPTION:

A11	0-10 cm	Very dark greyish brown (10YR 3/2) to dark brown (10YR 3/3) fine loamy sand; apedal; earthy fabric; very firm when moist; abundant roots; pH 5.5, abrupt smooth boundary
A12	10-38 cm	Dark brown (10YR 3/3) fine loamy sand; apedal, earthy fabric, very firm when moist abundant roots; pH 6.0; clear wavy boundary
A2	38-60 cm	Yellowish brown (10R 5/4) fine sand; common faint reddish brown (<5 mm) mottles; apedal; earthy fabric; soft when dry; 1% ferruginous nodules up to 15 mm; abundant roots; pH 7.0; clear wavy boundary
B2	60-100 cm	Yellowish brown (10YR 5/8) sandy clay; common faint reddish brown (<5 mm) mottles; moderate coarse (25 mm) angular blocky structure; smooth-ped fabric; very hard when dry; common roots; pH 5.0; clear wavy boundary
C1	100-180 cm	Yellowish brown (10YR 5/4) sandy loam; apedal; earthy fabric; very hard when dry; few roots; pH 7.0; wavy boundary
C2	180-200+ cm	Yellowish red (5YR 5/8) to yellowish brown (10YR 5/6) sand; apedal; earthy fabric; very hard when dry; pH 7.0

LABORATORY ANALYSES 968

Horizon	Sample Depth	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
	cm		Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A11	0-8	LS	0	2	69	23	6					5.7	38	0.003					
A12	20-30	C	1	1	82	6	11					6.3	2.5	0.002					
A2	38-60	SL	1	1	74	10	14					6.7	24	0.002					
B2	60-90	C	2	1	54	6	33					5.9	44	0.004					
B2	90-100							35	16	19	9.4								
C1	120-150	SL	1	1	74	5	16					6.4	120	0.020					

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
A11	0-8	2.0	0.16	16	0.7	8	140	0.014	0.077	2.0	0.8	0.3	0.03	10.8	1	7	3	<1	71
A12	20-30	0.72	0.057	16	0.7	1	90	0.009	0.069	2.3	0.6	0.2	0.04	7.4	31	8	3	1	57
A2	38-60				0.6			0.007	0.056	1.4	0.4	0.1	0.04	3.8	37	11	3	1	48
B2	60-90				2.9			0.015	0.17	1.5	3.4	0.1	0.5	15.1	10	22	1	3	64
B2	90-100																		
C1	120-150				2.7			0.017	0.13	0.3	2.8	0.01	0.9	6.8	4	41	<1	13	42

PROFILE NUMBER 64

Laboratory number: 0954

Site number: 401

Classification: Northcote (1979) – Dy3.22
Stace *et al* (1972) - Soloth

Location: Bairnsdale 8422, grid ref. 598136
3 km E of Bairnsdale East

Land system, component: Redgum 2, 1

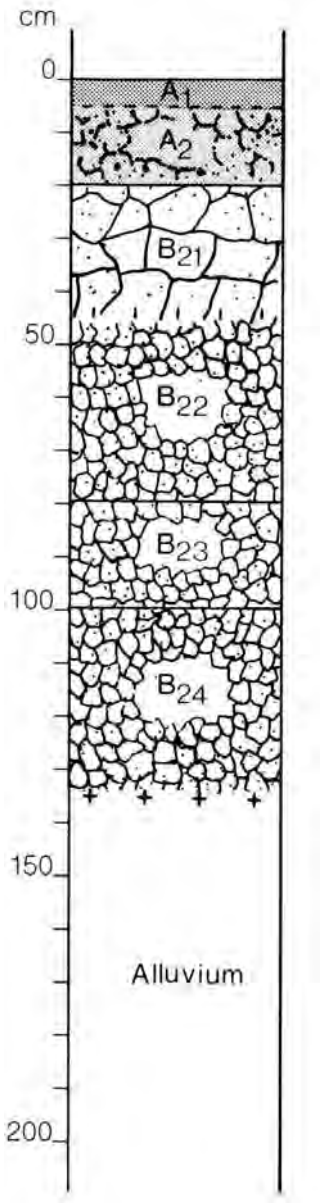
Topography: Slight depression on plain, 0% slope

Elevation: 20 m

Drainage: Poor

Parent material: Pleistocene fine-textured alluvium

Vegetation: Most native vegetation cleared; grassland with scattered *Eucalyptus tereticornis, Acacia mearnsii and A. melanoxylon*



PROFILE DESCRIPTION:

A1	0-5 cm	Very dark greyish brown (10YR 3/2) silty loam; weak crumb structure; rough-ped fabric; soft when dry; pH 4.5; gradual boundary
A2	5-20 cm	Dark greyish brown (10YR 4/2) silty clay loam; weak medium (10 mm) subangular blocky structure; rough-ped fabric; hard when dry; 5% quartz up to 10 mm; pH 5.5; clear boundary
B21	20-45 cm	Yellowish brown (10YR 5/4) medium clay; common distinct yellowish brown (<5 mm) mottles; strong coarse (20 mm) subangular blocky structure; rough-ped fabric; very hard when dry; 2% charcoal fragments up to 3 mm; pH 5.0-6.0; diffuse boundary
B22	45-80 cm	Yellowish brown (10YR 5/6-5/8) light clay; abundant distinct dark brown (>15 mm) mottles; moderate medium (10 mm) subangular blocky structure; rough-ped fabric; very hard when dry; 10% fine quartz gravel up to 3 mm; 5% ferruginous nodules up to 5 mm; pH 7.0; clear boundary
B23	80-100 cm	Dark yellowish brown (10YR 4/4) light clay' abundant distinct dark brown (>15 mm) mottles; moderate medium (10 mm) subangular blocky structure; rough-ped fabric; very hard when dry; 10% fine quartz gravel up to 3 mm; pH 7.0; clear boundary
B24	100-135 cm	Yellowish brown (10YR 5/8) light clay; common distinct reddish brown (<5 mm) mottles; moderate medium (10 mm) subangular blocky structure; rough-ped fabric; hard when dry; 10% fine quartz gravel up to 3 mm; pH 6.5-7.0

LABORATORY ANALYSES 954

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
A1	0-5	SiL	2	8	47	2	27	14				5.0	5.6	0.004	30-60	Mica 30;
A2	10-20	SiL	4	6	38	27	18	25	18	7	4.8	5.5	53	0.005		Illite 30;
B21	30-45	SiCL	7	3	24	33	39	35	15	20	10	5.4	100	0.009		Chlorite 40
B22	60-80	C	5	4	20	21	53					6.0	350	0.037		
B23	90-100	C	2	4	31	17	48					6.6	540	0.064		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-5	2.18	0.18	16	0.8	11	130	0.013	0.17	0.1	1.3	0.3	0.2	12.5	1	10	2	2	85
A2	10-20	1.01	0.092	14	0.8	4	30	0.009	0.22	1.0	1.3	0.2	0.3	10.4	10	12	2	3	73
B21	30-45				2.6			0.007	0.46	1.2	4.3	0.1	1.6	16.2	7	27	1	10	55
B22	60-80				3.9			0.008	0.48	1.5	8.5	0.2	4.9	22.0	7	39	1	22	31
B23	90-100				3.1			0.006	0.30	1.6	8.9	0.2	5.7	20.8	8	43	1	27	21

PROFILE NUMBER 65

Laboratory number: 0938

Site number: 385

Classification: Northcote (1979) – Dy3.23
Stace *et al* (1972) - Soloth

Location: Maffra 8222, grid ref. 758958
6km W of Heyfield

Land system, component: Redgum 2, 1

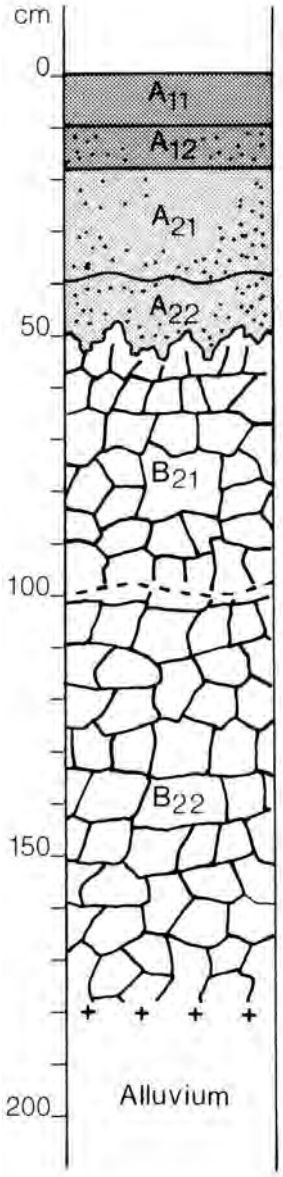
Topography: Pleistocene alluvial terrace

