12. TELANGATUK LAND-SYSTEM

Beyond the south-western boundary of East Wonwondah land-system is a tract of land that would be almost identical to it were it not for numerous large swamps and associated features. This land covers 72 square miles within the boundary of the survey area and it extends into the Shire of Kowree where Blackburn and Gibbons (1956) named it Telangatuk land-unit, the name adopted in this report. Telangatuk land-unit is the bigger land-unit in the Telangatuk land-system. A second land-unit is Pine Lake land-unit south-cast of Horsham.

Land-Units

Telangatuk land-unit

Telangatuk land-unit is made up of the flat plain, swamp, lunette and sand sheet land-forms. Their environmental features and relationships to each other are shown in Figure 16.

The flat plain is the most extensive land-form and its features of geology, geomorphology and topography are very similar to those of the East Wonwondah land-unit. That is, it is composed of fluviatile clay alluvia underlain by estuarine clays and marls which originated in the Tertiary Murray Sea.

The flat plain has gilgaied solonetzic soils, as described by Blackburn and Gibbons (1956), and they show a close similarity to the brown soils of heavy texture found throughout the East Wonwondah land-unit. The puff soil is identical and the shelf differs only in having a shallow sandy loam at the surface instead of a clay loam. Below three or four inches there is again a poorly structured heavy clay. This coarsening of the surface texture may be related to the influence of the lunettes in the area.

The sand material of the lunettes and sand sheets is thought to be of Early Holocene age. Aerial photographs show that on the eastern (leeward) side of each lunette there is an area in the rough shape of a crescent which is sharply defined from the gilgais on the flat plain. Ground inspection has shown that the crescent has red and brown solonetzic soils which have sandy A horizons of variable depth. These horizons are deepest near the lunette and gradually thin out towards the edge of the crescent where the clay subsoil is usually less than six inches below the surface. It is suggested that a sand sheet derived from the lunette has been deposited over the ground in the shape of a crescent and now forms the A horizon of the soils there. The lunette soils are podzolic deep sands and iron leptopodzols.

The relationships between the eucalypt woodlands and the land-forms and soils are shown in Figure 16. These relationships enable the plant communities to be used as indicators of the soils in which they occur. However, correlations significant for the Telangatuk land-unit (or any land-unit) should not be applied in other land-units without preliminary investigations.

Grey box-buloke woodlands in Telangatuk land-unit are found in the gilgaied solonetzic soils on the flat plain, and yellow gum woodlands are located on the lunettes. Grey box-yellow gum woodlands grow in the red and brown solonetzic soils on the sand sheets, and in these sites grey box predominates where the sandy A horizon is shallow (less than about six inches) and yellow gum predominates where the A horizon is much deeper. Red gum is indicative of wet sites because it occurs around the edges of the swamps and in the lowest and wettest positions on the plain.

The chief primary industry is fine-wool growing, and beef production is a profitable sideline on many properties. As in the East Wonwondah land-system, the spread of introduced pastures has been slow, until recently, and for the same reasons. For many years the gilgaied solonetzic soils were a barrier to pasture development in the same way as the brown soils of heavy texture.

The red and brown solonetzic soils, because of their sandier topsoils and lack of gilgais, have none of the problems of pasture establishment experienced on the heavier soils. They are easily cultivated for pastures and crops. Their texture profiles have soil moisture relationships that make them more suitable for pastures than the clay soils. That is, the sandy A horizons have low wilting points and so their supplies of soil moisture are readily used by pasture plants. Pastures can therefore make use of brief showers that fall during the dry months of the year. Also these soils suffer less waterlogging than the gilgaied areas because of their porous A horizon and their slightly higher topographic position.

The Mt. Barker variety of subterranean clover is generally the only legume sown, and superphosphate the only fertilizer applied. However, because of the variations in the nutrient status and water-holding capacity of the different groups of soils, the requirements of the various sites may be met more suitably by the use of a range of plants and fertilizers.

Bacchus Marsh subterranean clover makes an adaptable mixture with Mt. Barker variety. Yarloop subterranean clover and Palestine strawberry clover may find considerable use in the land-unit because of the many wet sites adjacent to swamps and on the gilgaied areas between the sand sheets. Phalaris and perennial ryegrass are two perennial grasses that can be used in the wetter positions.

The lunettes and deeper parts of the sand sheets are difficult areas on which to establish a vigorous pasture because they are excessively drained of moisture and are low in nutrients required by introduced species. A suggested treatment is to sow perennial veldt grass *(Ehrharta calcyina* Sm.) and evening primrose *(Oenothera biennis L.)* with a mixed phosphorus and nitrogen fertilizer. Potash may also be necessary. The newly established pasture should be kept from animals until it is strong enough to withstand no more than light grazing and this is best achieved by erecting a rabbit-proof fence around the area.

