

## 16. WARRATONG LAND-SYSTEM

The northern plains are flat and form a characteristic landscape of grey boxes and bulokes growing in gilgaied clay soils. However, there are isolated groups of yellow gums growing in sandy soils. The wind has formed the sand into sheets and dunes and underneath these land-forms there is a clay subsoil at depths ranging from a few inches to several feet.



*Plate 29 – A sand pit has exposed the cross-section of a sand dune in the Warratong land-system. A heath woodland of yellow gum covers the area.*

Most of the sandy areas cover less than 200 acres although a few are comparatively large, in one case four square miles. All of them are grouped under the Warratong land-system and in aggregate their area is 41 square miles. The land-system is sharply defined from surrounding land-systems by its land-forms, soils and vegetation. In Figure 20 the diagram shows the land-forms and their features of environment and land-use. Between the sand dunes are sand sheets of gradually diminishing thickness.

Podzolic deep sands occur on the sand dunes, and on the sand sheets there are brown solonetzic soils of the Warratong series which were described in Chapter Five. The deep sands are several feet in depth and they sometimes pass into clayey sands in the centre of the dune. Towards the edge of the dune, a shallow sandy phase occurs on the lower slopes with a sandy clay underneath. Common colours of the sand are cream and off-white. It is believed the sand sheets form the A horizons of the solonetzic soils. The A horizons vary 1 in depth from as little as four inches up to thirty inches generally they are deepest near the base of the dune and gradually become shallower as the distance from the dune increases. The texture is generally a sand with sometimes a loamy sand at the surface where organic matter has accumulated.

A heath woodland of yellow gum formerly grew on the dunes but most of them were cleared many years ago leaving only remnants of the vegetation. The heath layer is composed mainly of daphne heath, prickly tea-tree, silver banksia and twiggy guinea flower. Yellow gum and yellow box grow in the sand sheets, either in association or singly, and when in association yellow gum tends to be dominant where the sandy topsoil is deepest, whereas yellow box tends to be dominant where the topsoil is shallowest. Sedges are common in the ground flora where the topsoil is shallow and they indicate areas which are wet in winter. In the parishes of Quantong and Vectis East, apple box grows on the dunes in place of yellow gum.

Both irrigation farming and dryland farming are practised within the land-system. In the parishes of Quantong, Vectis East and Bungalally the two small irrigation areas of Quantong and Haven are supplied with water through the channels of the State Rivers and Water Supply Commission. Both irrigation areas are partly within the land-system and at Quantong, in particular, orchards of apples, pears, peaches and apricots have been established on the sand dunes and sand sheets. However, most of the dune orchards are now unproductive and neglected and the dunes are used for dairy pastures for butterfat production. For this purpose, spray irrigation is used with water pumped from the Wimmera River. Experience has shown that pasture growth is better along the edges of the dunes where a clay subsoil is closer to the surface than on the higher parts. On the sand sheets, orchards continue to produce, although again there is a gradual change to dairying as the trees go out of production. Orchards and pastures on the sand sheets are irrigated by surface flow orchards by the use of furrows, and pastures by the border-check method of flood irrigation. Both butterfat and whole milk are produced for the Horsham market.

The greater part of the land-system is not served by irrigation water but is included in the wool-growing areas of the southern Wimmera plains. For many years the sand dunes were not treated any differently from the rest of the paddocks in which they are located. They were cleared for grazing and remained unseparated from the more fertile soils of neighbouring land-systems which occupy most of the paddocks. The early attempts to encourage native pastures failed so that over the years many of the dunes have suffered severe wind erosion and the sand sheets have carried a thin cover of sedges and native annual grasses of little value for grazing.