Elevation: 60 m

Drainage: Poor

Parent material: Pleistocene fine-textured alluvium

Vegetation: Open forest II: *Eucalyptus goniocalyx, E. melliodora, E. tereticornis, E. radiata*



PROFILE DESCRIPTION:

A11	0-10 cm	Very dark greyish brown (10YR 3/2) sandy loam; weak coarse (10 mm) crumb structure; rough-ped fabric; soft when dry; abundant small roots, common large roots; pH 5.5; abrupt smooth boundary
A12	10-18 cm	Very dark greyish brown (10YR 3/2) sandy loam; apedal; earthy fabric; soft when dry; 2% fine quartz gravel up to 4 mm; pH 4.0; clear smooth boundary
A21	18-40 cm	Brown (10YR 5/3) sandy loam; common distinct yellowish brown (<5 mm) mottles; apedal; earthy fabric; soft when dry; 5% fine quartz gravel up to 3 mm; pH 6.5; abrupt wavy boundary
A22	40-50 cm	Light olive brown (2.5YR 5/4) sandy loam; common distinct yellowish brown (5-15 mm) mottles; apedal; earthy fabric; very hard when dry; 5% fine quartz gravel up to 3 mm; pH 6.5; clear irregular boundary
B21	50-100 cm	Dark yellowish brown (10YR 4/6) to yellowish brown (10YR 5/6) heavy clay; common distinct yellowish brown (5-15 mm) mottles; moderate medium (10 mm) angular blocky structure; smooth-ped fabric; extremely hard to very hard when dry; pH 7.5-8.5; gradual wavy boundary
B22	100-180 cm	Yellowish brown (10YR 5/6) medium clay; few distinct yellow (<5 mm) mottles; moderate coarse (20 mm) angular blocky structure; smooth-ped fabric; very firm when moist; pH 8.5

LABORATORY ANALYSES 938

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A11	0-10	LS	1	22	55	9	6					4.7	63	0.007					
A12	10-18	LS	1	24	53	12	7					4.6	64	0.007					
A21	30-40	LS	6	24	58	17	3					5.9	13	0.001					
A22	40-50	L	7	20	51	16	13	14	12	2	2.0	6.2	110	0.011					
B21	50-60		3					24	12	12	8.0								
B21	60-90	SiCL	1	4	39	26	31					7.4	270	0.037					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
A11	0-10	3.20	0.18	2.3	0.3	8	20	0.009	0.060	1.8	1.0	0.2	0.2	16.1	11	6	1	1	81
A12	10-18	2.28	0.076	39	0.3	4	140	0.004	0.047	0.2	06	0.3	0.5	22.3	1	3	1	2	93
A21	30-40				0.3			0.003	0.037	0.2	0.2	0.08	0.02	2.1	10	10	4	1	75
A22	40-50				1.1			0.004	0.13	0.2	2.6	0.2	0.9	6.7	3	39	3	13	42
B21	50-60																		
B21	60-90				2.6			0.006	0.27	0.2	7.5	0.6	2.6	12.4	2	60	5	21	12

PROFILE NUMBER 66

Laboratory number: 0944

Site number: 391

Classification: Northcote (1979) – Dy3.23
Stace *et al* (1972) – Solodic Soil

Location: Traralgon 8221, grid ref. 767918
4 km E of Cowwarr

Land system, component: Valencia, 1

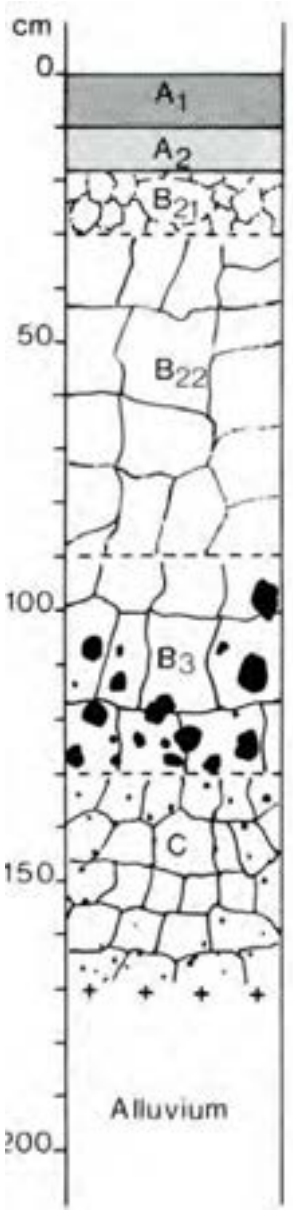
Topography: Pleistocene alluvial terrace, 0% slope

Elevation: 60 m

Drainage: Poor

Parent material: Pleistocene fine-textured alluvium

Vegetation: Cleared; grassland with *Paspalum dilatatum*, *Poa australis* and *Romulea rosea*



PROFILE DESCRIPTION:

A1	0-10 cm	Very dark greyish brown (10YR 3/2) clay loam; common distinct yellowish brown (<5 mm) mottles; weak coarse (20 mm) subangular blocky structure; porous; rough-ped fabric; hard when dry; abundant grass roots; pH 5.8; clear smooth boundary
A2	10-18 cm	Dark greyish brown (10YR 4/2) clay loam; common distinct yellowish brown (<5 mm) mottles; apedal; earthy fabric; very hard when dry; abundant grass roots; pH 5.5; clear smooth boundary
B21	18-30 cm	Yellowish brown (10YR 5/6) medium clay; common prominent grey (5-15 mm) mottles; weak coarse (30 mm) subangular blocky structure; porous; rough-ped fabric; very hard when dry; pH 8.5; smooth gradual boundary
B22	30-90 cm	Strong brown (7.5YR4/6) heavy clay; common faint yellowish brown (5-15 mm) mottles; moderate very coarse (60 mm) angular blocky structure; smooth-ped fabric; extremely hard when dry; common roots; pH 8.5; smooth gradual boundary
B3	90-130 cm	Dark yellowish brown (10YR 4/4) heavy clay; few distinct red (5-15 mm) mottles; moderate; very coarse (70 mm) angular blocky structure; smooth-ped fabric; extremely hard when dry; 20% gravel or nodules up to 80 mm; common roots; pH 8.7: smooth gradual boundary
C	130-170 cm	Dark red (2.5YR 3/6) heavy clay; strong medium (15 mm) angular blocky structure; smooth-ped fabric; very hard when dry; 5% manganiferous nodules up to 5 mm; pH 8.5

LABORATORY ANALYSES 944

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	SiL	0	4	28	37	23					5.5	95	0.010					
A2	10-18	SiL	0	5	30	13						5.4	63	0.007					
B21	20-30	SiCL	0	4	30	39	26					5.7	56	0.006					
B22	30-60	C	1	1	9	17	71					7.5	330	0.036					
B3	90-120	C	0	<1	11	20	67					8.4	900	0.11					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-10	3.17	0.29	14	1.4	15	220	0.026	0.29	1.8	1.9	0.6	0.5	17.6	10	11	3	3	73
A2	10-18	1.43	0.14	13	1.9	9	60	0.017	0.24	1.0	1.3	0.3	0.4	13.4	7	10	2	3	78
B21	20-30	0.59	0.065	12	2.7	47	30	0.012	0.29	0.9	2.1	0.2	0.6	10.8	8	19	2	6	65
B22	30-60				4.6			0.011	0.92	3.0	11.2	1.0	4.5	25.1	12	45	4	18	21
B3	90-120				4.1			0.011	0.87	1.9	9.9	0.8	5.7	20.4	9	49	4	28	10

PROFILE NUMBER 67

Laboratory number: 0946

Site number: 393

Classification: Northcote (1979) – Dy3.42
Stace *et al* (1972) - Soloth

Location: Traralgon 8221, grid ref. 655868
2 km W of Toongabbie, 23 km NW of Rosedale

Land system, component: Westbury, 1

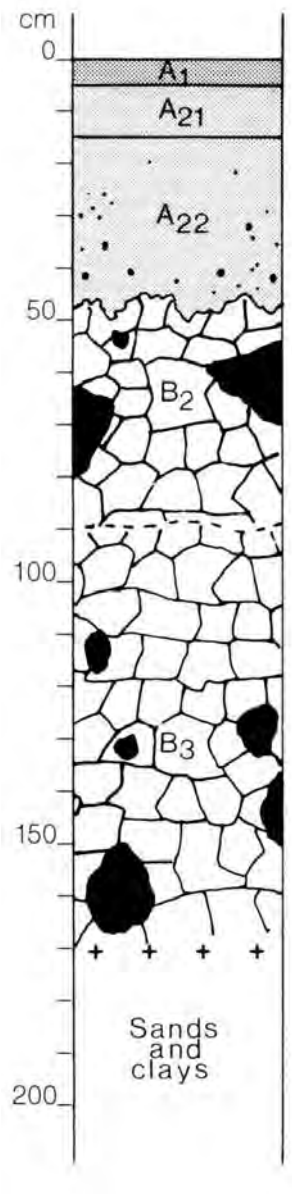
Topography: 4% slope on low rise

Elevation: 80 m

Drainage: Poor

Parent material: Tertiary unconsolidated material of mixed texture

Vegetation: Open forest II: *Eucalyptus globoidea, E. sideroxylon, E. mellioroda* and *E. goniocalyx*