More use could be made of the red and brown solonetzic soils for an 'Increased cropping programme. Fodder reserves of hay and grain could be increased and cash crops of wheat could be another source of income. In these ways, old clover pastures would be renovated and the increased fertility of the soil utilized. Such a development could lead to a modified clover-ley system in which wheat growing assumes a bigger role in the pastoral economy. However, associated with such a change is the problem of producing “flaggy" wheat crops during a dry spring. This has been discussed for the Horsham land-system. The difficulty of a clover-ley system is to control the increase in the level of soil nitrogen and this means deciding for how long a paddock should be under a legume pasture.

Another problem of land-use in the Telangatuk land-unit is shallow flooding during winter and spring. In particular, it affects the gilgaied areas between the sand sheets and swamps because they are low parts of the landscape and their clay soils hold the water at and near ground level.

Both the hazard and occurrence of water erosion are negligible because of the flat topography and extensive areas of heavy soils. There is a high wind erosion hazard on the lunettes and some of them have suffered sand drift and wind scalding since they have been cleared.

To summarize, Telangatuk and East Wonwondah land-units are similar to one another in some respects but Telangatuk land-unit has a number of distinguishing features. They are, first, the poorer regional drainage as shown by the lack of creeks and the presence of numerous swamps. Second, associated with the swamps are lunettes and sand sheets with sandy soils of variable depth supporting yellow gum, and third, red gum is far more common because of the greater number of wet sites.

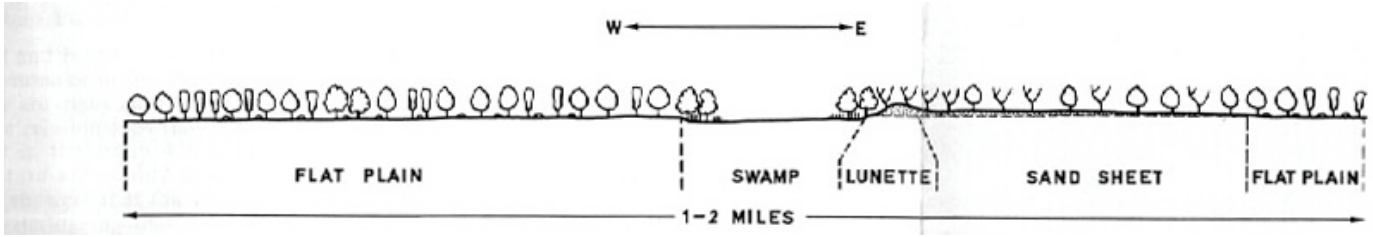
Pine Lake Land-unit

Pine Lake land-unit occurs to the south-cast of Horsham as a small area of 19 square miles surrounding four lakes known as Green, Dock, Pine and Taylor's Lakes. The four lakes were originally large swamps with lunettes before being converted to water storages by the State Rivers and Water Supply Commission.

The land-unit differs from the Telangatuk land-unit in having a gently undulating topography with red-brown earths in predominance. Wheat growing is the main industry. A specific problem is seepage salting around the four storages. Saline waters seeping through the retaining walls have caused a number of salted areas to develop. In one instance, reclamation has involved deep ripping the sowing of cereal rye and Wimmera ryegrass with a 1 : 1 mixture of superphosphate and sulphate of ammonia fencing out to control grazing and the diversion of the seepage by drains and a diversion bank.

TELANGATUK LAND-SYSTEM

(i) Distribution of land-forms



(ii) Land-system diagram

Climate		Average annual rainfall 18-21 inches : growing season April to September and October			
Land-Form		Flat Plain	Swamp	Lunette	Sand sheet
Geology		Fluviatile and estuarine sediments over marine clays		Early Holocene siliceous sands	
Topography		Flat		Gentle slopes	Flat and very gentle slopes
Soil		Gilgaied solonetzic soils		Podzolic deep sands, weak iron leptopodzols	Red and brown solonetzic soils
Land-Class		2A	6	Possibly 5, Probably 6	2A
Land-Use	Present	Fine wool grown on native and introduced pastures	Water supply	Fine wool grown on native and introduced pastures	
	Problems	Waterlogging, cultivation of clay soils		Wind erosion, pasture establishment	Developing a modified clover-ley rotation
Water and Wind Erosion	Hazard	Very low	None	High for wind erosion	Low
	Actual	None	None	Some sand drift	None
Native Vegetation	Structure	Tall woodland	Tall woodland	Tall woodland	
	Species	Grey box and buloke co-dominant red gum (minor)	Red gum around swamp	Yellow gum (dominant) red gum (minor)	Yellow gum and grey box co-dominant

Figure 16 – Telangatuk Land System