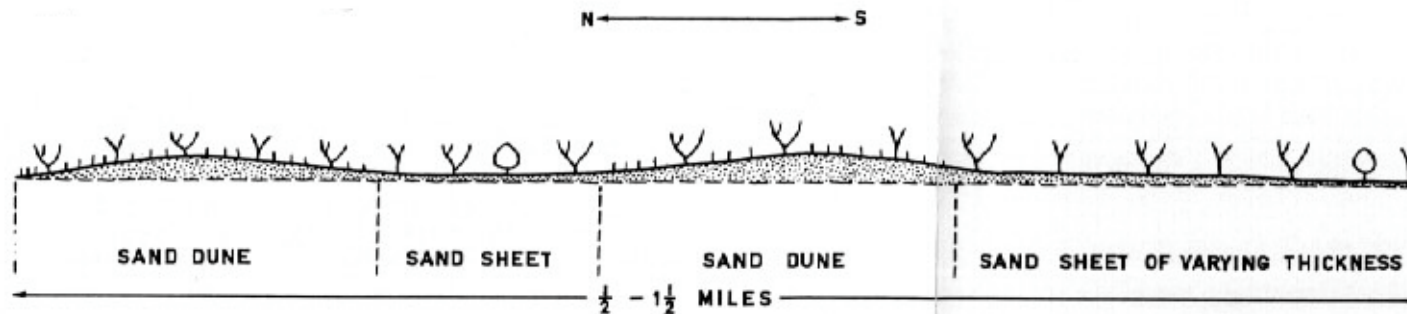
Some landholders have attempted to control the wind erosion and at the same time raise the grazing value of the dunes by sowing such species as cereal rye, perennial veldt grass, evening primrose, lucerne and subterranean clover with phosphorus and nitrogen fertilizers. Podzolic deep sands are infertile soils with a very low storage capacity for soil moisture. Under the average annual rainfall, which varies between 18 and 20 inches across the land-system, pasture establishment is a difficult task on the dunes. In Chapter Five, this theme is considered in more detail. It is necessary in such a programme of pasture establishment to relocate the fences so that in each paddock the dunes are separated from the better soils. In this way, the dunes can be withheld from grazing until a pasture of some vigour and density has developed and then, if desired, they can be carefully grazed at light stocking rates.

Introduced pastures can be encouraged on the sand sheets by the customary use of subterranean clover, phalaris and superphosphate with the possible addition of a potassium fertilizer where the sandy topsoils are deepest.

The large section of the land-system near Dadswell's Bridge differs in some ways from the other sections. First, the sand dunes in this section are smaller than elsewhere in the land-system and are not necessarily aligned in an east-west direction some point in a N.E-S.W. direction. Second, the soils on the sand sheets have a greater tendency to be waterlogged during winter and early spring because the area is crossed by a number of creeks and effluents from Mt. William Creek and the Wimmera River. Thus pasture species that are adapted to soil wetness, such as Yarloop subterranean clover and Palestine strawberry clover, find considerable use in sown pastures. Third, within the boundary of this section of the land-system, there are small areas of Mt. William Creek land-system that are too small for mapping. These areas have shallow red and brown solonchic soils and woodlands of yellow box, yellow gum, grey box and red gum. For this reason, the boundary of this section of the Warratong land-system is not accurate but rather a line of best fit.

## WARRATONG LAND-SYSTEM

(i) Distribution of land-forms



(ii) Land-system diagram

|                   |           |  |   |
|-------------------|-----------|--|---|
|                   |           | Average annual rainfall 17½-20 inches : growing season May to September      |   |
| Land-Form         |           | Sand dune  | Sand sheet  |
| Geology           |           | Early Holocene siliceous sands   |   |
| Topography        |           | Short, gentle slopes   | Flat  |
| Soil              |           | Podzolic deep sand   | Brown solonchic soils (Warratong series)                    |
| Land-Class        |           | 5 (strictly controlled light grazing)  | 2A (pastures with some cropping)                            |
| Land-Use          | Present   | Cleared but unused, some carry abandoned orchards                            | Wool growing on native pastures                             |
|                   | Problems  | Establishment of pastures and control of erosion                             | Establishment of improved pastures                          |
| Wind Erosion      | Hazard    | High   | Low   |
|                   | Actual    | Numerous examples of sand drift and wind scald                               | None  |
| Native Vegetation | Structure | Heath woodland   | Tall woodland   |
|                   | Species   | Yellow gum and apple box are dominant in different areas : heath understorey | Yellow box and yellow gum (co-dominant)<br>Grey box (minor) |

*Figure 20 – Warratong Land System*