PROFILE DESCRIPTION:

A1	0-5 cm	Very dark greyish brown (10YR 3/2) sandy loam; weak coarse (10 mm) crumb structure; rough-ped fabric; slightly hard when dry; abundant roots; pH 5.5; abrupt smooth boundary
A21	5-15 cm	Light yellowish brown (10YR 6/4) fine sandy loam; common faint yellowish brown (5-15 mm) mottles; apedal; earthy fabric; very hard when dry; common roots; pH 5.8; clear smooth boundary
B2	47-90 cm	Yellowish brown (10YR 5/8) medium clay; common distinct reddish brown (<5 mm) mottles; moderate coarse (20 mm) angular blocky structure; smooth-ped fabric; common roots; 2% (5 mm) mottles; common roots; 2% red chert fragments up to 300 mm; pH 6.0%; gradual wavy boundary
B3	90-170+ cm	Yellowish brown (10YR 5/8) heavy clay; common distinct grey (5-15 mm) and reddish brown (<5 mm) mottles; moderate coarse (25 mm) angular blocky structure; smooth-ped fabric; very hard when dry; few roots; 2% quartz gravel up to 200 mm; pH 7.0

LABORATORY ANALYSES 946

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-5	L	0	10	33	23	15					4.6	110	0.011					
A21	10-15	L	1	24	40	23	13					4.4	50	0.006					
A22	30-47	L	4	26	33	23	17					5.0	55	0.005					
B2	47-60	CL	5	14	24	22	38	42	13	29	13	5.5	190	0.026					
B3	90-120	C	1	10	21	19	49					6.2	50	0.063					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-5	12.2	0.59	27	0.5	23	160	0.023	0.11	5.4	2.9	0.6	0.4	42.2	13	7	1	1	78
A21	10-15	0.74	0.036	27	0.6	10	30	0.029	0.029	0.3	0.4	0.1	0.2	7.6	4	5	1	3	87
A22	30-47				1.9			0.004	0.097	0.2	1.3	0.1	0.4	9.4	2	14	1	4	79
B2	47-60				2.4			0.004	0.15	0.2	6.8	0.2	2.5	21.5	1	32	1	12	54
B3	90-120				2.7			0.004	0.21	0.2	9.1	0.1	5.3	19.3	1	47	1	27	24

PROFILE NUMBER 68

Laboratory number: 0964

Site number: 482

Classification: Northcote (1979) – Dy5.22
Stace *et al* (1972) - Soloth

Location: Stratford 8322, grid ref. 313958
24 km E of Stratford, 3 km NW of Meerlieu

Land system, component: Redgum 1, 1

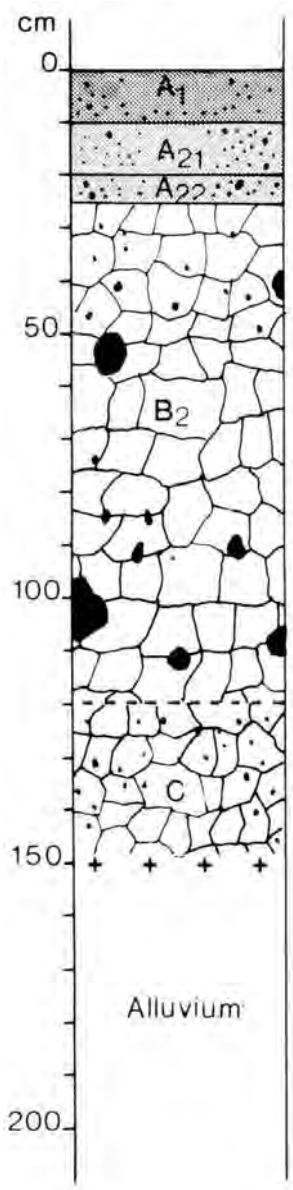
Topography: Alluvial terrace, 3% slope

Elevation: 20 m

Drainage: Poor

Parent material: Pleistocene fine-textured alluvium

Vegetation: Cleared; grassland with scattered *Eucalyptus tereticornis*



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PROFILE DESCRIPTION:

A1	0-10 cm	Very dark grey (10YR 3/1) loamy sand; weak crumb structure; rough-ped fabric; slightly hard when dry; 2% quartz up to 5 mm; pH 6.0; clear boundary
A21	10-20 cm	Dark greyish brown (10YR 4/2) sand; apedal; earthy fabric; soft when dry; 5% quartz gravel up to 10 mm; clear boundary
A22	20-25 cm	Brown (10YR 5/3) sand; apedal; earthy fabric; soft when dry; 5% quartz gravel up to 10 mm; pH 7.0; clear boundary
B2	25-120 cm	Yellowish brown (10YR 5/6) heavy sandy clay; common distinct grey (2 mm) mottles; moderate coarse (20 mm) angular blocky structure; smooth-ped fabric; firm when moist; 2% quartz gavel up to 100 mm; 1% ferruginous nodules up to 10 mm; pH 7.0; gradual boundary
C	120-150 cm	Yellowish brown (10YR 5/8) sandy clay; abundant prominent reddish brown (2 mm) and abundant distinct grey (2 mm) mottles; moderate medium (10 mm) angular blocky structure; smooth-ped fabric; very firm when moist; 1% gravel quartz up to 10 mm; pH 7.5

LABORATORY ANALYSES 964

Horizon	Sample Depth	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
	cm		Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
A1	0-10	S	2	45	42	5	4					5.9	29	0.003	30-60	Kaolinite 90;
A21	10-20	S	7	47	42	5	4					6.2	19	0.002		Chlorite 10
A22	20-25	S	15	46	45	4	5					6.5	17	0.002		
B2	30-60	C	14	27	32	4	35	43	16	27	10	7.2	150	0.004		
B2	90-120	C	19	20	29	4	44					7.7	340	0.025		

Horizon	Sample Depth	Org. C	Total N	1.3C N	Free Fe_2O_3	Available		HCl extract		Exchangeable cations									
						P	K	P	K	Ca	Mg	K	Na	CEC	Ca	Mg	K	Na	H
	cm	%	%		%	ppm	ppm	%	%	Milliequivalents/100g					% of CEC				
A1	0-10	1.1	0.092	16	0.4	3	60	0.006	0.0022	1.1	0.5	0.2	0.08	6.7	16	7	3	1	73
A21	10-20	0.41	0.036	15	0.5	2	20	0.004	0.012	0.8	0.3	0.06	0.06	3.5	23	9	2	2	64
A22	20-25	0.17	0.019	12	0.4	2	10	0.003	0.009	0.4	0.2	0.04	0.07	1.8	22	11	2	4	61
B2	30-60				3.2			0.005	0.14	0.4	5.5	0.09	2.5	14.1	3	39	1	18	38
B2	90-120				4.0			0.004	0.16	0.2	7.3	0.09	4.9	17.2	1	42	1	28	28

PROFILE NUMBER 69

Laboratory number: 0945

Site number: 392

Classification: Northcote (1979) – Dd2.23
Stace *et al* (1972) – Solodic Soil

Location: Traralgon 8221, grid ref. 843888
12 km N of Rosedale

Land system, component: Sale 1

Topography: 1% slope on alluvial terrace

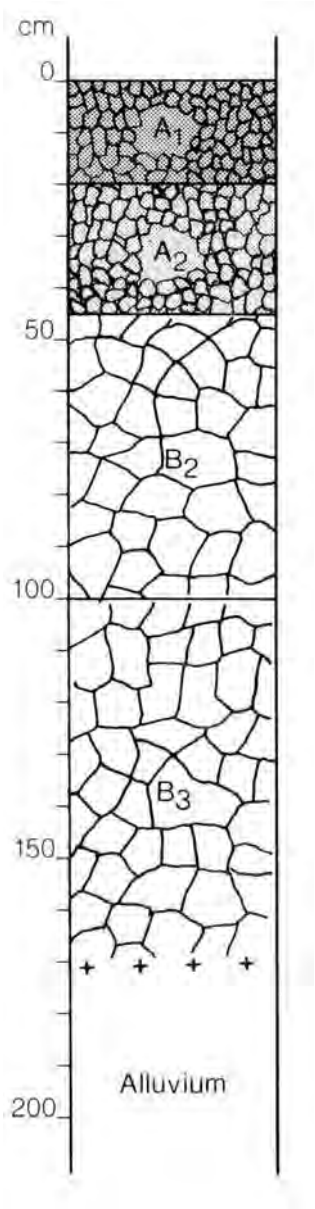
Elevation: 40 m

Drainage: Poor

Parent material: Pleistocene fine-textured alluvium

Vegetation: Cleared; grassland with predominantly *Phalaris aquatica*

Remarks: Monolith taken



PROFILE DESCRIPTION:

