

Association 7

Soils Associated with Quaternary Basalt

Geology

The area involves the Pleistocene Newer Volcanics of 1.0 to 1.8 m.y. of age and extend from Kilmore north to Seymour, with minor older Miscene Basaltic lava occurring near Broadford. This material covers approximately 310 sq km or 1.2% of the study area and forms part of the northern extremities of the Werribee Plains Phase of Basalt.

Lithology

Composed principally of Olivine basalt with alkaline derivatives, some minor tuff integrated sand may also be present.

Profiles are shallow to deep, uniformly heavy textured, impermeable clays which are apedal when wet but exhibit a very coarse angular blocky structure when dry.

Soils

Surfaces are often rough with numerous rocks and stones. In the narrower components and on breakaways from 5-90% may occur. Surface rock poses severe limitations to vehicular access. On many gently sloping areas, erosional effects have not been sufficient to expose the underlying parent material.

The basaltic areas contain a range of soils which cannot be differentiated well at the scale used in this study.

Three principle soil types were encountered.

1. Soils with greyish brown subsoils: Here the A or upper horizon is typically a thin (5 cm), black to very dark grey light clay with abundant roots. Structures are fine angular blocky when dry, but when wet individual peds merge, with consistences becoming very sticky and firm and structure less pronounced.

Beyond 5 cm, the clay becomes very heavy and takes on a greyish brown colouring. The material is an impermeable, plastic clay which has a weak, coarse angular blocky structure. The upper 60 cm commonly exhibits some yellowish-brown mottling increasing to 15% of the soil mass. In exposed cuttings and when dry, the clays crack markedly and numerous clay skins, become apparent.

2. Soils with reddish brown subsoils: Although no distinctive demarcation can be made, soils in the vicinity of the Broadford-Pyalong road and areas south, tend to show a reddish brown subsoil. In these areas, soils still exhibit heavy textured and impermeable clays with weak angular blocky structures. Some upper situations have pockets of well structured deep friable soils. Buckshot gravel accumulations are occasionally encountered.
3. Soils with black uniform fine textured clays: In the drainage areas and lower slopes soils are typically deep black, very coarsely structured, heavy clays. When dry and exposed as cuttings, soil material is unstable and may crumble away if disturbed.

Summary of Soil Features: Soils Associated with Quaternary Basalt

Classification		Texture		Structure		Permeability		Depth to Bedrock	Subsoil Slaking Tendency	Inclusions
PPF	USC	Surface	Subsoil	Surface	Subsoil	Surface	Subsoil			Gravel, Stone, Other
Uf 6.2 Uf 6.3 Ug 5	CL Minor CH	Light clay Minor medium clay	Heavy clay	Fine-medium (sub) angular blocky	Medium angular blocky	Slow	Slow-very slow	Dependent upon unit Upland areas often <40 cm Drainage areas approx 100 cm	Moderate	Some buckshot gravels in the reddish brown and some greyish brown soils.