A1	0-20 cm	Very dark greyish brown (10YR 3/2) silty loam; few distinct yellowish brown (<5 mm) mottles; strong fine (5 mm) subangular blocky structure; rough-ped fabric; hard when dry; common fine roots; pH 6.0; clear smooth boundary
A2	20-45 cm	Dark brown (10YR 4/3) silty clay loam; few faint yellowish brown (<5 mm) mottles; moderate medium (10 mm) subangular blocky structure; rough-ped fabric; very hard when dry; common fine roots; pH 6.5; clear smooth boundary
B2	45-100 cm	Very dark greyish brown (10YR 3/2) medium clay; abundant prominent yellowish brown (>15 mm) mottles; strong coarse (30 mm) angular blocky structure; smooth-ped fabric; very firm when moist; common fine roots; pH 7.0; clear smooth boundary
B3	100-170+ cm	Dark brown (10YR 4/3) medium clay; abundant prominent yellow (>15 mm) mottles; moderate coarse (30 mm) angular blocky structure; smooth-ped fabric; very firm when moist, pH 8.5

LABORATORY ANALYSES 945

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction	
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %
A1	0-10	SiCL	0	1	33	27	33					5.7	58	0.004	60-90	Mica 60;
A2	30-45	SiCL	0	1	33	36	29	26	15	11	7.0	5.9	42	0.003		Kaolinite 25;
B2	60-90	SiC	0	<1	11	25	62	55	23	32	14	6.6	280	0.034		Illite 15
B3	100-120	SiC	0	1	13	35	50					7.9	450	0.051		

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-10	2.55	0.22	15	1.5	12	260	0.021	0.36	2.6	2.2	0.8	0.2	16.4	16	13	5	1	65
A2	30-45				2.0			0.012	0.45	1.2	1.9	0.4	0.4	11.2	11	17	4	4	64
B2	60-90				3.8			0.012	0.81	3.1	8.5	0.4	2.6	20.7	14	41	2	13	29
B3	100-120				3.8			0.017	0.71	3.3	8.4	0.3	3.4	17.3	19	49	2	20	10

PROFILE NUMBER 70

Laboratory number: 0979

Site number: 476

Classification: Northcote (1979) – Uc2.36
Stace *et al* (1972) - Podzol

Location: Traralgon 8221, grid ref. 727646
3.5 km NNW of Gormandale

Land system, component: Gormandale 1

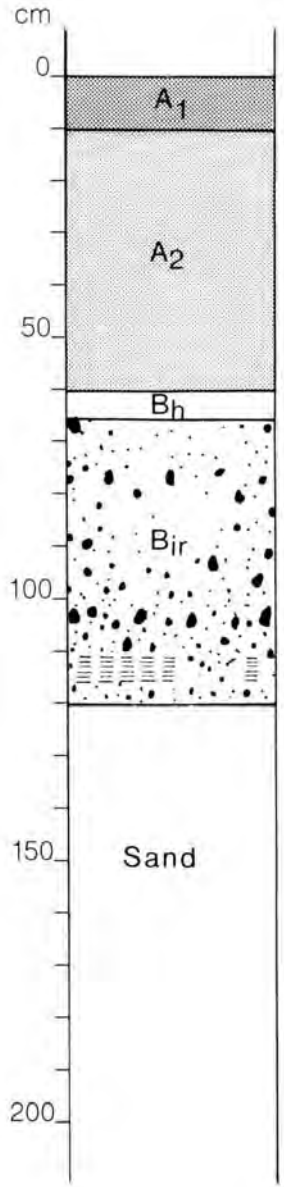
Topography: Lower hillslope with NW aspect, 5% gradient

Elevation: 180 m

Drainage: Good

Parent material: Tertiary sand

Vegetation: Shrubby open forest II*: Eucalyptus globoidea* and *E. consideniana*, with *Acacia terminalis, Kunzea ericoides* and *Pteridium esculentum* common in the understorey



PROFILE DESCRIPTION:

A1	0-10 cm	Black (10YR 2/1) sand, apedal; sandy fabric; slightly hard when dry; pH 4.5; clear boundary
A2	10-60 cm	Light brownish grey (10YR 6/2) sand; apedal; sandy fabric; hard when dry; pH 5.5; abrupt boundary
Bh	60-65 cm	Very dark brown (10YR 2/2) sand; apedal; sandy fabric; hard when dry; pH 5.5; abrupt boundary
Bir	65-120 cm	Yellowish brown (10YR 5/8) sand; apedal; sandy fabric; slightly hard when dry; 60% ferruginous nodules up to 40 mm; pH 6.2; solid iron-cemented material occurs in places at the base of this horizon.

LABORATORY ANALYSES 979

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	S	1	6	29	4	1					4.8	28	0.002					
A2	30-60	S	1	65	27	2	2					4.7	19	0.002					
Bh	60-65	S	2	62	27	6	4					5.6	23	0.002					
Bir	90-120	LS	1	59	29	9	2					5.9	30	0.003					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-10	12	0.039	40	0.7	4	50	0.026	0.01	0.4	0.3	0.1	0.2	9.3	4	3	1	2	90
A2	30-60	0.18	0.006	39	0.7	2	4	0.004	0.01	0.11	0.08	<0.01	0.06	2.0	6	4	<1	3	87
Bh	60-65	0.31	0.019	21	1.0	2	20	0.003	0.01	0.3	0.2	0.02	0.07	6.3	5	3	3	1	88
Bir	90-120	0.24	0.013	24	1.3	1	10	0.004	0.02	0.2	0.2	0.01	0.11	5.6	4	4	1	2	90

PROFILE NUMBER 71

Laboratory number: 0965

Site number: 483

Classification: Northcote (1979) – Uc4.22
Stace *et al* (1972) - Podzol

Location: Stratford 8322, grid ref. 397950
2 km SW of Bengworden

Land system, component: Barrier 1

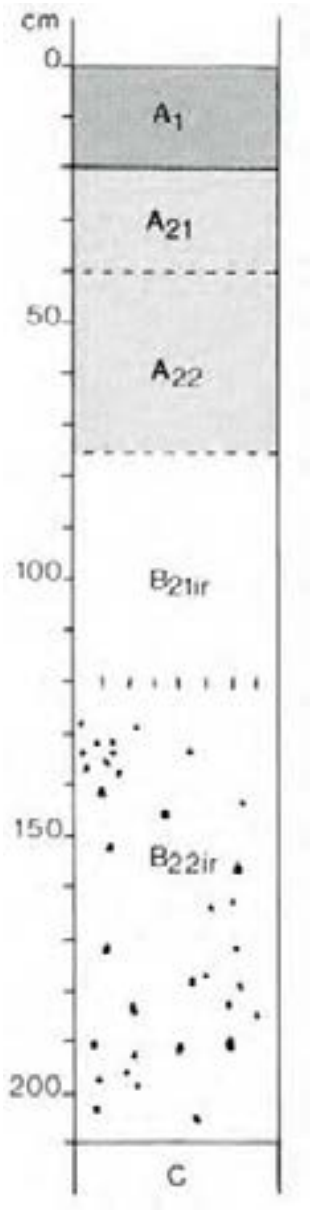
Topography: Crest slope of relict dune facing W, 5% gradient

Elevation: 20 m

Drainage: Good

Parent material: Pleistocene sand of marine origin

Vegetation: Cleared; predominantly *Pteridium esculentum*, *Themeda australis* and *Sporobolus africanus* with scattered *Acacia mearnsii*, *Casuarina littoralis* and *Leptospermum* sp



PROFILE DESCRIPTION:

A1	0-20 cm	Very dark greyish brown (10YR 3/2) loamy sand; apedal; earthy fabric; soft when dry; pH 5.5; clear boundary
A21	20-40 cm	Dark greyish brown (10YR 4/2) sand; apedal; sandy fabric; soft when dry; pH 5.5; gradual boundary
A22	40-75 cm	Yellowish brown (10YR 5/4) sand; apedal; sandy fabric; soft when dry; pH 6.0; gradual boundary
B21ir	75-120 cm	Yellowish brown (10YR 5/6) sand; apedal; sandy fabric; soft when dry; pH 6.0; diffuse boundary
B22ir	120-210 cm	Yellowish brown (10YR 5/6) sand; apedal; sandy fabric; soft when dry; 15% ferruginous concretions (30 mm); pH 6.5; clear boundary
C	210+ cm	Yellowish brown (10YR 5/4) sand; common distinct reddish brown mottles; apedal; sandy fabric; soft when dry

LABORATORY ANALYSES 965

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	SL	1	50	34	3	16					6.1	31	0.003					
A21	30-40	SL	0	56	31	2	14					6.2	11	0.001					
A22	60-75	S	0	53	42	3	2					6.3	14	0.001					
B21ir	75-90	S	0	52	42	2	3					6.5	15	0.001					
B22ir	90-120	S	0	53	41	3	3					6.7	17	0.001					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-10	1.8	0.12	20	0.3	5	120	0.006	0.038	3.6	0.8	0.3	0.04	9.0	40	9	3	<1	48
A21	30-40							0.002	0.023	0.7	0.2	0.04	0.03	1.6	44	13	3	2	38
A22	60-75	0.20	0.015	17	0.2	2	30	0.002	0.020	0.8	0.2	0.05	0.01	1.7	47	12	3	1	37
B21ir	75-90	0.17	0.013	17	0.4	2	30	0.002	0.019	0.8	0.2	0.05	0.01	2.0	40	10	3	1	56
B22ir	90-120	0.15	0.011	18	0.4	1	40	0.002	0.021	0.09	0.2	0.07	<0.01	2.0	45	10	4	<1	41

PROFILE NUMBER 72

Laboratory number: 0950

Site number: 397

Classification: Northcote (1979) – Uc4.22
Stace *et al* (1972) - Podzol

Location: Sale 8321, grid ref. 181744
15 km SE of Sale

Land system, component: Dutson 2

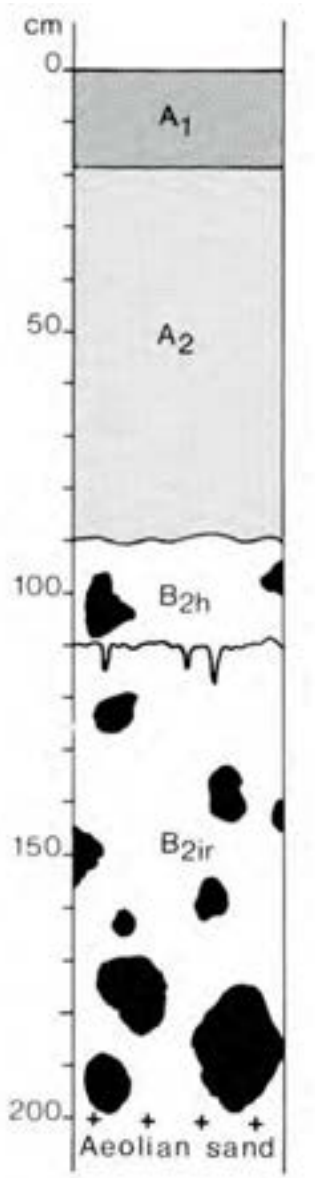
Topography: 2% slope on undulating sand sheet

Elevation: 20 m

Drainage: Good

Parent material: Pleistocene aeolian sand

Vegetation: Pine plantation



PROFILE DESCRIPTION:

A1	0-15 cm	Very dark greyish brown (10YR 3/2) organic sand; apedal; sandy fabric; loose when dry; abundant roots; pH 5.0; clear smooth boundary
A2	18-90 cm	Greyish brown (10YR 5/6) sand; apedal; sandy fabric; soft when dry; pH 5.5; wavy boundary
B2h	90-110 cm	Dark yellowish brown (10YR ¾) sand; apedal; sandy fabric; loose when dry; common roots; 2% ferruginous nodules up to 150 mm; clear irregular boundary
B2ir	110-200 cm	Dark yellowish brown (10YR 4/6) to yellowish brown (10YR 5/6) sand; apedal; sandy fabric; loose when dry; 1% ferruginous nodules up to 100 mm at 120 cm; increasing to 30% ferruginous concretions up to 300 mm at 200 cm; pH 5.7

LABORATORY ANALYSES 950

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	S	3	58	32	4	4					5.0	30	0.001					
A2	60-90	S	6	56	38	5	1					5.3	7	0.001					
B2h	90-110	S	8	57	35	5	3					5.4	16	0.001					
B2ir	110-120	S	6	56	37	5	2					5.5	17	0.001					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca Milliequivalents/100g	Mg Milliequivalents/100g	K Milliequivalents/100g	Na Milliequivalents/100g	CEC	Ca % of CEC	Mg	K	Na	H
A1	0-10	1.21	0.076	21	0.1	3	40	0.004	0.020	1.3	0.4	0.1	0.04	6.1	21	7	2	1	69
A2	60-90	0.17	0.007	32	0.1	<1	<1	0.001	0.010	0.07	0.02	0.02	0.02	0.80	9	3	3	3	82
B2h	90-110	0.22	0.014	20	0.5	2	<1	0.001	0.013	0.2	0.1	0.04	0.07	4.3	5	2	1	2	90
B2ir	110-120	0.24	0.015	21	0.4	4	<1	0.001	0.012	0.3	0.1	0.04	0.07	3.8	8	3	1	2	86

PROFILE NUMBER 73

Laboratory number: 0948

Site number: 395

Classification: Northcote (1979) – Uc4.31
Stace *et al* (1972) - Podzol

Location: Stratford 8322, grid ref. 256033
20 km NE of Stratford

Land system, component: Perry 1

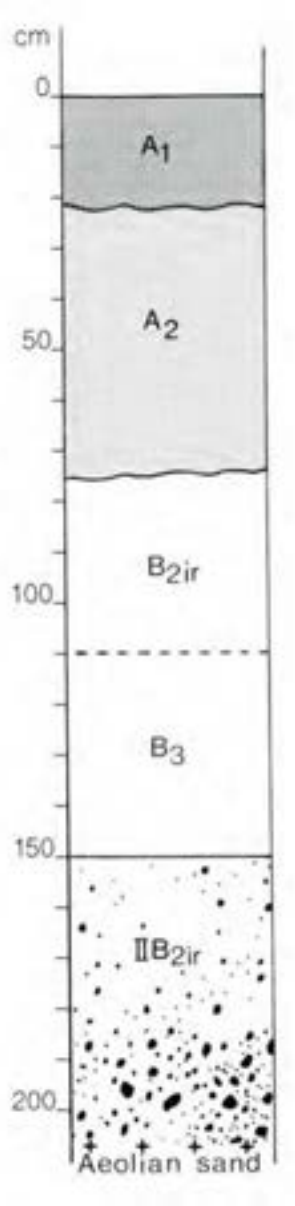
Topography: 3% slope on ridge of sand dune

Elevation: 60 m

Drainage: Good

Parent material: Pleistocene aeolian sand

Vegetation: Woodland II: *Eucalyptus globoidea with Banksia serrata, Pteridium esculentum, Perata cylindrica* and *Montoca scoparia* are predominant species of the understorey



PROFILE DESCRIPTION:

A1	0-22 cm	Very dark grey (YR 3/1) sand; apedal; earthy fabric; soft when dry; abundant small roots; pH 5.7; abrupt wavy boundary
A2	22-75 cm	Greyish brown (YR 5/2) sand; apedal; sandy fabric; loose when dry; roots common; pH 4.3 increasing to pH 6.2 at depth; clear wavy boundary
B2ir	75-110 cm	Yellowish brown (10YR 5/8) sand; apedal; sandy fabric; loose when dry; roots common; gradual boundary
B3	100-150 cm	Brown yellow (10YR 6/6) loamy sand; sandy fabric; soft when dry; few roots; pH 6.5; clear boundary
IIB2ir	150-207 cm	Brownish yellow (10YR 6/6) loamy sand; apedal; sandy fabric; loose when dry; 20% ferruginous nodules up to 20 mm increasing to 20 – 80% between 20-40 mm; pH 6.5-7.0

LABORATORY ANALYSES 948

Horizon	Sample Depth cm	Lab. texture	Particle size distribution					Atterberg limits				1:5 soil water suspension			Clay mineralogy by x-ray diffraction				
			Gravel %	Coarse sand % f.e.	fine sand % f.e.	Silt % f.e.	Clay % f.e.	liquid limit %	plastic limit %	plasticity index %	linear shrinkage %	pH	EC 25°C µS/cm	Cl- %	Depth cm	Composition %			
A1	0-10	S	0	36	58	3	4					5.2	20	0.001					
A2	22-30	S	0	37	61	1	1					4.6	8	0.001					
A2	60-75	S	0	36	62	1	1					4.9	5	0.001					
B2ir	75-90	S	0	29	66	2	3					5.1	11	0.001					
B3	110-120	S		0	30	68	<1	2				5.7	7	0.001					

Horizon	Sample Depth cm	Org. C %	Total N %	1.3C N	Free Fe_2O_3 %	Available P ppm	Available K ppm	HCl extract P %	HCl extract K %	Exchangeable cations Ca	Mg	K	Na	CEC	Ca % of CEC	Mg	K	Na	H
										Milliequivalents/100g									
A1	0-10	1.02	0.046	29	0.2	2	10	0.003	0.031	1.4	0.5	0.1	0.1	5.8	24	9	2	2	63
A2	22-30	0.25	0.019	17	0.1	1	3	0.001	0.010	0.3	0.1	0.05	0.03	1.9	16	5	3	2	74
A2	60-75	0.07	0.007	13	0.2	3	1	0.001	0.015	0.2	0.06	0.02	0.09	0.6	33	10	3	15	39
B2ir	75-90	0.23	0.011	27	0.6	1	<1	0.003	0.027	0.3	0.1	0.06	0.04	3.7	8	3	2	1	86
B3	110-120				0.3	2	<1	0.002	0.020	0.3	0.1	0.04	0.03	2.8	11	4	1	1	83

Appendix II – Methods of Soil Analysis

T.I. Leslie

All results are expressed in terms of oven-dry soil passing a 2 mm round-hole sieve, except gravel, which is reported as a percentage of the air-dry field sample.

Particle-size analysis: Plummet balance method of Hutton (1956), with sand separation by hand decantation. The ISSS size fractions were separated: ie, coarse sand 2 - 0.2 mm; fine sand 0.2 - 0.2 mm; silt 0.02 - 0.002 mm; and clay < 0.002 mm.

Electrolytic conductivity (EC 25°C,: A 1:5 soil: water suspension was shaken for 1 hour and, after temperature equilibration, conductivity was measured with a dip cell and direct-reading meter. Results are reported as microsiemens per centimetre (µs/cm).

Soil reaction (pH): By glass electrode and digital pH meter on the above suspension.

Chloride (Cl): By solid-state chloride electrode and millivoltmeter on the same suspension, calibrated with potassium chloride standards.

Organic carbon (Org. C): Wet-combustion technique of Walldey and Black, described by Piper (1942). No recovery factor was applied, but the factor 1.3 C:N was used to calculate carbon:nitrogen ratios.

Total nitrogen (N): Semimicro Kjeldahl method of Metson (1956).

Free iron oxide (Fe203): Haldane (1956). Finely ground soil was extracted with powdered zinc in ammonium chloride-oxalic acid buffer. Ferrous ion in the treated extract was titrated with potassium dichromate.

Hydrochloric acid extract for phosphorus and potassium (P,K): 4 g soil was refluxed for 4 hours with 20 mL 6M hydrochloric acid, with subsequent filtration and dilution of the filtrate to 200 mL. Phosphorous was determined by a colorimetric method using molybdenum blue (Hutton, private communication) and potassium by atomic absorption.

Available phosphorus (P avail.): Colwell (1963). 1 g soil was shaken with 100 mL 0.5 M sodium bicarbonate at pH 8.5 for 16 hours. Phosphorus was determined in the clarified extract by a colorimetric method (molybdenum blue).

Available potassium (K avail.): 2.5 g soil was shaken for 1 hour with 50 mL 0.05 M hydrochloric acid. After settling overnight to clear, an aliquot was diluted for potassium determination by atomic absorption.

Exchangeable cations: By extraction method of Tucker (1974), also described in Loveday (1974). Synopsis: Soluble ion removal by 10% ethanediol in ethanol. Cation displacement by ammonium chloride in ethanol-water (2:1) at pH 8.5 Cation determinations by atomic absorption. Cation exchange capacity by measurement of ammonium ion displaced from the treated soil by a potassium nitrate-calcium nitrate solution.

Water-holding properties: Undisturbed soil cores 73 mm diameter and 63 mm high retained in brass sleeves were saturated with water from below, weighed, then allowed to equilibrate at a water tension of j m on a ceramic tension plate. After re-weighing, the cores were dried at 105°C and weighed again. The soil was then washed through a 2 mm sieve, and gravel on the sieve was dried and weighed. The percentage of gravel by volume was calculated assuming a specific gravity of 2.65. Smaller samples of fine earth were saturated, then equilibrated at 15 atm in a pressure membrane apparatus. These were weighed, dried at 105°C and weighed again.

These measurements allowed the calculation of bulk density and percentage by volume of water retained at saturation, field capacity and wilting point, all in a gravel-free basis. Total porosity was derived from the function 100X(1 - [bulk density - 2.651).

Atterberg limits: Methods employed were taken from Australian Standard 1289:

Liquid limit —	AS 1289 C1.1
Plastic limit —	AS 1289 C2.1
Plasticity index —	AS 1289 C3.1
Linear shrinkage —	AS 1289 C4.1

Appendix III – Floristic List

Names according to J. H. Willis, "A Handbook to Plants in Victoria", Volume 1 (1970) and Volume 2 (1972) with amendments according to Forbes *et al.* (1984).

Introduced species denoted by an asterisk.

Acacia dealbata	silver wattle	*Asplenium flabellifolium*	necklace fern	*Carex gaudichaudiana*	sedge
Acacia falciformis	hickory wattle	*Astroloma pinifolium*	pine heath	*Carpobrotus rossii*	karkalla
Acacia genistifolia (Acacia diffusa)	spreading wattle	*Atherosperma moschatum*	southern sassafras	*Cassinia aculeata*	common cassinia (dogwood)
Acacia implexa	lightwood	*Athyrium australe*	Austral lady-fern (shade spleenwort)	*Cassinia longifolia*	shiny cassinia
Acacia longifolia	sallow wattle	*Baeckea gunniana*	alpine baeckea	*Cassinia trinerva*	cassinia
Acacia mearnsii	black wattle	*Banksia integrifolia*	coast banksia	*Casuarina littoralis*	black she-oak (erect she-oak)
Acacia melanoxylon	blackwood	*Banksia marginata*	silver banksia	*Casuarina pusilla*	dwarf she-oak
Acacia mucronata	narrow-leaf wattle	*Banksia serrata*	saw banksia (red honeysuckle)	*Casuarina stricta*	drooping she-oak (coast she-oak)
Acacia myrtifolia	myrtle wattle	*Baumea juncea*	bare twig-rush	*Celastrus australis*	staff climber
Acacia obliquinervia	mountain hickory wattle	*Bedfordia arborescens (Bedfordia salicina*	blanket-leaf	*Celmisia asteliifolia*	silver daisy, snow daisy
Acacia oxycedrus	spike wattle	*Blechnumnudum*	fishbonewater-fern (fishbonefern)	**Cirsium vulgare*	spear thistle
Acacia retinodes	wirilda	*Blechnumpenna-marina*	alpine water-fern (alpine fern)	*Clematis aristata*	Australian clematis
Acacia sophorae		*Blechnumwattsii (Blechnum procerum)*	hard water-fern (hard hill-fern)	*Clematis glycinoides*	forest clematis
Acacia terminalis (Acacia botrycephala)	sunshine wattle	*Bossiaea cinerea*	showy bossiaea	*Clematis microphylla*	small-leaved clematis
Acacia vernicflua	varnish wattle	*Bossiaea heterophylla*	variable bossiaea	*Coprosma hirtella*	rough coprosma
Acacia verticillata	prickly moses	*Brachycome aculeata*		*Coprosma quadrifida*	prickly currant-bush
Acaena anserinifolia	bidgee-widgee	*Brachyloma daphnoides*	daphne heath	*Correa lawrenciana*	mountain correa
Acmena smithii (Eugenia smithii)	lilly-pilly	**Briza maxima*	large quaking-grass (shell grass)	*Cotula coronopifolia*	water-buttons
Acronychia oblongifolia	yellow-wood	**Bromus sterilis*	barren brome (sterile brome)	*Craspedia glauca*	common billy-buttons
Agrostis spp.	bent grass	**Bromus catharticus (Bromus unioloides)*	prairie grass (rescue grass)	*Crowea exalata*	small crowea
Alsophila australis (Cyathea australis)	rough tree-fern (hill tree-fern)	*Bursaria spinosa*	sweet bursaria	**Cynodon dactylon*	couch
**Ammophila arenaria*	marram grass			**Cynosures echinatus*	rough dog's-tail
Amperea xiphoclada	broom spurge	*Cakile maritima*	sea rocket	**Cyperus congest us*	dense flat-sedge
**Anthoxanthum odoratum*	sweet vernal-grass	*Callistemon sieberi*	alpine bottlebrush	**Cyperus eragrostis*	drain flat-sedge
Aotus ericoides	common aotus	*Calocephalus brownii*	cushion-bush		
Apium prostratum	sea celery	*Calystegia marginata*	forest bindweed	**Dactylis glomerata*	cocksfoot
Asplenium bulbiferum	mother spleenwort	*Carex appressa*	tall sedge	*Danthonia spp.*	wallaby grasses

Daviesia latifolia	hop bitter-pea	*Eucalyptus camphora*	mountain swamp gum	*Eucalyptus regnans*	mountain ash
Daviesia ulicfolia	gorse bitter-pea	*Eucalyptus cephalocarpa*	silver-leaf stringybark	*Eucalyptus rubida*	candlebark
Deyeuxia monticola	bent-grass	*Eucalyptus consideniana*	yertchuk	*Eucalyptus sideroxylon*	red ironbark
Dianella revoluta	black-anther flax-lily (spreading flax lily)	*Eucalyptus cypellocarpa*	mountain grey gum	*Eucalyptus stellulata*	silver-top
Dianella tasmanica	Tasman flax-lily	*Eucalyptus dalrympleana*	mountain gum	*Eucalyptus tereticornis*	black sallee
Dichondra repens	kidney-weed	*Eucalyptus delegatensis*	alpine ash (woolly butt)	*Eucalyptus*	forest red gum
Dicksonia antarctica	soft tree-fern	*Eucalyptus dives*	broad-leaved peppermint (blue peppermint)	*Eucalyptus sieberi viminalis*	manna gum (ribbon gum)
Dillwynia glaberrima	smooth parrot-pea	*Eucalyptus elata*	river peppermint	*Eucalyptus viminalis var. racemosa*	manna gum (ribbon gum)
Disphyma austra	rounded noon-flower	*Eucalyptus glaucescens*	Tingaringy gum	*Eustrephus latifolius*	wombat berry (orange vine)
Distichlis distichophylla	Australian salt grass	*Eucalyptus globoidea*	white stringybark	*Ewartia nubigena*	silver ewartia (brown edelweiss)
Doodia media	common rasp-fern	*Eucalyptus globulus ssp. maidenii (Eucalyptus maidenii)*	Maiden's gum	*Exocarpos cupressiformis*	cherry ballart
		Eucalyptus globulus ssp. pseudoglobulus (Eucalyptus st johnii)	Victorian eurabbie		
Elaeocarpus reticulatus	blue oliveberry	*Eucalyptus goniocalyx*	bundy (long-leaf box)	*Frankenia pauciflora var gunnii*	southern sea heath
Eleaocharis sphacelata	tall spike-rush	*Eucalyptus kybeanensis*	ash-mallee		
Empodisma minus (Calorophus lateriflorus)	spreading rope-rush	*Eucalyptus macrorhyncha*	red stringybark	*Gahnia filum*	chaffy saw-sedge (Thready twig-rush)
Epacris impressa	common heath	*Eucalyptus mannifera*	brittle gum	*Gahnia melanocarpa*	black-fruits saw-sedge
Epacris glacilis (Epacris serpyllifolia)	thyme heath	*Eucalyptus melliodora*	yellow box	*Gahnia radula*	thatch saw-sedge
Epacris microphylla	coral heath	*Eucalyptus muellerana*	yellow stringybark	*Gahnia sieberiana*	red-fruit saw-sedge
Epacris paludosa	swamp heath, alpine heath	*Eucalyptus neglecta*	Omeo gum	*Gahnia trifrda*	coast saw-sedge
Eucalyptus albens	white box	*Eucalyptus nitens*	shining gum	*Geitonoplesium cymosum*	scrambling lily (shepherd's joy)
Eucalyptus aromaphloia	scent-bark	*Eucalyptus nitida*	shining peppermint (Smithton peppermint)	*Geranium homeanum*	crane's-bill
Eucalyptus bauerana	blue box	*Eucalyptus obliqua*	messmate stringybark	*Gleichenia microphylla*	scrambling coral-fern (umbrella fern, parasol fern)
Eucalyptus baxteri	brown stringybark	*Eucalyptus ovata*	swamp gum	*Goodenia ovata*	hop goodenia
Eucalyptus bosistoana	coast grey box	*Eucalyptus pauciflora*	white sallee	*Grevillea australis*	alpine grevillea
Eucalyptus botryoides	southern mahogany	*Eucalyptus perriniana*	spinning gum (Dargo gum)		
Eucalyptus bridgesiana	but but (apple box)	*Eucalyptus polyanthemos*	red box	*Hakea microcarpa*	small-fruit hakea
Eucalyptus camaldulensis	river red gum	*Eucalyptus radiata*	common, black or narrow-leaf peppermint	*Hedycarya angustifolia*	Austral mulberry (djelwuck)

Helichrysum hookeri scaly everlasting (kerosene bush)
Helichrysum paralium coast everlasting
Hemichroa pentandra trailing hemichroa
Hibbertia spp. guinea-flower
Histiopteris incisa bat's-wing fern (oakfern)
**Holcus lanatus* Yorkshire fog
Hovea longifolia rusty-pods
Hymenanthera dentata tree violet
Hymenophyllum cupressiforme common filmy-fern
**Hypericum perforatum* St. John's wort
**Hypochoeris radicata* cat's-ear (flat-weed)
Hypolaena fastigiata tassel rope-rush
Imperata cylindrica blady grass
Juncus effuses s soft rush
Juncukraussii (Juncus maritimus) sea rush
Kunzea ericoides (Leptospermum phylicoides
**Lagurus ovatus* hare's-tail
Lastreopsis acuminata (Lastreopsis shepherdii) shiny shield-fern
*Lepidium virginicum Virginian pepper-cress
Lepidosperma concavum sand-hill sword-sedge (hill sword-sedge)
Lepidosperma gladiatum coast sword-sedge
Lepidosperma longitudinale pithy sword-sedge (common sword-sedge)
Leptocatpus brownii coarse twine-rush
Leptorhynchos squamatus scaly buttons
Leptospermum grandifolium mountain tea-tree
Leptospermum juniperinum prickly tea-tree (black tea-tree)
Leptospermum laevigatum coast tea-tree
Leptospermum myrsinoides heath tea-tree (silky tea-tree)
Lepyrodia muelleri common scale-rush (erect scale-rush)
Leucopogon b florus twin-flower beard-heath
Leucopogon ericoides pink beard-heath
Leucopogon parvforus coast beard-heath
Leucopogon suaveolens mountain beard-heath
**Lolium perenne* perennial rye-grass
Lomandra longifolia spiny-headed mat-rush
Lomatia ilicifolia holly lomatia
**Lycium ferocissimum* African box-thorn
**Marrubium vulgare* horehound
Marsdenia rostrata milk-vine
Melaleuca ericifolia swamp paper-bark
Melaleuca squarrosa scented paper-bark
Microlaena stipoides weeping grass
Microsorium diversifolium kangaroo fern
Microsorium scandens fragrant fern (scented polypody)
Mimulus repens creeping monkey-flower(Maori mush)
Monotoca elliptica tree broom-heath
Monotoca scoparia prickly broom-heath
Morinda jasminoides jasmin morinda
Muehlenbeckia adpressa climbing lignum
Muellerina celastroides coast mistletoe
Myoporum insulare common boobialla
Nothofagus cunninghamii myrtle beech
Olearia atgophylla musk daisy-bush
Olearia axillaris coast daisy-bush
Olearia lirata snowy daisy-bush
Olearia phlogopappa dusty daisy-bush
Oplismenus imbecillis
Oxylobium alpestre alpine oxylobium (mountain shaggy-pea)
Oxylobium ellipticum common oxylobium (golden shaggy-pea)
Pandorea pandorana wonga-vine
Parahebe derwentiana (Veronica derwentiana) Derwent speedwell
Patsonsia brownii twining silkpod
**Paspalum dilatatum* paspalum
Paspalum distichum water couch (swamp couch, siltgrass, knot-grass)
Pelargonium australe Austral stork's-bill
Pellaeafalcata sickle fern
Pennisetum clandestinum kikuyu grass
**Phalaris aquatica (Phalaris tuberosa)* Toowoomba canary-grass
Phragmites communis common reed
Pimelea axiflora bootlace bush
Pimelea ligustrina tall rice-flower
**Pinus radiata* Monterey pine
Pittosporum bicolor banyalla
Pittosporum undulatum sweet pittosporum
Plantago coronopus buck's-horn plantain
Plantago lanceolata ribwort
Platylobium formosum handsome flat-pea
Platysace lanceolata shrubby platysace
Poa australis, spp. agg tussock grass
Poa poiformis blue tussock grass
Poa tenera slender tussock grass
Polyscias sambucifolius (7ieghemopanax sambucifolius elderberry panax, elderberry ash

Polystichum proliferum mother shield-fern (common shield-fern)
Pomadems aspera hazel pomaderris
**Populus spp.* poplar
Prostanthera lasianthos Victorian christmas-bush
Prostanthera melissifolia balm mint-bush
Prunella vulgaris self-heal
Pteridium esculentum Austral bracken
Pteris tremula tender brake (tender bracken)
Pultenaea juniperina prickly bush-pea
Pultenaea muelleri Mueller's bush-pea
Pyrrosia rupestris rock felt-fern (creeping polypody)
Ranunculus spp. buttercup
Rapanea howittiana mutton-wood
Restio spp. cord-rush
Rhagodia baccata seaberry saltbush
Richea continentis candle heath (swamp heath)
Ricinocarpos pinifolius wedding bush
**Romulea rosea* onion-grass
**Rubus fruticosus, spp. agg.* blackberry
**Rubus rosifolius* rose-leaf bramble
Rumen spp. dock
Salicornia blackiana thick-head glasswort
Salicornia quinqueflora beaded glasswort
**Salix spp.* willow, sallow
Sambucus gaudichaudiana white elderberry
Samolus repens creeping brookweed
Sarcochilus australis Gunn's orchid (butterfly orchid, small sarcochilus)
Schoenus brevifolius zig-zag bog-rush (short-leaf bog-rush)
Scirpus nodosus knobby club-rush (knotty club-rush)
Selliera radicans selliera (swamp-weed)
**Seneciojacobaea* ragwort
Senecio lautus variable groundsel
Senecio minimus fireweed
**Setaria spp.* pigeon-grass
Sigesbeckia orientalis Indian weed
Smilax australis Austral sarsaparilla (lawyer-vine)
Solanum aviculare kangaroo apple
**Solanum pseudocapsicum* Madeira winter-cherry (Jerusalem cherry)
Sphagnum cristatum sphagnum moss
Spinifex hirsutus hairy spinifex
**Sporobolus africanus* rat-tail grass (Parramatta grass)
Stellaria flaccida chickweed
Stellaria pungens. prickly starwort
Stipa spp spear-grasses
Stylidium graminifolium grass trigger-plant
Stypandra glauca nodding blue-lily
Suaeda australis Austral seablite
Tasmannia lanceolata (Drimys lanceolata) mountain pepper
Tasmannia xerophila (Drimys xerophila) alpine pepper
Tetragonia implexicoma bower spinach
Tetrarrhena juncea forest wire grass (wiry rice grass, tangle grass)
Themeda australis kangaroo grass
Thryptomene micrantha ribbed thryptomene
**Trifolium fragiferum* strawberry clover
**Trifolium repens* white clover (Dutch clover)
**Tnfolium subterraneum* subterranean clover
Triglochin striata streaked arrowgrass
Tristania laurina kanooka, watergum
Urtica incisa scrub nettle
Viola hederacea ivy-leaf violet
Wilsonia backhousei narrow-leaf wilsonia
Wittsteinia vacciniacea Baw-Baw berry
Xanthorrhoea australis Austral grass-tree
Xanthorrhoea minor small grass-tree (bayonet grass, snake charmers)
Ziera arborescens stinkwood
Zoysia macrantha prickly couch

Appendix IV - Methods and Explanations of Land System Data

LAND SYSTEM BOUNDARIES

Land system boundaries are based on different criteria. The simplest and most precise boundary is that which is based on a physiographic break of slope, for example, between upper and lower sets of terraces or where an alluvial fan landscape meets steep hill slopes. Changes in rock type are also often clear enough to give a precise boundary.

Commonly, however, changes in important land characteristics are gradual and an arbitrary choice must be made for the placement of a boundary. For example, the gradual change in rainfall across a region may be great enough to justify subdividing the area. It is often convenient to use change in vegetation characteristics as an indicator of where the change is significant for plant growth. The land system boundary which separates such areas is obviously indicating a zone of change.

It is important to realise that in many cases the land system boundaries used are not an indication of a sharp change in the land but that basically they separate areas with differences which are described in the land system descriptions.

Data presented in the land system tables have been derived in the following ways.

CLIMATE

Rainfall: Annual average and average lowest and highest monthly falls were estimated from data published by the Bureau of Meteorology (1976).

Temperature: Mean annual and lowest and highest mean monthly temperatures have been estimated using Bureau of Meteorology data (1976) for stations within and adjacent to the catchment and the formula of Rowe (1967) linking temperature and elevation.

Seasonal Growth Limitations: Months for which temperature is less than 10°C have been estimated from the same data as mean monthly temperatures. Potential evapotranspiration has been calculated as 80% of potential evaporation; evaporation values were estimated using the formula of Fitzpatrick (1963).
GEOLOGY

Age and lithology: Details were obtained from the 1:250,000 geological maps of Bairnsdale SJ 55-7, Sale SJ 55-11, Tallangatta SJ 55-3, Warburton SI 55-6 and Warragul SI 55-10 (Department of Minerals and Energy), and from field observation.

PHYSIOGRAPHY

Elevation: Elevation was derived from 1:100,000 topographic maps. Relative relief: This was estimated from 1:100,000 topographic maps using the range in elevation within a 1 km^2 grid.

Drainage density: Measured from 1:100,000 topographic maps.

Slope gradient: Estimates were made from the distance between contours on 1:100,000 topographic maps and from field measurements.

Slope shape: Field observations were made to classify slopes as convex, concave or linear.

NATIVE VEGETATION

Structure: Height and projected foliage cover were estimated in the field and classified according to Specht (1970) with amendments for the height classes of the tree stratum as given in Chapter 5.

Characteristic and predominant species: The predominant species within each stratum of the vegetation were identified at each site, those which frequently occurred within the dominant stratum of each component have been listed. If particular species were usually numerically predominant, this has been noted.
SOILS

Parent material: Determined by field observation and reference to the 1:250,000 geological maps of the area listed under Geology.

Description: Soil profiles were described in general terms compatible with the Soil Survey Manual (USDA Handbook No. 18, 1951) and Northcote's (1979) Factual Key for the Recognition of Australian Soils. Soil descriptions in the land system tables were generalised and abbreviated using all available data for each component. Dashes indicate where no observations were available and no reliable inferences could be drawn. Definitions of the following terms used are:

Shallow cemented:	less than 0.5 m to rock or hard cemented
Deep cemented:	more than 1.5 m to rock or hard cemented pans
Calcareous:	lime is present as evidenced by effervescence when dilute hydrochloric acid (0.1 N) is added to a sample of soil

Classification: Both the great soil group classification of Stace et al., (1972) and the alpha-numerical codes of Northcote (1979) were used.

Surface texture: Terms for texture grades are compatible with Northcote (179) and can be referenced against the International Particle Size Classification.

Surface consistence: Consistence in the dry and moist state only have been given. The definitions of terms used follow the USDA Soil Survey Manual (1951).

Consistence when moist Loose: Noncoherent.

Very friable: Soil material crushes under very gentle pressure but coheres when pressed together.

Friable: Soil material crushes easily under gentle to moderate pressure between thumb and forefinger, coheres when pressed together.

Firm: Soil material crushes under moderate pressure between thumb and forefinger but resistance is distinctly noticeable.

Very firm: Soil material crushes under strong pressure; barely crushable between thumb and forefinger.

Extremely firm: Soil material crushes only under very strong pressure; cannot be crushed between thumb and forefinger and must be broken apart bit by bit.

Consistence when dry

Loose: Noncoherent.

Soft: Soil mass is very weakly coherent and fragile; breaks to powder or individual grains under very slight pressure.

Slightly hard: Weakly resistant to pressure; easily broken between thumb and forefinger.

Hard: Moderately resistant to pressure; can be broken in the hands without difficulty but is barely breakable between thumb and forefinger.

Very hard: Very resistant to pressure; can be broken in the hands only with difficulty; not breakable between thumb and forefinger.

Extremely hard: Extremely resistant to pressure; cannot be broken in the hands.

Depth: Soil depth is defined as the modal depth to hard material, which may be bedrock or cemented layers. No attempt was made to estimate the actual depth when it was deeper than 2 m.

Nutrient status: Categories for nutrient status were based on empirical criteria for pasture production used by the Department of Agriculture and Rural Affairs; assessments were based on laboratory data for sampled soil profiles and on inferences drawn from mineralogy of parent materials and from the quality of native vegetation.

Available soil water capacity: Estimates for the whole profile were based on a broad relationship with texture and organic matter content and on the thickness and structural condition of each layer in the rootzone.

Perviousness to water: Perviousness refers to the potential of a soil in the natural state to transmit water and is governed by the least pervious layer. The estimate of perviousness is made subjectively by considering soil structure, size and number of continuous pores, rooting density, texture, and presence or absence of massive or cemented layers.

Drainage: The drainage status of a soil is reflected in the frequency and duration of periods of saturation with water (USDA Soil Survey Manual, 1951). Length and frequency of saturation are a complex function of climate, topography, soil perviousness and height of the watertable. Seven classes, defined in the Soil Survey Manual, are used — very poor; poor; imperfect or somewhat poor; moderately good; good; somewhat excessive; excessive. A soil's drainage status was assessed subjectively from soil matrix colours and mottling, known soil moisture regime at comparable localities and from the other relevant soil, topographic and climatic factors listed above.

Exposed stone: Ratings of percent surface area covered by stone are based on estimates made during profile descriptions and from impressions gained from field traverses.